Public Input No. 161-NFPA 72-2022 [Global Input]

1. Add new Annex material A.14.3.2 to read as follows:

A.14.3.2 In addition to safety considerations, other reasons for delaying fire alarm inspections include nationally or regionally declared disasters, such as pandemics, weather-related emergencies, or other governmentally recognized disruptions.

2. Add new Annex material A.14.4.4.1 to read as follows:

A.14.4.4.1 In addition to safety considerations, other reasons for delaying fire alarm testing include nationally or regionally declared disasters, such as pandemics, weather-related emergencies, or other governmentally recognized disruptions.

Additional Proposed Changes

File Name	Description	Approved
TIA_72_22_1.pdf		

Statement of Problem and Substantiation for Public Input

NOTE: This public input originates from Tentative Interim Amendment No. 22-1 (Log 1548) issued by the Standards Council on April 15, 2021 and per the NFPA Regs., needs to be reconsidered by the Technical Committee for the next edition of the Document.

SUBSTANTIATION:
The Underwriters Laboratories standard for Central Station monitoring (UL 827) is currently being modified to allow temporary monitoring “at home” or other non-listed locations due to what the standard now defines as “nationally or regionally declared emergencies” which would disrupt normal operations. During the UL Standards Technical Panel discussions relating to
this change to UL 827, it was brought up that not only are the monitoring locations being challenged as a result of the current pandemic, but fire alarm service companies are finding that the fire alarm owners and subscribers are not open, or are unwilling for outside contractors to enter their premises to perform code-mandated fire alarm inspections and testing.

Emergency Nature:
The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation. The annex material proposed in the above sections will make it easier for code officials and other
AHJs to allow delays in the frequencies of inspection and testing of the fire alarm systems in their jurisdictions.

Submitter Information Verification

Submitter Full Name: TC on SIG_TMS
Organization: NFPA
Street Address:
City:
State:
Zip:

Submittal Date:	Thu Feb 24 18:06:18 EST 2022
Committee:	SIG-TMS

Public Input No. 341-NFPA 72-2022 [New Section after 3.3.75]

TITLE OF NEW CONTENT

Design Review: A review of an installed system by a qualified design professional for compliance to the original or current installation codes and standards.

Statement of Problem and Substantiation for Public Input

Justification: This public input is in conjunction with public inputs 340 and 342 which intend to clarify that personnel performing inspection, testing, and maintenance of existing previously approved fire alarm and signaling systems are not, unless otherwise licensed or approved by the authority having jurisdiction, design professionals. And, that any observations that they make are not part of a design review. And, that during the course of their inspection, testing, and maintenance duties, they are not required to verify the adequacy of design of existing previously approved system installations.

- Public Input 340 clarifies the definition of an Observation to state that it is not part of a design review.
- Public Input 341 adds a definition for Design Review so that the addition to the definition of Observation is clear.
- Public input 342 borrows language from the 2020 NFPA 25 – section 1.1.3.1 to clarify that inspection, testing, and maintenance personal performing their duties for previously approved system installations are not required to confirm the adequacy of the design of the system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 340-NFPA 72-2022 [Section No. 3.3.193]	
Public Input No. 342-NFPA 72-2022 [New Section after 14.1.5]	
Public Input No. 340-NFPA 72-2022 [Section No. 3.3.193]	
Public Input No. 342-NFPA 72-2022 [New Section after 14.1.5]	

Submitter Information Verification

Submitter Full Name: Jason Dupuis
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Street Address:
City:
State:
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Submittal Date: Tue May 24 10:30:14 EDT 2022
Committee: SIG-TMS

Public Input No. 340-NFPA 72-2022 [Section No. 3.3.193]

3.3.193* Observation.

A suggested correction, improvement, or enhancement, which is not considered to be part of a design review, to the fire alarm or signaling system that is not considered to be an impairment or deficiency. (SIG-TMS)

Statement of Problem and Substantiation for Public Input

This public input is in conjunction with public inputs 341 and 342 which intend to clarify that personnel performing inspection, testing, and maintenance of existing previously approved fire alarm and signaling systems are not, unless otherwise licensed or approved by the authority having jurisdiction, design professionals. And, that any observations that they make are not part of a design review. And, that during the course of their inspection, testing, and maintenance duties, they are not required to verify the adequacy of design of existing previously approved system installations.

- Public Input 340 clarifies the definition of an Observation to state that it is not part of a design review.
- Public Input 341 adds a definition for Design Review so that the addition to the definition of Observation is clear.
- Public input 342 borrows language from the 2020 NFPA 25 – section 1.1.3.1 to clarify that inspection, testing, and maintenance personal performing their duties for previously approved system installations are not required to confirm the adequacy of the design of the system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 341-NFPA 72-2022 [New Section after 3.3.75]	
Public Input No. 342-NFPA 72-2022 [New Section after 14.1.5]	
Public Input No. 341-NFPA 72-2022 [New Section after 3.3.75]	
Public Input No. 342-NFPA 72-2022 [New Section after 14.1.5]	

Submitter Information Verification

Submitter Full Name: Jason Dupuis
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Submittal Date: Tue May 24 10:25:40 EDT 2022
Committee: SIG-TMS

Public Input No. 335-NFPA 72-2022 [Section No. 3.3.288]

3.3.288 Software.

Programs, instructions, procedures, data, and the like that are executed by a central processing unit of a product and that influences the functional performance of that product. For the purpose of this Code, software is one of ~~two~~ three types: executive software~~ and site~~ , site -specific software, and cybersecurity-related only . (SIG-TMS)

3.3.288.1 Executive Software.

Control and supervisory program that manages the execution of all other programs and directly or indirectly causes the required functions of the product to be performed. Executive software is sometimes referred to as firmware, BIOS, or executive program. (SIG-TMS)

3.3.288.2 Site-Specific Software.

Program that is separate from, but controlled by, the executive software that allows inputs, outputs, and system configuration to be selectively defined to meet the needs of a specific installation.~~ Typically~~ (SIG-TMS) It includes the following subcategories –

i. Operational Site-Specific Software – Programs and information that affects the equipment and operation of a system as intended during emergency conditions. Typically it defines the type and quantity of hardware ~~, customized labels,~~ and the specific operating ~~features~~ controls or sequences of a system.~~ (SIG-TMS)~~

ii. Informational Site-Specific Software – Programs and information that are included as part of the site-specific software, but whose inclusion, exclusion, or alteration does not affect the type and quantity of hardware on a system, or its operational sequence as intended during emergency conditions.

A.3.3.288.2. Typically it includes custom labeling for hardware, historical event information, reports, maintenance information or testing, or other non-emergency related functions .

Statement of Problem and Substantiation for Public Input

Subcategories of site specific software provide needed distinctions between operational and informational software.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 337-NFPA 72-2022 [New Section after 3.3.288.2]	

Submitter Information Verification

Submitter Full Name: Chris Heaton
Organization: Electronic Security Association
Affiliation: Electronic Security Association
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Submittal Date:	Mon May 23 15:59:17 EDT 2022
Committee:	SIG-TMS

Public Input No. 496-NFPA 72-2022 [Sections 3.3.288.1, 3.3.288.2]

Sections 3.3.288.1, 3.3.288.2

3.3.288.1 Executive Software.

Control and supervisory program that manages the execution of all other programs and directly or indirectly causes the required functions of the product to be performed. Executive software is sometimes referred to as firmware, BIOS, or executive program. (SIG-TMS)

3.3.288.2 Site-Specific Software.

Program that is separate from, but controlled by, the executive software that allows inputs, outputs, and system configuration to be selectively defined to meet the needs of a specific installation. It includes the following subcategories:

i. Operational Site-Specific Software-Programs and information that affects the equipment and operation of a system as intended during emergency conditions. Typically it defines the type and quantity of ~~hardware, customized labels, and~~ hardware and the specific operating ~~features~~ controls or sequences of a system. ~~(SIG-TMS)~~

ii. Informational Site-Specific Software-Programs and information that are include as part of the site-specific software, but whose inclusion, exclusion, or alteration does not affect the type and quantity of hardware on a system, or its operational sequence as intended during emergency conditions.

A.3.3.288.2. Typically it includes custom labeling for hardware, historical event information, reports, maintenance information or testing, or other non-emergency related functions.

3.3.288.3 Cybersecurity-related Only Software - Software that is included in a system element that is arranged such that its inclusion or exclusion in no way affects the executive or site-specific software execution, and whose purpose is to reduce the vulnerability of the system to cybersecurity attacks.

Statement of Problem and Substantiation for Public Input

Building systems are increasingly networked and/ or accessible to public facing networks. Evidence has been identified in multiple case studies including the Fire Protection Research Foundation (FPRF) report. The FPRF conducted research that has identified gaps and assessed the appropriateness of the existing provisions and guidance related to cybersecurity.
Their report lists gaps that include:

- Configuration – • Interconnection of external systems (call centers, service providers) could allow for unauthorized activity if those external systems are not secure. • Interconnection with other building systems with no access/restriction to prevent unintended communications. • If one interconnected system is compromised and life safety is connected, it would be safe to assume that all are compromised.
- Implementation – • Systems that have remote access for maintenance or monitoring could introduce vulnerabilities if not properly implemented. • Using secure gateways and configuring devices with only the necessary communication mechanisms can reduce exposure. • The use of insecure wireless devices, or lack of wireless device authentication can be a weakness.
- Security – • Complexity of cybersecurity threats and solutions are increasing, making systems more vulnerable to highly sophisticated arson (terrorist) attacks, industrial espionage, and insider threats. Because of this, it is becoming more difficult to defend against these attacks and new solutions need to be implemented.
- Access – • Weak logical and physical access to 3rd party networks and systems. • Easy to implant hardware or software devices into environment

The attached public Input addresses the above gaps by requiring industry accepted cyber security

practices.
There are several incidents that have already occurred and are referenced here.

- https://www.smartcitiesdive.com/news/hackers-emergency-sirens-texas-cities/550639/
- Researchers Hack Building Control System at Google Australia Office | WIRED

Target Hackers Broke in Via HVAC Company – Krebs on Security

Submitter Information Verification

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Submittal Date: Mon May 30 14:33:11 EDT 2022
Committee: SIG-TMS

Public Input No. 479-NFPA 72-2022 [Section No. 3.3.288.2]

3.3.288.2 Site-Specific Software.

Program that is separate from, but controlled by, the executive software that allows inputs, outputs, and system configuration to be selectively defined to meet the needs of a specific installation. ~~Typically it defines the type and quantity of hardware, customized labels, and the specific operating features of a system. (SIG-TMS)~~

~~TMS)~~

It includes the following subcategories –

i. Informational Site-Specific Software – Programs and information that are included as part of the site-specific software, but whose inclusion, exclusion, or alteration does not affect the type and quantity of hardware on a system, or its operational sequence as intended during emergency conditions. Typically it includes custom labeling for hardware, historical event information, reports, maintenance information or testing, or other non-emergency related functions .

ii. Operational Site-Specific Software – Programs and information that affects the equipment and operation of a system as intended during emergency conditions. Typically it defines the type and quantity of hardware and the specific operating controls or sequences of a system.

3.3.288.3 Cybersecurity-related Only Software – Software that is included in a system element that is arranged such that its inclusion or exclusion in no way affects the executive or site-specific software execution, and whose purpose is to reduce the vulnerability of the system to cybersecurity attacks.

Additional Proposed Changes

File Name	Description	Approved
NFPA_72_BS_SB_3.3.288.2_and_3.3.288.3_defns.docx		

Statement of Problem and Substantiation for Public Input

This matches what is already in the cybersecurity proposal

Submitter Information Verification

Submitter Full Name: Tim Knisely
Organization: Automatic Fire Alarm Association (AFAA)
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 27 12:13:14 EDT 2022
Committee: SIG-TMS

Public Input No. 67-NFPA 72-2022 [Section No. 7.8.2]

7.8.2 Forms for ~~Documentation~~ Record of Completion/Installation .

~~Forms for documentation shall~~ As applicable, forms for the Record of Completion or the installation of household fire alarm systems or single- or multiple-station alarms shall be as follows:

(1) * Unless otherwise permitted or required in 7.5.6 or 7.8.1.2, Figure 7.8.2(a) through Figure 7.8.2(f) shall be used to document the record of completion and inspection.

(2)~~*~~ ~~Unless otherwise permitted or required in 7.6.6 or 7.8.1.2, Figure 7.8.2(g) through Figure 7.8.2(l) shall be used to document the record of inspection and testing.~~

(3) Where a form is required by the AHJ to document the installation and inspection of a household fire alarm system or single- or multiple-station alarms, Figure 7.8.2(~~m~~

(4) g) shall be permitted to be used to document the record of completion and inspection.

Figure 7.8.2(a) System Record of Completion.

SYSTEM RECORD OF COMPLETION

This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.
Attach additional sheets, data, or calculations as necessary to provide a complete record.

Form Completion Date:_____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property:_____
Address:_____
Description of property:_____
Name of property representative:_____
Address:_____
Phone:_____ Fax:_____ E-mail:_____

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

Installation contractor:_____
Address:_____
Phone:_____ Fax:_____ E-mail:_____
Service organization:_____
Address:_____
Phone:_____ Fax:_____ E-mail:_____
Testing organization:_____
Address:_____
Phone:_____ Fax:_____ E-mail:_____
Effective date for test and inspection contract:_____
Monitoring organization:_____
Address:_____
Phone:_____ Fax:_____ E-mail:_____
Account number:_____ Phone line 1:_____ Phone line 2:_____
Means of transmission:_____
Entity to which alarms are retransmitted:_____ Phone:_____

3. DOCUMENTATION

On-site location of the required record documents and site-specific software:_____

4. DESCRIPTION OF SYSTEM OR SERVICE

This is a: ❑ New system ❑ Modification to existing system Permit number:_____
NFPA 72 edition: _____

4.1 Control Unit

Manufacturer:_____ Model number:_____

4.2 Software and Firmware

Firmware revision number:_____

4.3 Alarm Verification

❑ This system does not incorporate alarm verification.
Number of devices subject to alarm verification:_____ Alarm verification set for _____ seconds

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SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

Input voltage of control panel:_____ Control panel amps:_____
Overcurrent protection: Type:_____ Amps:_____
Branch circuit disconnecting means location:_____ Number:_____

5.1.2 Secondary Power

Type of secondary power:_____
Location, if remote from the plant:_____
Calculated capacity of secondary power to drive the system:
In standby mode (hours):_____ In alarm mode (minutes):_____

5.2 Control Unit

❑ This system does not have power extender panels
❑ Power extender panels are listed on supplementary sheet A

6. CIRCUITS AND PATHWAYS

Pathway Type	Dual Pathway	Separate Pathway	Class	Survivability Level
Signaling Line				
Device Power				
Initiating Device				
Notification Appliance				
Other (specify):				

7. REMOTE ANNUNCIATORS

Type	Location

8. INITIATING DEVICES

Type	Quantity	Addressable or Conventional	Alarm or Supervisory	Sensing Technology
Manual Pull Stations				
Smoke Detectors				
Duct Smoke Detectors				
Heat Detectors				
Gas Detectors				
Carbon Monoxide Detectors				
Waterflow Switches				
Tamper Switches				

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SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description	Connected to a Notification Appliance Circuit (NAC)	Connected to a Signaling Line Circuit (SLC)
Audible				
Visual				
Combination Audible and Visual				

10. SYSTEM CONTROL FUNCTIONS

Type	Quantity
Hold-Open Door Releasing Devices	
HVAC Shutdown	
Fire/Smoke Dampers	
Door Unlocking	
Elevator Recall	
Elevator Shunt Trip	

11. INTERCONNECTED SYSTEMS

❑ This system does not have interconnected systems.
❑ Interconnected systems are listed on supplementary sheet _____ .

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

This system as specified herein has been installed according to all NFPA standards cited herein.

Signed: _____ Printed name: _____ Date: _____
Organization: _____ Title: _____ Phone: _____

12.2 System Operational Test

This system as specified herein has tested according to all NFPA standards cited herein.

Signed: _____ Printed name: _____ Date: _____
Organization: _____ Title: _____ Phone: _____

12.3 Acceptance Test

Date and time of acceptance test: _____
Installing contractor representative: _____
Testing contractor representative: _____
Property representative: _____
AHJ representative: _____

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Figure 7.8.2(b) Emergency Communications System Supplementary Record of Completion.

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes systems and components specific to emergency communications systems.
This form is to be completed by the system installation contractor at the time of system acceptance and approval. It shall be permitted to modify this form as needed to provide a more complete and/or clear record. Insert N/A in all unused lines.

Form Completion Date: _____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

❑ Fire alarm with in-building fire emergency voice alarm communications system (EVAC)
❑ Mass notification system
❑ Combination system, with the following components:
❑ Fire alarm ❑ EVACS ❑ MNS ❑ Two-way, in-building, emergency communications system
❑ Other (specify): _____
NFPA 72 edition: _____ Additional description of system(s): _____

2.1 In-Building Fire Emergency Voice Alarm Communications System

Manufacturer: _____ Model number: _____
Number of single voice alarm channels: _____ Number of multiple voice alarm channels: _____
Number of loudspeakers: _____ Number of loudspeaker circuits: _____
Location of amplification and sound processing equipment: _____

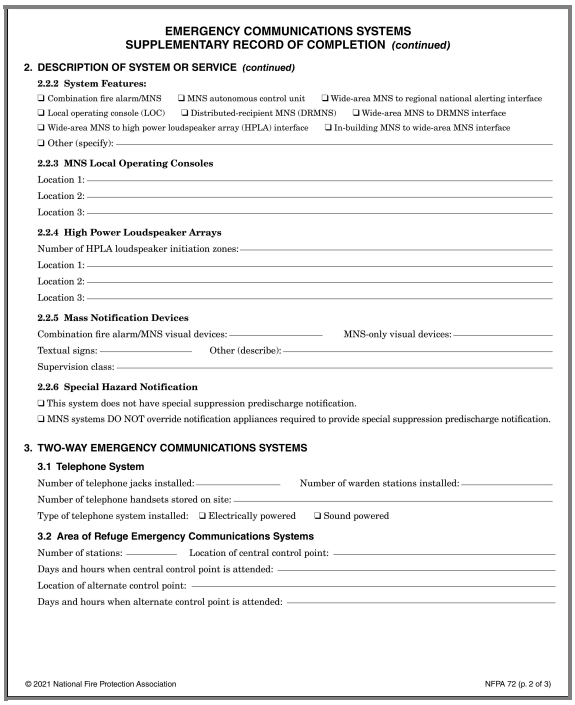
Location of paging microphone stations:
Location 1: _____
Location 2: _____
Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

❑ In-building MNS–combination
❑ In-building MNS ❑ Wide-area MNS ❑ Distributed recipient MNS
❑ Other (specify): _____

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EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. DESCRIPTION OF SYSTEM OR SERVICE *(continued)*

2.2.2 System Features:

❑ Combination fire alarm/MNS ❑ MNS autonomous control unit ❑ Wide-area MNS to regional national alerting interface
❑ Local operating console (LOC) ❑ Distributed-recipient MNS (DRMNS) ❑ Wide-area MNS to DRMNS interface
❑ Wide-area MNS to high power loudspeaker array (HPLA) interface ❑ In-building MNS to wide-area MNS interface
❑ Other (specify): _____

2.2.3 MNS Local Operating Consoles

Location 1: _____
Location 2: _____
Location 3: _____

2.2.4 High Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones: _____
Location 1: _____
Location 2: _____
Location 3: _____

2.2.5 Mass Notification Devices

Combination fire alarm/MNS visual devices: _____ MNS-only visual devices: _____
Textual signs: _____ Other (describe): _____
Supervision class: _____

2.2.6 Special Hazard Notification

❑ This system does not have special suppression predischarge notification.
❑ MNS systems DO NOT override notification appliances required to provide special suppression predischarge notification.

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

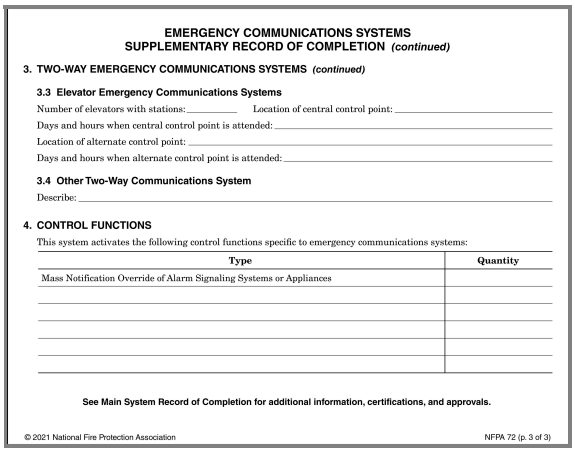
3.1 Telephone System

Number of telephone jacks installed: _____ Number of warden stations installed: _____
Number of telephone handsets stored on site: _____
Type of telephone system installed: ❑ Electrically powered ❑ Sound powered

3.2 Area of Refuge Emergency Communications Systems

Number of stations: _____ Location of central control point: _____
Days and hours when central control point is attended: _____
Location of alternate control point: _____
Days and hours when alternate control point is attended: _____

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EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS *(continued)*

3.3 Elevator Emergency Communications Systems

Number of elevators with stations: _____ Location of central control point: _____
Days and hours when central control point is attended: _____
Location of alternate control point: _____
Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

This system activates the following control functions specific to emergency communications systems:

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	

See Main System Record of Completion for additional information, certifications, and approvals.

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Figure 7.8.2(c) Power Systems Supplementary Record of Completion.

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes systems and components specific to power systems that incorporate generators, SEPSS systems, remote battery systems, or other complex power systems. This form is to be completed by the system installation contractor at the time of system acceptance and approval. It shall be permitted to modify this form as needed to provide a more complete and/or clear record. Insert N/A in all unused lines.

Form Completion Date:_____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

Input voltage of control panel: _____ Control panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.1.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.1.3 Stored-Energy Emergency Power Supply Systems

Equipment powered by SEPSS system: _____

Location of SEPSS system: _____

Calculated capacity of SEPSS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.1.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.2 In-Building Fire Emergency Voice Alarm Communications System or Mass Notification System

2.2.1 Primary Power

Input voltage of EVACS or MNS panel: _____ EVACS or MNS panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

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POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER ***(continued)***

2.2.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.2.3 Stored-Energy Emergency Power Supply Systems

Equipment powered by SEPSS system: _____

Location of SEPSS system: _____

Calculated capacity of SEPSS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.2.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

Input voltage of power extender panel(s): _____ Power extender panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.3.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.3.3 Stored-Energy Emergency Power Supply Systems

Equipment powered by SEPSS system: _____

Location of SEPSS system: _____

Calculated capacity of SEPSS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.3.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

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POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

❑ This system does not use transmission equipment within the building powered by any other source than the alarm system control unit.

2.4.1 Primary Power

Input voltage of shared transmission equipment: _____

Shared transmission equipment panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.4.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.4.3 Energy Storage Systems

Equipment powered by ESS system: _____

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.4.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

See Main System Record of Completion for additional information, certifications, and approvals.

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Figure 7.8.2(d) Notification Appliance Power Panel Supplementary Record of Completion.

NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes a list of types and locations of notification appliance power extender panels.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: _____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

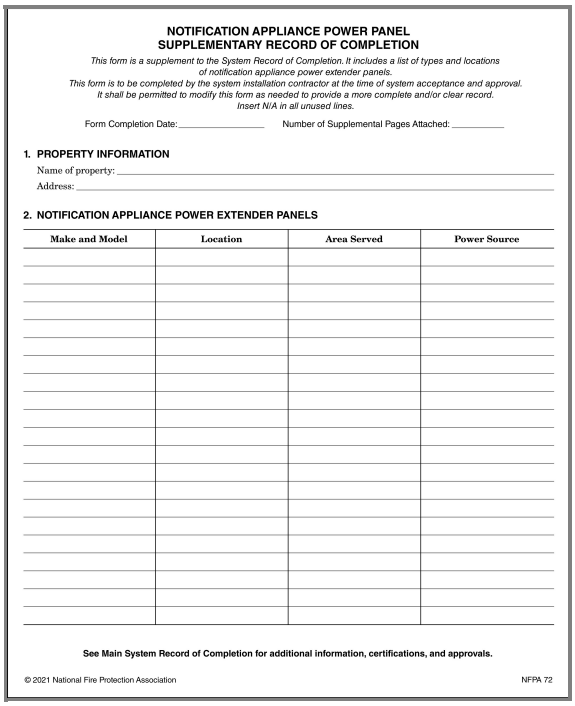
2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source

See Main System Record of Completion for additional information, certifications, and approvals.

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Figure 7.8.2(e) Interconnected Systems Supplementary Record of Completion.



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes a list of types and locations of notification appliance power extender panels.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: _____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

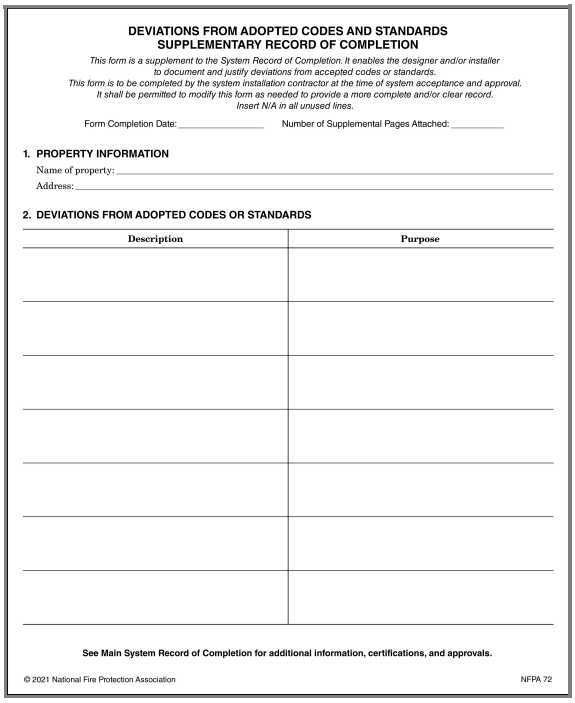
2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source

See Main System Record of Completion for additional information, certifications, and approvals.

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Figure 7.8.2(f) Deviations from Adopted Codes and Standards Supplementary Record of Completion.



DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It enables the designer and/or installer to document and justify deviations from accepted codes or standards.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: _____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose

See Main System Record of Completion for additional information, certifications, and approvals.

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Figure 7.8.2(g) ~~System Record of Inspection and Testing.~~

SYSTEM RECORD OF INSPECTION AND TESTING

This form is to be completed by the system inspection and testing contractor at the time of a system test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.
Attach additional sheets, data, or calculations as necessary to provide a complete record.

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____

Supplemental Form(s) Attached: _____ (yes/no)

1. PROPERTY INFORMATION

Name of property: _____
Address: _____
Description of property: _____
Name of property representative: _____
Address: _____
Phone: _____ Fax: _____ E-mail: _____

2. TESTING AND MONITORING INFORMATION

Testing organization: _____
Address: _____
Phone: _____ Fax: _____ E-mail: _____
Monitoring organization: _____
Address: _____
Phone: _____ Fax: _____ E-mail: _____
Account number: _____ Phone line 1: _____ Phone line 2: _____
Means of transmission: _____
Entity to which alarms are retransmitted: _____ Phone: _____

3. DOCUMENTATION

Onsite location of the required record documents and site-specific software: _____

4. DESCRIPTION OF SYSTEM OR SERVICE

4.1 Control Unit

Manufacturer: _____ Model number: _____

4.2 Software Firmware

Firmware revision number: _____

4.3 System Power

4.3.1 Primary (Main) Power

Nominal voltage: _____ Amps: _____ Location: _____
Overcurrent protection type: _____ Amps: _____ Disconnecting means location: _____

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SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

4. DESCRIPTION OF SYSTEM OR SERVICE *(continued)*

4.3.2 Secondary Power

Type: _____ Location: _____
Battery type (if applicable): _____
Calculated capacity of batteries to drive the system:
In standby mode (hours): _____ In alarm mode (minutes): _____

5. NOTIFICATIONS MADE PRIOR TO TESTING

Monitoring organization	Contact: _____	Time: _____
Building management	Contact: _____	Time: _____
Building occupants	Contact: _____	Time: _____
Authority having jurisdiction	Contact: _____	Time: _____
Other, if required	Contact: _____	Time: _____

6. TESTING RESULTS

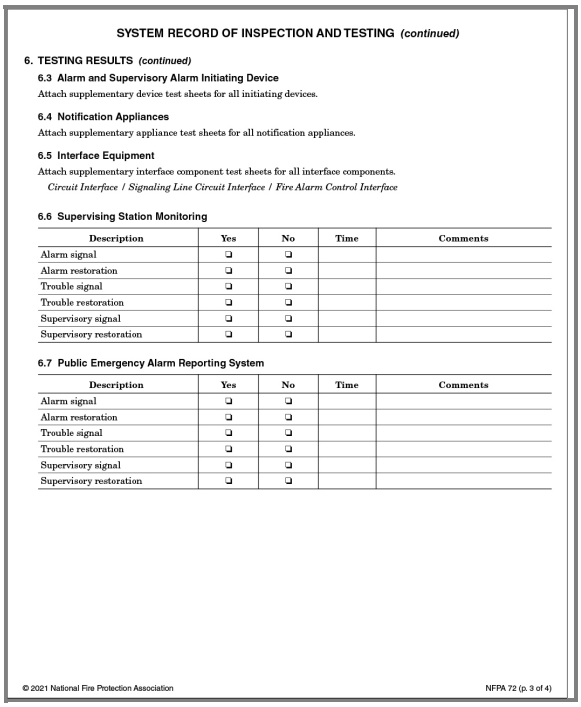
6.1 Control Unit and Related Equipment

Description	Visual Inspection	Functional Test	Comments
Control unit	❑	❑	
Lamps/LEDs/LCDs	❑	❑	
Fuses	❑	❑	
Trouble signals	❑	❑	
Disconnect switches	❑	❑	
Ground-fault monitoring	❑	❑	
Supervision	❑	❑	
Local annunciator	❑	❑	
Remote annunciators	❑	❑	
Remote power panels	❑	❑	

6.2 Secondary Power

Description	Visual Inspection	Functional Test	Comments
Battery condition	❑	❑	
Load voltage	❑	❑	
Discharge test	❑	❑	
Charger test	❑	❑	
Remote panel batteries	❑	❑	
Batteries marked with date of manufacture	❑	❑	

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SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

6. TESTING RESULTS *(continued)*

6.3 Alarm and Supervisory Alarm Initiating Device

Attach supplementary device test sheets for all initiating devices.

6.4 Notification Appliances

Attach supplementary appliance test sheets for all notification appliances.

6.5 Interface Equipment

Attach supplementary interface component test sheets for all interface components.

Circuit Interface / Signaling Line Circuit Interface / Fire Alarm Control Interface

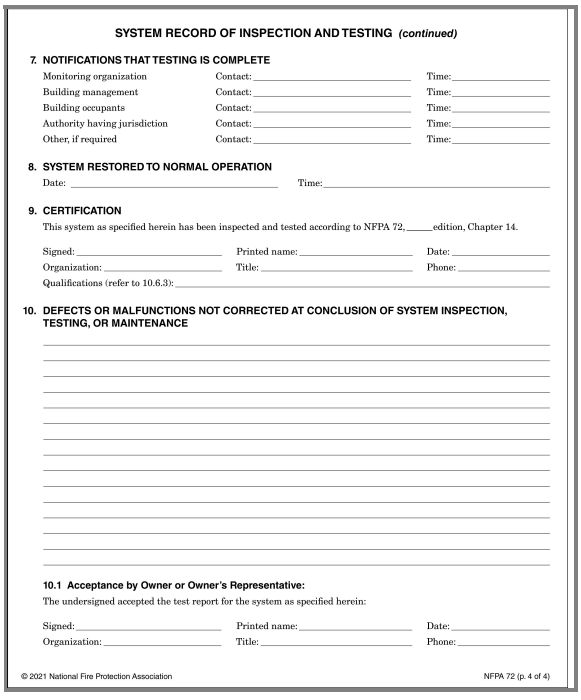
6.6 Supervising Station Monitoring

Description	Yes	No	Time	Comments
Alarm signal	❑	❑		
Alarm restoration	❑	❑		
Trouble signal	❑	❑		
Trouble restoration	❑	❑		
Supervisory signal	❑	❑		
Supervisory restoration	❑	❑		

6.7 Public Emergency Alarm Reporting System

Description	Yes	No	Time	Comments
Alarm signal	❑	❑		
Alarm restoration	❑	❑		
Trouble signal	❑	❑		
Trouble restoration	❑	❑		
Supervisory signal	❑	❑		
Supervisory restoration	❑	❑		

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SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

7. NOTIFICATIONS THAT TESTING IS COMPLETE

Monitoring organization Contact: _____ Time: _____
Building management Contact: _____ Time: _____
Building occupants Contact: _____ Time: _____
Authority having jurisdiction Contact: _____ Time: _____
Other, if required Contact: _____ Time: _____

8. SYSTEM RESTORED TO NORMAL OPERATION

Date: _____ Time: _____

9. CERTIFICATION

This system as specified herein has been inspected and tested according to NFPA 72, _____edition, Chapter 14.

Signed: _____ Printed name: _____ Date: _____
Organization: _____ Title: _____ Phone: _____
Qualifications (refer to 10.6.3): _____

10. DEFECTS OR MALFUNCTIONS NOT CORRECTED AT CONCLUSION OF SYSTEM INSPECTION, TESTING, OR MAINTENANCE

10.1 Acceptance by Owner or Owner's Representative:

The undersigned accepted the test report for the system as specified herein:

Signed: _____ Printed name: _____ Date: _____
Organization: _____ Title: _____ Phone: _____

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~~Figure 7.8.2(h) Notification Appliance Supplementary Record of Inspection and Testing.~~

NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes a notification appliance test record.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time: ________________ Inspection/Test Completion Date/Time: ________________

Number of Supplemental Pages Attached: ________

1. PROPERTY INFORMATION

Name of property: ____________________

Address: ____________________

2. NOTIFICATION APPLIANCE TEST RESULTS

Appliance Type	Location/Identifier	Test Results

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NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

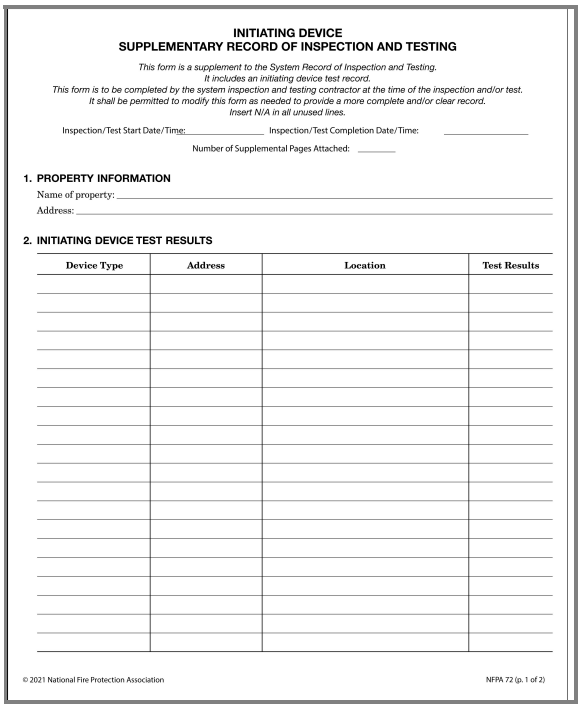
2. NOTIFICATION APPLIANCE TEST RESULTS *(continued)*

Appliance Type	Location/Identifier	Test Results

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

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~~**Figure 7.8.2(i) Initiating Device Supplementary Record of Inspection and Testing.**~~



INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes an initiating device test record.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time:_____ Inspection/Test Completion Date/Time: _____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

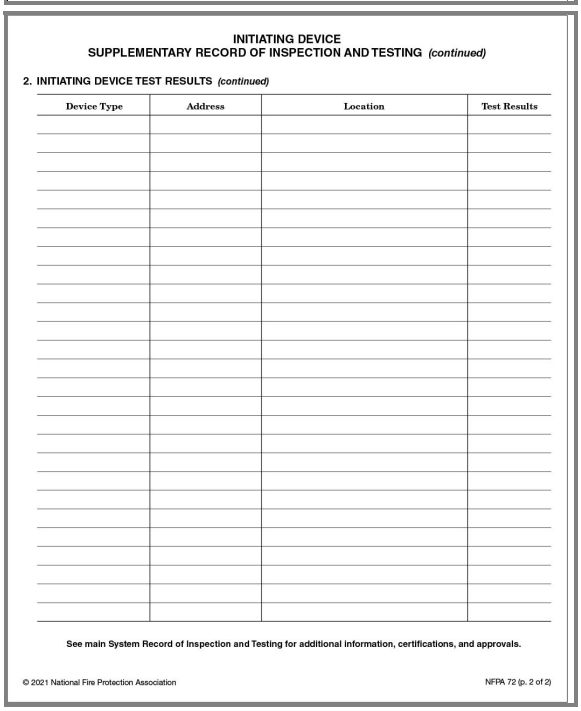
Name of property: _____

Address: _____

2. INITIATING DEVICE TEST RESULTS

Device Type	Address	Location	Test Results

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INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

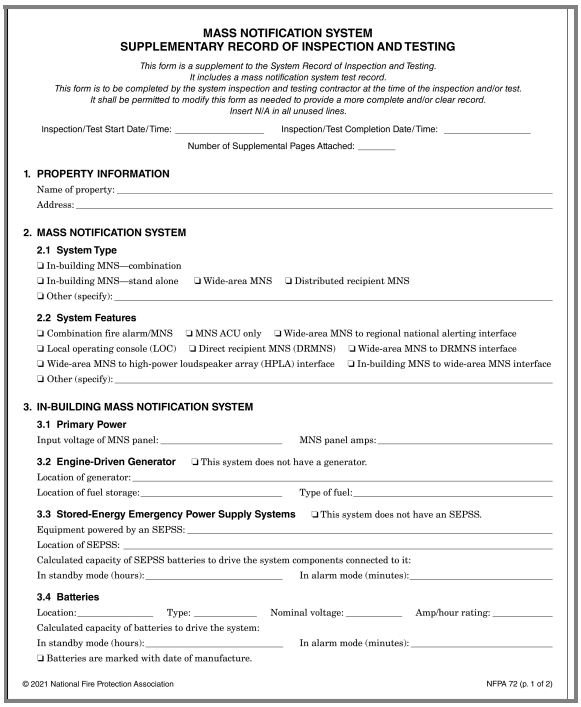
2. INITIATING DEVICE TEST RESULTS *(continued)*

Device Type	Address	Location	Test Results

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

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~~Figure 7.8.2(j) Mass Notification System Supplementary Record of Inspection and Testing.~~



MASS NOTIFICATION SYSTEM
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes a mass notification system test record.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. MASS NOTIFICATION SYSTEM

2.1 System Type

❑ In-building MNS—combination

❑ In-building MNS—stand alone ❑ Wide-area MNS ❑ Distributed recipient MNS

❑ Other (specify): _____

2.2 System Features

❑ Combination fire alarm/MNS ❑ MNS ACU only ❑ Wide-area MNS to regional national alerting interface

❑ Local operating console (LOC) ❑ Direct recipient MNS (DRMNS) ❑ Wide-area MNS to DRMNS interface

❑ Wide-area MNS to high-power loudspeaker array (HPLA) interface ❑ In-building MNS to wide-area MNS interface

❑ Other (specify): _____

3. IN-BUILDING MASS NOTIFICATION SYSTEM

3.1 Primary Power

Input voltage of MNS panel: _____ MNS panel amps: _____

3.2 Engine-Driven Generator ❑ This system does not have a generator.

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

3.3 Stored-Energy Emergency Power Supply Systems ❑ This system does not have an SEPSS.

Equipment powered by an SEPSS: _____

Location of SEPSS: _____

Calculated capacity of SEPSS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

3.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

❑ Batteries are marked with date of manufacture.

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MASS NOTIFICATION SYSTEM
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

4. MASS NOTIFICATION EQUIPMENT TEST RESULTS

Description	Visual Inspection	Functional Test	Comments
Functional test			
Reset/power down test			
Fuses			
Primary power supply			
SEPSS power test			
Trouble signals			
Disconnect switches			
Ground-fault monitoring			
CCU security mechanism			
Prerecorded message content			
Prerecorded message activation			
Software backup performed			
Test backup software			
Fire alarm to MNS interface			
MNS to fire alarm interface			
In-building MNS to wide-area MNS			
MNS to direct recipient MNS			
Sound pressure levels Occupied ❑ Yes ❑ No Ambient dBA: _____ Alarm dBA: _____ (attach supplementary notification appliance form(s) with locations, values, and weather conditions)			
System intelligibility Test method: _____ Score: _____ CIS value: _____ (attach supplementary notification appliance form(s) with locations, values, and weather conditions)			
Other (specify):			

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

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~~Figure 7.8.2(k) Emergency Communications Systems Supplementary Record of Inspection and Testing.~~

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes systems and components specific to emergency communication systems.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

❑ Fire alarm with in-building fire emergency voice alarm communications system (EVAC)

❑ Mass notification system

❑ Combination system, with the following components:
❑ Fire alarm ❑ EVACS ❑ MNS ❑ Two-way, in-building, emergency communications system

❑ Other (specify): _____

Additional description of system(s): _____

_____

2.1 In-Building Fire Emergency Voice Alarm Communications System

Manufacturer: _____ Model number: _____

Number of single voice alarm channels: _____ Number of multiple voice alarm channels: _____

Number of loudspeakers: _____ Number of loudspeaker circuits: _____

Location of amplification and sound processing equipment: _____

_____

_____

Location of paging microphone stations:

Location 1: _____

Location 2: _____

Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

❑ In-building MNS—combination

❑ In-building MNS ❑ Wide-area MNS ❑ Distributed recipient MNS

❑ Other (specify): _____

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EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

2. DESCRIPTION OF SYSTEM OR SERVICE *(continued)*

2.2.2 System Features:

❑ Combination fire alarm/MNS ❑ MNS autonomous control unit ❑ Wide-area MNS to regional national alerting interface
❑ Local operating console (LOC) ❑ Distributed-recipient MNS (DRMNS) ❑ Wide-area MNS to DRMNS interface
❑ Wide-area MNS to high-power loudspeaker array (HPLA) interface ❑ In-building MNS to wide-area MNS interface
❑ Other (specify): _____

2.2.3 MNS Local Operating Consoles

Location 1: _____

Location 2: _____

Location 3: _____

2.2.4 High-Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones: _____

Location 1: _____

Location 2: _____

Location 3: _____

2.2.5 Mass Notification Devices

Combination fire alarm/MNS visual devices: _____ MNS-only visual devices: _____

Textual signs: _____ Other (describe): _____

Supervision class: _____

2.2.6 Special Hazard Notification

❑ This system does not have special suppression pre-discharge notification

❑ MNS systems DO NOT override notification appliances required to provide special suppression pre-discharge notification

3. TWO-WAY EMERGENCY COMMUNICATION SYSTEMS

3.1 Telephone System

Number of telephone jacks installed: _____ Number of warden stations installed: _____

Number of telephone handsets stored on site: _____

Type of telephone system installed: ❑ Electrically powered ❑ Sound powered

3.2 Area of Refuge Emergency Communications Systems

Number of stations: _____ Location of central control point: _____

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

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EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS *(continued)*

3.3 Elevator Emergency Communications Systems

Number of elevators with stations: _____ Location of central control point: _____

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communications System

Describe: _____

4. TESTING RESULTS

4.1 Control Unit and Related Equipment

Description	Visual Inspection	Functional Test	Comments
Control unit	❑	❑	
Lamps/LEDs/LCDs	❑	❑	
Fuses	❑	❑	
Trouble signals	❑	❑	
Disconnect switches	❑	❑	
Ground fault monitoring	❑	❑	
Supervision	❑	❑	
Local annunciator	❑	❑	
Remote annunciators	❑	❑	
Remote power panels	❑	❑	
Other:	❑	❑	

4.2 Secondary Power

Description	Visual Inspection	Functional Test	Comments
Battery condition	❑	❑	
Load voltage	❑	❑	
Discharge test	❑	❑	
Charger test	❑	❑	
Remote panel batteries	❑	❑	

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EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

4. TESTING RESULTS *(continued)*

4.3 Emergency Communications Equipment

Description	Visual Inspection	Functional Test	Comments
Control unit	❑	❑	
Lamps/LEDs/LCDs	❑	❑	
Fuses	❑	❑	
Secondary power supply	❑	❑	
Trouble signals	❑	❑	
Disconnect switches	❑	❑	
Ground fault monitoring	❑	❑	
Panel supervision	❑	❑	
System performance	❑	❑	
System audibility	❑	❑	
System intelligibility	❑	❑	
Other:	❑	❑	

4.4 Mass Notification Equipment

Description	Visual Inspection	Functional Test	Comments
Functional test	❑	❑	
Reset/Power down test	❑	❑	
Fuses	❑	❑	
Primary power supply	❑	❑	
SEPSS power test	❑	❑	
Trouble signals	❑	❑	
Disconnect switches	❑	❑	
Ground fault monitoring	❑	❑	
CCU security mechanism	❑	❑	
Prerecorded message content	❑	❑	
Prerecorded message activation	❑	❑	
Software backup performed	❑	❑	
Test backup software	❑	❑	
Fire alarm to MNS Interface	❑	❑	
MNS to fire alarm interface	❑	❑	
In-building MNS to wide-area MNS	❑	❑	
MNS to direct recipient MNS	❑	❑	

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EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

4. TESTING RESULTS *(continued)*

4.4 Mass Notification Equipment *(continued)*

Description	Visual Inspection	Functional Test	Comments
Sound pressure levels (attach report with locations, values, and weather conditions)	❑	❑	
System intelligibility ❑ CSI ❑ STI (attach report with locations, values, and weather conditions)	❑	❑	
Other:	❑	❑	

4.5 Two-Way Communication Equipment

Description	Visual Inspection	Functional Test	Comments
Phone handsets	❑	❑	
Phone jacks	❑	❑	
Off-hook indicator	❑	❑	
Call-in signal	❑	❑	
System performance	❑	❑	
System audibility	❑	❑	
System intelligibility	❑	❑	
Other:	❑	❑	

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

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~~Figure 7.8.2(l) Interface Component Supplementary Record of Inspection and Testing.~~

INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes an interface component test record for circuit interfaces, signaling line circuit interfaces, and fire alarm control interfaces.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

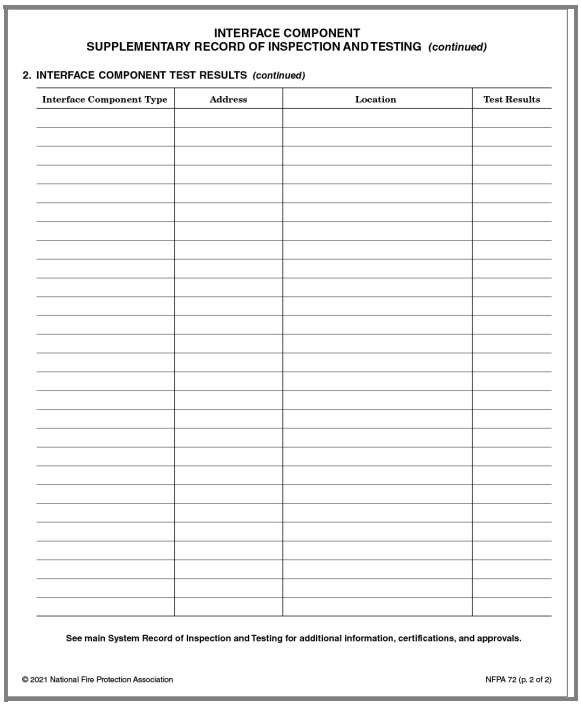
Name of property: _____

Address: _____

2. INTERFACE COMPONENT TEST RESULTS

Interface Component Type	Address	Location	Test Results

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INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

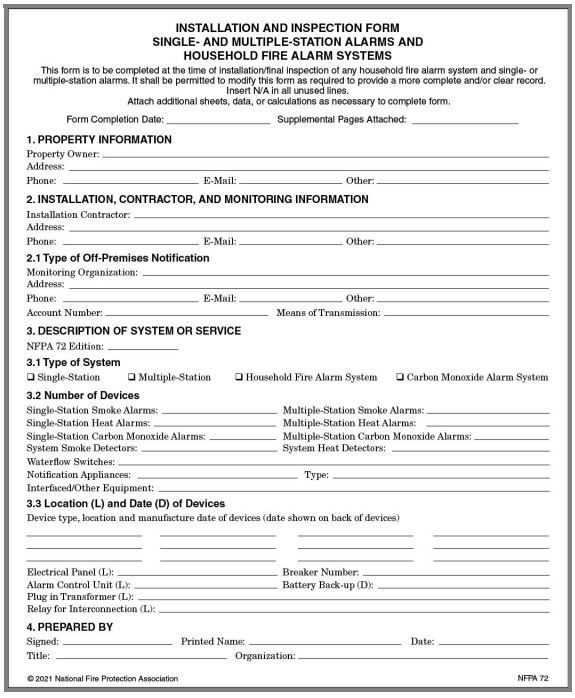
2. INTERFACE COMPONENT TEST RESULTS *(continued)*

Interface Component Type	Address	Location	Test Results

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

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~~Figure 7.8.2(m)~~ Installation and Inspection Form Single- and Multiple-Station Alarms and Household Fire Alarm Systems.



INSTALLATION AND INSPECTION FORM
SINGLE- AND MULTIPLE-STATION ALARMS AND
HOUSEHOLD FIRE ALARM SYSTEMS

This form is to be completed at the time of installation/final inspection of any household fire alarm system and single- or multiple-station alarms. It shall be permitted to modify this form as required to provide a more complete and/or clear record.
Insert N/A in all unused lines.
Attach additional sheets, data, or calculations as necessary to complete form.

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION
Property Owner: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2. INSTALLATION, CONTRACTOR, AND MONITORING INFORMATION
Installation Contractor: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2.1 Type of Off-Premises Notification
Monitoring Organization: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____
Account Number: _____ Means of Transmission: _____

3. DESCRIPTION OF SYSTEM OR SERVICE
NFPA 72 Edition: _____

3.1 Type of System
❑ Single-Station ❑ Multiple-Station ❑ Household Fire Alarm System ❑ Carbon Monoxide Alarm System

3.2 Number of Devices
Single-Station Smoke Alarms: _____ Multiple-Station Smoke Alarms: _____
Single-Station Heat Alarms: _____ Multiple-Station Heat Alarms: _____
Single-Station Carbon Monoxide Alarms: _____ Multiple-Station Carbon Monoxide Alarms: _____
System Smoke Detectors: _____ System Heat Detectors: _____
Waterflow Switches: _____
Notification Appliances: _____ Type: _____
Interfaced/Other Equipment: _____

3.3 Location (L) and Date (D) of Devices
Device type, location and manufacture date of devices (date shown on back of devices)
_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____
Electrical Panel (L): _____ Breaker Number: _____
Alarm Control Unit (L): _____ Battery Back-up (D): _____
Plug in Transformer (L): _____
Relay for Interconnection (L): _____

4. PREPARED BY
Signed: _____ Printed Name: _____ Date: _____
Title: _____ Organization: _____

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Statement of Problem and Substantiation for Public Input

This PI relates to PI-80 and PI-81, proposing the relocation of the Inspection and Testing forms to an Annex note related to Section 7.6.6 and reserving Section 7.8.2 for the remaining documents, namely the Record of Completion form and Household Alarm Installation form. The title of this section has been changed accordingly as well. This is consistent with the Code's intent all along with regard to the Inspection and Testing forms, namely that they are samples for guidance but not intended to be mandated. The AHJ, of course, can still mandate the use of the Inspection and Testing forms as they appear in the Annex of the Code. However, the current placement of the Inspection and Testing forms

in the body of the Code is inconsistent with the Code's intent for those documents.

The committee rejected a related PC last cycle stating that the Code already states in the Annex that the I&T is a sample form. That statement is true. However, the presence of the I&T form in the body of the Code as a sample is not correct. As a sample form, it belongs in the Annex. Again, its presence in the body of the Code is contradictory to the Code's intent and to the Annex note that the committee referenced in their previous substantiation. It belongs in the Annex. The concern of the committee over not having the form in Chapter 7 is not valid since it's still related to Chapter 7 by way of the annex note linked to 7.6.6.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 80-NFPA 72-2022 [Section No. 7.6.6]	
Public Input No. 81-NFPA 72-2022 [New Section after A.7.7.1.2]	
Public Input No. 68-NFPA 72-2022 [Section No. A.7.8.2(2)]	
Public Input No. 80-NFPA 72-2022 [Section No. 7.6.6]	
Public Input No. 81-NFPA 72-2022 [New Section after A.7.7.1.2]	

Submitter Information Verification

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Submittal Date: Thu Jan 13 09:56:57 EST 2022
Committee: SIG-TMS

Public Input No. 342-NFPA 72-2022 [New Section after 14.1.5]

TITLE OF NEW CONTENT

14.1.6 This chapter does not require inspection, test, or maintenance personnel to verify the adequacy of the design of existing previously approved systems.

Statement of Problem and Substantiation for Public Input

Justification: This public input is in conjunction with public inputs 340 and 341 which intend to clarify that personnel performing inspection, testing, and maintenance of existing previously approved fire alarm and signaling systems are not, unless otherwise licensed or approved by the authority having jurisdiction, design professionals. And, that any observations that they make are not part of a design review. And, that during the course of their inspection, testing, and maintenance duties, they are not required to verify the adequacy of design of existing previously approved system installations.

- Public Input 340 clarifies the definition of an Observation to state that it is not part of a design review.
- Public Input 341 adds a definition for Design Review so that the addition to the definition of Observation is clear.
- Public input 342 borrows language from the 2020 NFPA 25 – section 1.1.3.1 to clarify that inspection, testing, and maintenance personal performing their duties for previously approved system installations are not required to confirm the adequacy of the design of the system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 340-NFPA 72-2022 [Section No. 3.3.193]	
Public Input No. 341-NFPA 72-2022 [New Section after 3.3.75]	
Public Input No. 340-NFPA 72-2022 [Section No. 3.3.193]	
Public Input No. 341-NFPA 72-2022 [New Section after 3.3.75]	

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Committee: SIG-TMS

Public Input No. 204-NFPA 72-2022 [New Section after 14.2.1.4]

TITLE OF NEW CONTENT

14.2.1.5* The purpose of conducting periodic inspection and testing is not to determine the adequacy of the design of the system.

A.14.2.1.5 Personnel conducting inspection and testing procedures should meet the qualifications of 10.5.3.1, inspection personnel, or 10.5.3.2, testing personnel, and 10.5.3.4. These personnel do not typically have the expertise to meet the requirements of a system designer, 10.5.1. Section 14.2.1.5 clarifies that the purpose of periodic inspection and testing does not include a review of a system's adequacy. The inspection and testing personnel may have no idea what codes were in effect when the system was initially designed and installed. Or, if the system being inspected and tested met the in-effect codes at the time.

Statement of Problem and Substantiation for Public Input

The intent of the proposed language is intended to clarify that inspection and testing activities are not intended to verify a system's adequacy. While this is generally understood by many people in the fire alarm and signaling system industry, two recent legal cases I have been involved in prove that this lack of clarity exists. Firms providing inspection and testing services were the defendants in life-loss fires when they allegedly did not advise the system owner that the existing fire alarm systems being inspected/tested were not in compliance with NFPA 72 for device and/or appliance placement and performance. I believe the new section makes clear what is the intent of Chapter 14 as it applies to existing systems.

NFPA 25 already includes similar language (NFPA 25, 1.1.3.1). The retroactivity section, 1.4.1, does not provide the necessary clarity.

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Committee: SIG-TMS

Public Input No. 56-NFPA 72-2022 [Section No. 14.2.6.1]

14.2.6.1

Testing personnel shall be qualified and experienced in the specific arrangement and operation of a suppression system ~~(s)~~ and ~~a releasing function(s) and shall be~~ related releasing functions and cognizant of the hazards associated with inadvertent system discharge.

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.

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Committee: SIG-TMS

Public Input No. 569-NFPA 72-2022 [New Section after 14.2.10.1]

14.2.10.2*

Where a risk assessment demonstrates that a temporary condition will result in persnnel safety being compormised, inspection and testing activities shall be delayed when approved by the authority having jurisdiction.

A.14.2.10.2

Although some sprecific tasks might be delayed, it is not the intent that all activities under the scope of the standard be deferred. A reasonable attempt should be made to verity that the system is operational. Inspection and testing of equipment and components in other areas where personnel safety is not compromised should still be performed.

Statement of Problem and Substantiation for Public Input

The proposed language is the result of situations that arose during the COVID-19 public health emergency. Health care facilities, with staff that were not able to keep up with tasks directly related to patient care and with portions of the facility treating very contagious patients, were being told that they had to continue to meet ITM requirements. While one could argue that some other provisions could apply, those paragraphs are more related to industrial operations that include a planned shutdown. Post COVID-19, most health care facilities were not going to shutdown. The provision includes two restrictions: a risk assessment and approval from the AHJ. The Annex not is intended to guide facilities to a point in which only those tasks that directly impact personnel safety should be deferred. Note that this will not address the burden on staff what may already be over-committed but it does address the personnel safety issue to patients, staff, visitors, and contractors. In some instances, some of which were directed by regulators, contractors were not permitted into the health care facility due to the risk they might pose (if COVID-19 positive) to the patients and staff in the facility.

Similar language is likely to be included in the 2023 Edition of NFPA 25 (4.9.7.3 and A.4.9.7.3).

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Committee: SIG-TMS

Public Input No. 187-NFPA 72-2022 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

Component	Initial Acceptance	Periodic Frequency	Method	Reference
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4; 14.3.5
2. Control equipment:				
(1) Fire alarm systems monitored for alarm, supervisory, and trouble signals			Verify a system normal condition.	
(a) Fuses	X	Annual		
(b) Interfaced equipment	X	Annual		
(c) Lamps and LEDs	X	Annual		
(d) Primary (main) power supply	X	Annual		
(e) Trouble signals	X	Semiannual		
(2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals			Verify a system normal condition.	
(a) Fuses	X	Weekly		
(b) Interfaced equipment	X	Weekly		
(c) Lamps and LEDs	X	Weekly		
(d) Primary (main) power supply	X	Weekly		
(e) Trouble signals	X	Weekly		
3. Reserved				
4. Supervising station alarm systems — transmitters			Verify location, physical condition, and a system normal condition.	
(1) Digital alarm communicator transmitter (DACT)	X	Annual		

Component	Initial Acceptance	Periodic Frequency	Method	Reference
(2) Digital alarm radio transmitter (DART)	X	Annual		
(3) McCulloh	X	Annual		
(4) Radio alarm transmitter (RAT)	X	Annual		
(5) All other types of communicators	X	Annual		
5. In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	
6. Reserved				
7. Reserved				
8. Reserved				
9.* Batteries				10.6.10
(1) Valve-regulated lead-acid (VRLA) batteries				
(a) General	X	N/A	Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks in cell/unit or leakage of electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	
(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	
(2) Primary (dry cell) other than those used in low-power radio (wireless) systems in accordance with Chapter 23	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.	

Component	Initial Acceptance	Periodic Frequency	Method	Reference
10. Reserved				
11. Remote annunciators	X	Semiannual	Verify location and condition.	
12. Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6
13. Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6
14. Surge protective devices	X	Semiannual	Verify location and condition.	
15. Reserved				
16. Optical fiber cable connections	X	Annual	Verify location and condition.	
17. Initiating devices			Verify location and condition (all devices).	
(1) Air sampling				
(a) General	X	Semiannual	Verify that in-line filters, if any, are clean.	17.7.4.6
(b) Sampling system piping and sampling ports	X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed.	17.7.4.6
(2) Duct detectors				
(a) General	X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct.	17.7.6.5
(b) Sampling tube	X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.	17.7.6.5
(3) Electromechanical releasing devices	X	Semiannual		
(4) Fire extinguishing system(s) or	X	Semiannual		

	Component	Initial Acceptance	Periodic Frequency	Method	Reference
	suppression system(s) switches				
	(5) Manual fire alarm boxes	X	Semiannual		
	(6) Heat detectors	X	Semiannual		
	(7) Radiant energy fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	17.8
	(8) Video image smoke and fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	17.7.8; 17.8.5
	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual		
	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	
	(11) Supervisory signal devices	X	Semiannual		
	(12) Waterflow devices	X	Semiannual		
18.	Reserved				
19.	Combination systems			Verify location and condition (all types).	
	(1) Fire extinguisher electronic monitoring devices/systems	X	Semiannual		
	(2) Carbon monoxide detectors/systems	X	Semiannual		
20.	Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	
21.	Guard's tour equipment	X	Semiannual	Verify location and condition.	
22.	Notification appliances			Verify location and condition (all appliances).	
	(1) Audible appliances	X	Semiannual		
	(2) Loudspeakers	X	Semiannual		
	(3) Visual appliances				
	(a) General	X	Semiannual		18.5.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference
(b) Candela rating	X	N/A	Verify the appliance candela rating marking or the FACU controlled candela rating agrees with the approved drawings.	18.5.5
23. Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	
24. Reserved				
25. Two-way emergency communications systems	X	Annual	Verify location and condition.	
26. Reserved				
27. Supervising station alarm systems — receivers				
(1) Signal receipt	X	Daily	Verify receipt of signal.	
(2) Receivers	X	Annual	Verify location and normal condition.	
28. Public emergency alarm reporting system transmission equipment			Verify location and condition.	
(1) Publicly accessible alarm box	X	Semiannual		
(2) Auxiliary box	X	Annual		
(3) Master box				
(a) Manual operation	X	Semiannual		
(b) Auxiliary operation	X	Annual		
29. Reserved				
30. Mass notification system				
(1) Monitored for integrity			Verify a system normal condition.	
(a) Control equipment				
(i) Fuses	X	Annual		
(ii) Interfaces	X	Annual		
(iii) Lamps/LED	X	Annual		
(iv) Primary (main) power supply	X	Annual		
(b) Secondary power batteries	X	Annual		
(c) Initiating devices	X	Annual		

Component	Initial Acceptance	Periodic Frequency	Method	Reference
(d) Notification appliances	X	Annual		
(2) Not monitored for integrity; installed prior to adoption of the 2010 edition			Verify a system normal condition.	
(a) Control equipment				
(i) Fuses	X	Semiannual		
(ii) Interfaces	X	Semiannual		
(iii) Lamps/LED	X	Semiannual		
(iv) Primary (main) power supply	X	Semiannual		
(b) Secondary power batteries	X	Semiannual		
(c) Initiating devices	X	Semiannual		
(d) Notification appliances	X	Semiannual		
(3) Antenna	X	Annual	Verify location and condition.	
(4) Transceivers	X	Annual	Verify location and condition.	

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

Additional Proposed Changes

File Name	Description	Approved
PI_4.3.1_Item_9._2_.pdf		
PI_4.3.1_Item_9._2_.docx		

Statement of Problem and Substantiation for Public Input

Primary batteries sold in the United States provide a shelf life expiration date rather than the date of manufacture. The shelf life expiration date is commonly referred to as a "use before" or "best if used by" date, etc., and is the date that the manufacturer cannot guarantee that full life is left. Shelf life varies based on chemistry. Many publications indicate that dry cell shelf life could be as little as 50 percent of its rating regardless of chemistry when stored at room temperature.

When the battery is installed, it should be verified to be fresh as possible to increase the likelihood it will last a full 12 months. Establishing a minimum shelf life of 60 percent adds assurance that the installed battery will not be installed at the end of its shelf life and will likely last 12 months. For example, an alkaline battery with a ten year shelf life has a "Use Before" date of JUL 28. Fifty percent of shelf life occurs JUL 23. The battery should not be installed after JUL 22. The installed date should be recorded so that it can be determined how long the battery has been installed.

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Submittal Date: Tue Mar 22 15:14:52 EDT 2022
Committee: SIG-TMS

(2) Primary (dry cell) other than those used in low-power radio (wireless) systems in accordance with Chapter 23	X	Semiannual	Ensure a minimum of 60 percent shelf life is remaining based on the use by date printed on the battery. Record the installed date on the battery. ~~Verify marking of the month/year of manufacture.~~ Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed I2 months from the installed date. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.

Public Input No. 280-NFPA 72-2022 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection -Add "Visual Inspection" at the top of each page of the table in front of where it currently says "Continued" - This would include what is at the top of page 89 and 90. This will make the tables easier to read and help prevent readers from confusing table 14.3.1 on visual inspections with 14.4.3.2 on testing.

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4; 14.3.5	
2. Control equipment:	-	-	-	-	
-	(1) Fire alarm systems monitored for alarm, supervisory, and trouble signals	-	-		Ve sy no co
-	(a) Fuses	X	Annual	-	-
(b) Interfaced equipment	X	Annual	-	-	
-	(c) Lamps and LEDs	X	Annual	-	-
-	(d) Primary (main) power supply	X	Annual	-	-
-	(e) Trouble signals	X	Semiannual	-	-
-	(2) Fire alarm systems unmonitored for alarm, supervisory, and	-	-		Ve sy no co

	Component	Initial Acceptance	Periodic Frequency	Method	Reference	
		trouble signals				
	-	(a) Fuses	X	Weekly	-	-
	(b) Interfaced equipment	X	Weekly	-	-	
	-	(c) Lamps and LEDs	X	Weekly	-	-
	-	(d) Primary (main) power supply	X	Weekly	-	-
	-	(e) Trouble signals	X	Weekly	-	-
3.	Reserved	-	-	-	-	
4.	Supervising station alarm systems — transmitters	-	-			Verify location, physical condition, and a system normal condition.
	-	(1) Digital alarm communicator transmitter (DACT)	X	Annual	-	-
	(2) Digital alarm radio transmitter (DART)	X	Annual	-	-	
	-	(3) McCulloh	X	Annual	-	-
	-	(4) Radio alarm transmitter (RAT)	X	Annual	-	-
	-	(5) All other types of communicators	X	Annual	-	-
5.	In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	-	
6.	Reserved	-	-	-	-	
7.	Reserved	-	-	-	-	
8.	Reserved	-	-	-	-	
9.*	Batteries	-	-	-		
	-	(1) Valve-regulated lead-acid (VRLA) batteries	-	-	-	-
	-	(a) General	X	N/A	Ensure month and year of manufacture is	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks in cell/unit or leakage of electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	
-	(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	-
-	(2) Primary (dry cell)	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.	-
-	other than those used in low-power radio (wireless) systems in accordance with Chapter 23	-	-		-
10. Reserved	-	-	-	-	

	Component	Initial Acceptance	Periodic Frequency	Method	Reference	
11.	Remote annunciators	X	Semiannual	Verify location and condition.	-	
12.	Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
13.	Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
14.	Surge protective devices	X	Semiannual	Verify location and condition.	-	
15.	Reserved	-	-	-	-	
16.	Optical fiber cable connections	X	Annual	Verify location and condition.	-	
17.	Initiating devices	-	-			Verify location and condition (all devices).
	-	(1) Air sampling	-	-	-	-
	-	(a) General	X	Semiannual	Verify that in-line filters, if any, are clean.	17.7.4.6
	-	(b) Sampling system piping and sampling ports	X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed.	17.7.4.6

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(2) Duct detectors	-	-	-	-
-	(a) General	X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct.	17.7.6.5
-	(b) Sampling tube	X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.	17.7.6.5
-	(3) Electromechanical releasing devices	X	Semiannual	-	-
-	(4) Fire extinguishing system(s) or suppression system(s) switches	X	Semiannual	-	-
-	(5) Manual fire alarm boxes	X	Semiannual	-	-
-	(6) Heat detectors	X	Semiannual	-	-
-	(7) Radiant energy fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector’s field of view.	17.8
-	(8) Video image smoke and fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector’s field of view.	17.7.8; 17.8.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual	-	-
-	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	-
-	(11) Supervisory signal devices	X	Semiannual	-	-
(12) Waterflow devices	X	Semiannual	-	-	
18. Reserved	-	-	-	-	
19. Combination systems	-	-			Verify location and condition (all types).
-	(1) Fire extinguisher electronic monitoring devices/systems	X	Semiannual	-	-
-	(2) Carbon monoxide detectors/systems	X	Semiannual	-	-
20. Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	-	
21. Guard's tour equipment	X	Semiannual	Verify location and condition.	-	
22. Notification appliances	-	-			Verify location and condition (all appliances).
-	(1) Audible appliances	X	Semiannual	-	-
(2) Loudspeakers	X	Semiannual	-	-	
-	(3) Visual appliances	-	-	-	-
-	(a) General	X	Semiannual	-	
-	(b) Candela rating	X	N/A	Verify the appliance candela rating marking or the	18.5.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				FACU controlled candela rating agrees with the approved drawings.	
23. Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	-	
24. Reserved	-	-	-	-	
25. Two-way emergency communications systems	X	Annual	Verify location and condition.	-	
26. Reserved	-	-	-	-	
27. Supervising station alarm systems — receivers	-	-	-	-	
- (1) Signal receipt	X	Daily	Verify receipt of signal.	-	
- (2) Receivers	X	Annual	Verify location and normal condition.	-	
28. Public emergency alarm reporting system transmission equipment	-	-			Verify location and condition.
- (1) Publicly accessible alarm box	X	Semiannual	-	-	
- (2) Auxiliary box	X	Annual	-	-	
(3) Master box	-	-	-	-	
- (a) Manual operation	X	Semiannual	-	-	
(b) Auxiliary operation	X	Annual	-	-	
29. Reserved	-	-	-	-	
30. Mass notification system	-	-	-	-	
- (1) Monitored for integrity	-	-			Ve sy no co
- (a) Control equipment	-	-	-	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(i) Fuses	X	Annual	-	-
(ii) Interfaces	X	Annual	-	-	
-	(iii) Lamps/LED	X	Annual	-	-
-	(iv) Primary (main) power supply	X	Annual	-	-
-	(b) Secondary power batteries	X	Annual	-	-
-	(c) Initiating devices	X	Annual	-	-
(d) Notification appliances	X	Annual	-	-	
-	(2) Not monitored for integrity; installed prior to adoption of the 2010 edition	-	-		Ve sy no co
-	(a) Control equipment	-	-	-	-
-	(i) Fuses	X	Semiannual	-	-
(ii) Interfaces	X	Semiannual	-	-	
-	(iii) Lamps/LED	X	Semiannual	-	-
-	(iv) Primary (main) power supply	X	Semiannual	-	-
-	(b) Secondary power batteries	X	Semiannual	-	-
-	(c) Initiating devices	X	Semiannual	-	-
(d) Notification appliances	X	Semiannual	-	-	
-	(3) Antenna	X	Annual	Verify location and condition.	-
(4) Transceivers	X	Annual	Verify location and condition.	-	

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-

cadmium batteries.

Statement of Problem and Substantiation for Public Input

Currently on pages 89 and 90 of the code, at the very top of the table, it reads "Table 14.3.1 Continued". I think it would be more clear to the user if the words "Visual Inspection" were included before "Continued" so that the user does not confuse Table 14.3.1 on visual inspections with 14.4.3.2 on testing.

The table heading on all pages of the table would read: "Table 14.3.1 Visual Inspection Continued"

PS, I heard a rumor that your committee is considering eliminating the tables in chapter 14. Please do not do this.

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State:
Zip:
Submittal Date: Thu May 12 16:31:37 EDT 2022
Committee: SIG-TMS

Public Input No. 38-NFPA 72-2021 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

~~(5) other communicators X~~

Component	Initial Acceptance	Periodic Frequency	Method	Reference
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4; 14.3.5
2. Control equipment:	-	-	-	-
-	(1) Fire alarm systems monitored for alarm, supervisory, and trouble signals	-	-	
-	(a) Fuses	X	Annual	-	-
(b) Interfaced equipment	X	Annual	-	-
-	(c) Lamps and LEDs	X	Annual	-	-
-	(d) Primary (main) power supply	X	Annual	-	-
-	(e) Trouble signals	X	Semiannual	-	-
-	(2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals	-	-	

	Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-		(a) Fuses	X	Weekly	-	-
	(b) Interfaced equipment	X	Weekly	-	-	
-		(c) Lamps and LEDs	X	Weekly	-	-
-		(d) Primary (main) power supply	X	Weekly	-	-
-		(e) Trouble signals	X	Weekly	-	-
3.	Reserved	-	-	-	-	
4.	Supervising station alarm systems — transmitters	-	-			Verify location, physical condition, and a system normal condition.
-		— (1) ~~Digital alarm communicator transmitter (DACT)~~	~~X~~	~~Annual~~	-	-
-	— (2) ~~Digital alarm radio transmitter (DART)~~	~~X~~	~~Annual~~	-	-	
-	— (3) ~~McCulloh~~	~~X~~	~~Annual~~	-	-	
-	— (4) ~~Radio alarm transmitter (RAT)~~	~~X~~	~~Annual~~	-	-	
-	All	types of	communicators	X	Annual	-
5.	In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	-	
6.	Reserved	-	-	-	-	
7.	Reserved	-	-	-	-	
8.	Reserved	-	-	-	-	
9.*	Batteries	-	-	-		
-		(1) Valve-regulated lead-acid (VRLA) batteries	-	-	-	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(a) General	X	N/A	Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks in cell/unit or leakage of electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	-
-	(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	-
-	(2) Primary (dry cell)	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded.	-
-	other than those used in low-power radio (wireless) systems in accordance with Chapter 23	-	-	Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				observed.	
10. Reserved	-	-	-	-	
11. Remote annunciators	X	Semiannual	Verify location and condition.	-	
12. Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
13. Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
14. Surge protective devices	X	Semiannual	Verify location and condition.	-	
15. Reserved	-	-	-	-	
16. Optical fiber cable connections	X	Annual	Verify location and condition.	-	
17. Initiating devices	-	-			Verify location and condition (all devices).
-	(1) Air sampling	-	-	-	-
-	(a) General	X	Semiannual	Verify that in-line filters, if any, are clean.	17.7.4.6
-	(b) Sampling system piping and sampling ports	X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports	17.7.4.6

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				or points are not obstructed.	
-	(2) Duct detectors	-	-	-	-
-	(a) General	X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct.	17.7.6.5
-	(b) Sampling tube	X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.	17.7.6.5
-	(3) Electromechanical releasing devices	X	Semiannual	-	-
-	(4) Fire extinguishing system(s) or suppression system(s) switches	X	Semiannual	-	-
-	(5) Manual fire alarm boxes	X	Semiannual	-	-
-	(6) Heat detectors	X	Semiannual	-	-
-	(7) Radiant energy fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector’s field of view.	17.8
-	(8) Video image smoke and fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector’s field of view.	17.7.8; 17.8.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual	-	-
-	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	-
-	(11) Supervisory signal devices	X	Semiannual	-	-
(12) Waterflow devices	X	Semiannual	-	-	
18. Reserved	-	-	-	-	
19. Combination systems	-	-			Verify location and condition (all types)
-	(1) Fire extinguisher electronic monitoring devices/systems	X	Semiannual	-	-
-	(2) Carbon monoxide detectors/systems	X	Semiannual	-	-
20. Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	-	
21. Guard's tour equipment	X	Semiannual	Verify location and condition.	-	
22. Notification appliances	-	-			Verify location and condition (all appliance
-	(1) Audible appliances	X	Semiannual	-	-
(2) Loudspeakers	X	Semiannual	-	-	
-	(3) Visual appliances	-	-	-	-
-	(a) General	X	Semiannual	-	
-	(b) Candela rating	X	N/A	Verify the appliance candela rating marking or the	18.5.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				FACU controlled candela rating agrees with the approved drawings.	
23. Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	-	
24. Reserved	-	-	-	-	
25. Two-way emergency communications systems	X	Annual	Verify location and condition.	-	
26. Reserved	-	-	-	-	
27. Supervising station alarm systems — receivers	-	-	-	-	
-	(1) Signal receipt	X	Daily	Verify receipt of signal.	-
-	(2) Receivers	X	Annual	Verify location and normal condition.	-
28. Public emergency alarm reporting system transmission equipment	-	-			Verify location and condition.
-	(1) Publicly accessible alarm box	X	Semiannual	-	-
-	(2) Auxiliary box	X	Annual	-	-
(3) Master box	-	-	-	-	
-	(a) Manual operation	X	Semiannual	-	-
(b) Auxiliary operation	X	Annual	-	-	
29. Reserved	-	-	-	-	
30. Mass notification system	-	-	-	-	
-	(1) Monitored for integrity	-	-		
-	(a) Control equipment	-	-	-	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(i) Fuses	X	Annual	-	-
(ii) Interfaces	X	Annual	-	-	
-	(iii) Lamps/LED	X	Annual	-	-
-	(iv) Primary (main) power supply	X	Annual	-	-
-	(b) Secondary power batteries	X	Annual	-	-
-	(c) Initiating devices	X	Annual	-	-
(d) Notification appliances	X	Annual	-	-	
-	(2) Not monitored for integrity; installed prior to adoption of the 2010 edition	-	-		
-	(a) Control equipment	-	-	-	-
-	(i) Fuses	X	Semiannual	-	-
(ii) Interfaces	X	Semiannual	-	-	
-	(iii) Lamps/LED	X	Semiannual	-	-
-	(iv) Primary (main) power supply	X	Semiannual	-	-
-	(b) Secondary power batteries	X	Semiannual	-	-
-	(c) Initiating devices	X	Semiannual	-	-
(d) Notification appliances	X	Semiannual	-	-	
-	(3) Antenna	X	Annual	Verify location and condition.	-
(4) Transceivers	X	Annual	Verify location and condition.	-	

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-

cadmium batteries.

Statement of Problem and Substantiation for Public Input

Listing different communicators adds confusion to the requirement when ultimately item #5 was already inclusive by stating "all other types of communicators" be annually inspected.

Submitter Information Verification

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Submittal Date: Tue Dec 21 10:35:47 EST 2021
Committee: SIG-TMS

Public Input No. 393-NFPA 72-2022 [Section No. 14.4.2.2]

14.4.2.2

When an initiating device, notification appliance, or control relay is deleted, another device, appliance, or control relay on the circuit shall be ~~operated~~ functionally tested .

Statement of Problem and Substantiation for Public Input

Functionally tested was added for clarity and consistency with 14.4.2.1.

Submitter Information Verification

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Committee: SIG-TMS

Public Input No. 471-NFPA 72-2022 [Section No. 14.4.2.2]

14.4.2.2

When an initiating device, notification appliance, or control relay is deleted, another device, appliance, or control relay on the circuit shall be ~~operated~~ functionally tested .

Additional Proposed Changes

File Name	Description	Approved
NFPA_72_BS_SB_14_4_2_comments.docx		

Statement of Problem and Substantiation for Public Input

Functionally tested was added for clarity and consistency with 14.4.2.1

Submitter Information Verification

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Committee: SIG-TMS

Public Input No. 510-NFPA 72-2022 [Section No. 14.4.2.2]

14.4.2.2

When an initiating device, notification appliance, or control relay is deleted, another device, appliance, or control relay on the circuit shall be ~~operated~~ functionally tested .

Statement of Problem and Substantiation for Public Input

Functionally tested was added for clarity and consistency with 14.4.2.1

Submitter Information Verification

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Committee: SIG-TMS

Public Input No. 57-NFPA 72-2022 [Section No. 14.4.2.4]

14.4.2.4

When changes are made to site-specific software, ~~the following~~ 14.4.2.4.1 through 14.4.2.4.3 shall apply:

14.4.2.4.1

All functions known to be affected by the change, or identified by a means that indicates changes, shall be 100 percent tested.

~~In addition, 10 percent~~

14.4.2.4.2

Ten percent of initiating devices that are not directly affected by the change, up to a maximum of 50 devices,

~~also~~
shall be tested and correct system

~~operation shall be verified~~
operation verified .

14.4.2.4.3

A revised record of completion in accordance with 7.5.6 shall be prepared to reflect these changes.

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.

Submitter Information Verification

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Submittal Date: Wed Jan 12 09:14:10 EST 2022
Committee: SIG-TMS

Public Input No. 179-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3. Alarm control unit trouble signals	-	-	-	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

-	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5. Emergency communications equipment	-	-	-	
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6. Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7. Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
				-	-
				-	-
-	-	-	-	-	
-		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the

-	Component	Initial Acceptance	Periodic Frequency	Method
				respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors (single sensor) — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Carbon monoxide detectors/carbon monoxide alarms connected to protected premises systems	-	-	-
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the

-	Component	Initial Acceptance	Periodic Frequency	Method
				handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum

-	Component	Initial Acceptance	Periodic Frequency	Method
				3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually,

-	Component	Initial Acceptance	Periodic Frequency	Method
				test the primary sensor.[m]
-		-	-	-
-		-	-	
			-	-
-		-	-	
-		-	-	-
-		-	-	
18.	Special hazard equipment	-	-	-
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.

		Component	Initial Acceptance	Periodic Frequency	Method
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4	Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
22. Alarm notification appliances	-	-	-		
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
			-	-	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing that ea applia flashe
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been		

-	Component	Initial Acceptance	Periodic Frequency	Method
			performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
26. Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
27.	Supervising station alarm systems — receiving equipment	-	-	-
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).

-	Component	Initial Acceptance	Periodic Frequency	Method
29. Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for

-	Component	Initial Acceptance	Periodic Frequency	Method
				detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals*

	Component	Initial Acceptance	Periodic Frequency	Method
				with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be

notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

The parenthetical description makes it clear that item 8 in the table only applies to single sensor smoke detectors. Item 12 is used for multi-sensor or multi-criteria detectors. As it is one could assume that item 8 also applies to multi-sensors/multi-criteria.

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Public Input No. 247-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3. Alarm control unit trouble signals	-	-	-	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

	-	Component	Initial Acceptance	Periodic Frequency	Method
4.	Supervising station alarm systems — transmission equipment	-	-	-	
	-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
				-	-
	-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

-	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica appliar circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

	Component	Initial Acceptance	Periodic Frequency	Method	
-	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17. Initiating devices[i]	-	-	-		
-	(1) Electromechanical releasing device	-	-	-	
-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
-	(4) Heat detectors	-	-	-	
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run in compliance with 17.7.4.6.2.1 and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-

	Component	Initial Acceptance	Periodic Frequency	Method
	(9) Carbon monoxide detectors/carbon monoxide alarms connected to protected premises systems			
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its

-	Component	Initial Acceptance	Periodic Frequency	Method
				restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of

-	Component	Initial Acceptance	Periodic Frequency	Method
				testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]
-		-	-	-
-		-	-	
			-	-
-		-	-	
-		-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-		-	-	
18.	Special hazard equipment	-	- -	
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-	(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-	(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both

	-	Component	Initial Acceptance	Periodic Frequency	Method
					the first and second detector in alarm.
	-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	
	-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4		Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
			being supervised.		
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.	
22.	Alarm notification appliances	-	-	-	
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
-	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound	

	Component	Initial Acceptance	Periodic Frequency	Method	
				level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	to convey voice messages)				
			N/A	Annually	[q]For p testing the op of the notifica applia
	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each	

		Component	Initial Acceptance	Periodic Frequency	Method	
					visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-		-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built		

-	Component	Initial Acceptance	Periodic Frequency	Method
			drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
27. Supervising station alarm systems — receiving equipment	-	-	-	
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the

-	Component	Initial Acceptance	Periodic Frequency	Method
				supervising station.
			-	-
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations

-	Component	Initial Acceptance	Periodic Frequency	Method
	receiver (RARSR)			and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station

-	Component	Initial Acceptance	Periodic Frequency	Method
				within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three

-	Component	Initial Acceptance	Periodic Frequency	Method
				complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals

-	Component	Initial Acceptance	Periodic Frequency	Method
				(inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements.

	Component	Initial Acceptance	Periodic Frequency	Method
				Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files.

-	Component	Initial Acceptance	Periodic Frequency	Method
				Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not

-	Component	Initial Acceptance	Periodic Frequency	Method
				compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and

therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

The proposed change to this table is for the test method for air sampling detectors, referencing the transport time maximum limit in Chapter 17. This reference will assist testing personnel by providing them with a quick link to testing parameters that they need to be aware of, especially as this information is not in Chapter 14.

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Public Input No. 281-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

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At the top of the table on pages 93 - 101, add the word "Testing" in front of "Continued. The top header of each page after the first page of the table should read - "Table 14.4.3.2 Testing Continued".

	Component	Initial Acceptance	Periodic Frequency	Method	
1.	All equipment	X	-		See Table 14.3.1.
2.	Control unit	-	-	-	
	-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
	-	(2) Fuses	X	Annually	Verify rating and supervision.
	-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
	-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
	-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test

	Component	Initial Acceptance	Periodic Frequency	Method	
					redundant power supplies separately.
3.	Alarm control unit trouble signals	-	-	-	
	-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
	-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
	-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
	-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
4.	Supervising station alarm systems — transmission equipment	-	-	-	
	-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
				-	-
				-	-

Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.

Component	Initial Acceptance	Periodic Frequency	Method

Component	Initial Acceptance	Periodic Frequency	Method	
	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

Component	Initial Acceptance	Periodic Frequency	Method	
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.

Component	Initial Acceptance	Periodic Frequency	Method	
				Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

	Component	Initial Acceptance	Periodic Frequency	Method	
5.	Emergency communications equipment	-	-	-	
	-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
	-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Emergency power supply system/stored-emergency power supply	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required	

	Component	Initial Acceptance	Periodic Frequency	Method	
	system (EPSS/SEPSS)			power source, verify by the building owner operation of the EPSS/SEPSS in accordance with NFPA 111.	
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior to conduct any bat testing, by the p conduct test, tha system softwar stored i volatile

Component	Initial Acceptance	Periodic Frequency	Method	
				memory protecte loss.
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline

Component	Initial Acceptance	Periodic Frequency	Method	
				ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.
		-	-	- Semiar
-	(5) Replacement/Load test[g]	-	3 years	Replace battery conduct test of t

Component	Initial Acceptance	Periodic Frequency	Method	
				battery capacity test the based o manufa specific for a dis rate of 3 or more applying current indicate the sele hourly dischar continu until the termina voltage decreas the end voltage specifie the manufa Record test dur and cal the batt capacity includin adjustm ambient tempera Replace battery capacity less tha equal to or at the schedul interval battery capacity less tha
10. Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the	

Component	Initial Acceptance	Periodic Frequency	Method
			following:

Component	Initial Acceptance	Periodic Frequency	Method

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.	
12.	Reserved	-	-	-	
13.	Reserved	-	-	-	
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.	
15.	Conductors — metallic	-	-	-	
	-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
	-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.

Component	Initial Acceptance	Periodic Frequency	Method	
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
	-	-	N/A	Annually For peri testing, each ini device

Component	Initial Acceptance	Periodic Frequency	Method		
					notificat applian circuit, a signalin circuit fo correct indicatio the con unit. Co all circu perform indicate Section 23.6, ar 23.7.
16. Nonmetallic pathways	-	-	-		
-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and	

Component	Initial Acceptance	Periodic Frequency	Method		
				signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For peri testing, each ini device notificat applian circuit, signalin circuit f correct indicati the con unit. Co all circu perform indicate Section 23.6, ar 23.7.
17. Initiating devices[i]	-	-	-		
-	(1) Electromechanical releasing device	-	-	-	
-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
-	(4) Heat detectors	-	-	-	

Component	Initial Acceptance	Periodic Frequency	Method	
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
			-	- -
			-	- -
- -	-	-	-	

Component	Initial Acceptance	Periodic Frequency	Method	
-	(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.
		-	-	-
		-	-	-
		-	-	-
		-	-	-

Component	Initial Acceptance	Periodic Frequency	Method	
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed

Component	Initial Acceptance	Periodic Frequency	Method	
				in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an

Component	Initial Acceptance	Periodic Frequency	Method	
				optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	- -
			-	- -
			-	- -
			-	- -
			-	- -

Component	Initial Acceptance	Periodic Frequency	Method	
-	(9) Carbon monoxide detectors/carbon monoxide alarms connected to protected premises systems	-	-	-
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-

Component	Initial Acceptance	Periodic Frequency	Method	
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).

Component	Initial Acceptance	Periodic Frequency	Method	
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer’s published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows

Component	Initial Acceptance	Periodic Frequency	Method	
				individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]
-		-	-	-
-		-	-	
			-	-
-		-	-	
-		-	-	-
-		-	-	

	Component	Initial Acceptance	Periodic Frequency	Method	
18.	Special hazard equipment	-	-	-	
	-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
	-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
	-	(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
	-	(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
	-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
	-	(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
	-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
	-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.

	Component	Initial Acceptance	Periodic Frequency	Method	
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	
-		(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-		(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4	Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.	

	Component	Initial Acceptance	Periodic Frequency	Method		
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.		
22.	Alarm notification appliances	-	-	-		
	-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	N/A	Annually	[q]For pe testing, the ope of the notificat applian
	-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1,	

Component	Initial Acceptance	Periodic Frequency	Method		
				Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
-	-	-	-	-	-
	-	-	N/A	Annually	[q]For pe testing, the ope of the notificat applian
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported	

	Component	Initial Acceptance	Periodic Frequency	Method		
					by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-		-	N/A	Annually	For peri testing, that eac applian flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the		

Component	Initial Acceptance	Periodic Frequency	Method
			system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.

	Component	Initial Acceptance	Periodic Frequency	Method	
26.	Special procedures				
		(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
		(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.

Component	Initial Acceptance	Periodic Frequency	Method	
		-	-	-
Supervising station alarm systems — receiving equipment	-	-	-	
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
		-	-	-
		-	-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.

Component	Initial Acceptance	Periodic Frequency	Method	
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:

Component	Initial Acceptance	Periodic Frequency	Method	
	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations

Component	Initial Acceptance	Periodic Frequency	Method	
	receiver (RARSR)			and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
				- - -
				- - -
				- - -
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
				- - -
				- - -
				- - -
				- - -
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station

	Component	Initial Acceptance	Periodic Frequency	Method	
					within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
	-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
	-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three

Component	Initial Acceptance	Periodic Frequency	Method	
				complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
29. Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
			-	- -
			-	- -
			-	- -

Component	Initial Acceptance	Periodic Frequency	Method

Component		Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals

Component	Initial Acceptance	Periodic Frequency	Method	
				(inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements.

Component	Initial Acceptance	Periodic Frequency	Method	
				Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files.

Component	Initial Acceptance	Periodic Frequency	Method	
				Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not

Component	Initial Acceptance	Periodic Frequency	Method
			compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and

therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Currently on pages 93 - 101 for table 14.4.3.2 the heading reads "Table 14.4.3.2 Continued". I think it would be more clear to the user if the word "Testing" was included before "Continued" so that the user does not confuse Table 14.3.1 with 14.4.3.2.

This is in conjunction with PI 280

PS, Please do not eliminate the tables in Chapter 14!

Submitter Information Verification

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City:
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Submittal Date: Thu May 12 16:44:12 EDT 2022
Committee: SIG-TMS

Public Input No. 30-NFPA 72-2021 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3. Alarm control unit trouble signals	-	-	-	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

	-	Component	Initial Acceptance	Periodic Frequency	Method
4.	Supervising station alarm systems — transmission equipment	-	-	-	
	-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
				-	-
				-	-
	-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also

-	Component	Initial Acceptance	Periodic Frequency	Method
				supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby) power sources shall

	Component	Initial Acceptance	Periodic Frequency	Method
				be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5. Emergency communications equipment	-	-	-	
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6. Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7. Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the	

-	Component	Initial Acceptance	Periodic Frequency	Method
			EPSS/SEPSS in accordance with NFPA 111.	
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.
9.	VRLA battery and charger[d]	-	-	Prio conc any testi by th pers conc the t all s soft store vola mem prot from

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.
		-	-	- Sem
(5) Replacement/Load test[g]		-	3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of

-	Component	Initial Acceptance	Periodic Frequency	Method
				3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published

-	Component	Initial Acceptance	Periodic Frequency	Method
				instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits

		Component	Initial Acceptance	Periodic Frequency	Method	
					specified in the manufacturer's published instructions for the installed equipment.	
-		(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
		-	-	N/A	Annually	For testi each initia devi circu notif appl circu sign circu corr indic the unit. all ci perf indic Sect 23.5 and
16.	Nonmetallic pathways	-	-	-		
-		(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For testi each initia devi circu notif appl circu sign circu corr indic the unit. all c

-	Component	Initial Acceptance	Periodic Frequency	Method
				perf indic Sect 23.5 and
17. Initiating devices[i]	-	-	-	
-	(1) Electromechanical releasing device	-	-	-
-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.
-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.
-	(4) Heat detectors	-	-	-
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure

		Component	Initial Acceptance	Periodic Frequency	Method
					and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the manufacturer's published instructions of the detector or conduct a test with pressure pump.
		(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon monoxide alarms connected to protected premises systems	-	-	-
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of

-	Component	Initial Acceptance	Periodic Frequency	Method
				listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.

	Component	Initial Acceptance	Periodic Frequency	Method
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]
-		-	-	-
-		-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
-		-	-	
-		-	-	-
-		-	-	
18. Special hazard equipment	-	-	-	
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.

		Component	Initial Acceptance	Periodic Frequency	Method
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	
-		(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper

		Component	Initial Acceptance	Periodic Frequency	Method
					signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4	Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.	
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.	
22.	Alarm notification appliances	-	-	-	
	-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal

-	Component	Initial Acceptance	Periodic Frequency	Method	
				tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For testi the of th notif appl
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in	

	Component	Initial Acceptance	Periodic Frequency	Method	
				accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
			-	-	
	-	-	N/A	Annually	[q]For testi the of th notif appl
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	N/A	Annually	For testi that appl flash
23. Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		

-	Component	Initial Acceptance	Periodic Frequency	Method
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
26.	Special procedures	-	-	-	
-		(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as

-	Component	Initial Acceptance	Periodic Frequency	Method
				having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-
			-	-
27.	Supervising station alarm systems — receiving equipment	-	-	-	
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all

-	Component	Initial Acceptance	Periodic Frequency	Method
				subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or

-	Component	Initial Acceptance	Periodic Frequency	Method
				subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed

-	Component	Initial Acceptance	Periodic Frequency	Method
				prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
29. Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-			-	-
-			-	-
-			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or

-	Component	Initial Acceptance	Periodic Frequency	Method
				simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
		-		-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at

77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Footnote "f" of Table 14.4.3.2 states that "a load test as per item 9 (5) is permitted in lieu of an ohmic test". This language should be moved into section 9 (4) to clarify that the load test is allowed as the footnotes are often overlooked.

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Public Input No. 31-NFPA 72-2021 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X			See Table 14.3.1.
2. Control unit				
	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
	(2) Fuses	X	Annually	Verify rating and supervision.
	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3. Alarm control unit trouble signals	-	-	-	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
				-	-
				-	-
-	-	-	-	-	
-		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	
			-	-	
-	(7) Smoke detectors — functional test	-	-	-	
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into	-

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-

	Component	Initial Acceptance	Periodic Frequency	Method
	(9) Carbon monoxide detectors/carbon monoxide alarms connected to protected premises systems			
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its

-	Component	Initial Acceptance	Periodic Frequency	Method
				restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of

	Component	Initial Acceptance	Periodic Frequency	Method
				testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]

-	Component	Initial Acceptance	Periodic Frequency	Method
-		-	-	
18.	Special hazard equipment	-	- -	
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-	(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-	(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both

-	Component	Initial Acceptance	Periodic Frequency	Method
				the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20. Interface equipment[o]	X	See 14.4.4.4		Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
			being supervised.		
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.	
22.	Alarm notification appliances	-	-	-	
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
-	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound	

	Component	Initial Acceptance	Periodic Frequency	Method	
				level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	to convey voice messages)				
			N/A	Annually	[q]For p testing the op of the notifica applia
	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each	

		Component	Initial Acceptance	Periodic Frequency	Method	
					visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built		

-	Component	Initial Acceptance	Periodic Frequency	Method
			drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
27. Supervising station alarm systems — receiving equipment	-	-	-	
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the

-	Component	Initial Acceptance	Periodic Frequency	Method
				supervising station.
			-	-
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations

-	Component	Initial Acceptance	Periodic Frequency	Method
	receiver (RARSR)			and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station

-	Component	Initial Acceptance	Periodic Frequency	Method
				within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three

-	Component	Initial Acceptance	Periodic Frequency	Method
				complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals

-	Component	Initial Acceptance	Periodic Frequency	Method
				(inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements.

	Component	Initial Acceptance	Periodic Frequency	Method
				Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files.

-	Component	Initial Acceptance	Periodic Frequency	Method
				Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not

-	Component	Initial Acceptance	Periodic Frequency	Method
				compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and

therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

The footnote stating that magnets are not acceptable for smoke entry tests has been in Table 14.4.3.2 for many editions of the code. This language should be added to the method section of 17 (7) (a) to add clarity as the footnotes are often overlooked.

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Public Input No. 318-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3.	Alarm control unit trouble signals	-	-	-
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

	-	Component	Initial Acceptance	Periodic Frequency	Method
4.	Supervising station alarm systems — transmission equipment	-	-	-	
	-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
				-	-
				-	-
	-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

-	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

-	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica appliar circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
				~~Do not perform heat tests. Test functionality mechanically and electrically.~~	
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the

-	Component	Initial Acceptance	Periodic Frequency	Method
				respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
	monoxide alarms connected to protected premises systems			
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]

		Component	Initial Acceptance	Periodic Frequency	Method
18.	Special hazard equipment				
		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.

		Component	Initial Acceptance	Periodic Frequency	Method
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method
	-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4		Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
22.	Alarm notification appliances	-	-	-	
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
			-	-	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been		

-	Component	Initial Acceptance	Periodic Frequency	Method
			performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
26. Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
27.	Supervising station alarm systems — receiving equipment	-	-	-
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).

-	Component	Initial Acceptance	Periodic Frequency	Method
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for

-	Component	Initial Acceptance	Periodic Frequency	Method
				detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals*

-	Component	Initial Acceptance	Periodic Frequency	Method
				with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
			-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be

notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

The language being proposed for deletion for line 17 (4) (c) is confusing and appears to be contradictory. There is no test method for non-restorable spot-type heat detectors. Rather, the Periodic Frequency states "See Method" to indicate that, rather than following a periodic frequency of testing, these heat detectors remain in place for 15 years and then are either replaced or a sample is lab tested. If the lab test is successful, the replacement/test cycle is initiated every 5 years thereafter. The committee should review the language regarding testing mechanically and electrically to determine if this language is valid or not.

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Public Input No. 326-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3. Alarm control unit trouble signals	-	-	-	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

	-	Component	Initial Acceptance	Periodic Frequency	Method
4.	Supervising station alarm systems — transmission equipment	-	-	-	
	-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
				-	-
	-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

-	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method
			EPSS/SEPSS in accordance with NFPA 111.	
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test. A listed control unit's charger/power supply that is arranged for the purpose of verifying battery capacity shall be approved for equivalency with this section .

-	Component	Initial Acceptance	Periodic Frequency	Method	
					Prior t conduc any ba testing by the conduc the tes all sys softwa stored volatile memo protec from lo
9.	VRLA battery and charger[d]	-	-		- A listed unit's charge supply arrange the pur verifyin battery capacit charge voltage approv equival with th section
	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				temperature of the enclosure.	
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.	
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semi

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(5) Replacement/Load test[g]	-	3 years		Replac battery conduc test of battery capaci test th based manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag

-	Component	Initial Acceptance	Periodic Frequency	Method	
					decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			- -	
			- -	
			- -	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12. Reserved		-	-	-
13. Reserved		-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each

		Component	Initial Acceptance	Periodic Frequency	Method	
					circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
	-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
		-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
	-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure	

		Component	Initial Acceptance	Periodic Frequency	Method
					and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the manufacturer's published instructions of the detector or conduct a test with pressure pump.
		(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon monoxide alarms connected to protected premises systems	-	-	-
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of

-	Component	Initial Acceptance	Periodic Frequency	Method
				listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.

-	-	Component	Initial Acceptance	Periodic Frequency	Method
-		(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-		(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-		(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]
-			-	-	-
-			-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
-		-	-	
-		-	-	-
-		-	-	
18. Special hazard equipment	-	-	-	
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.

-		Component	Initial Acceptance	Periodic Frequency	Method
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	
-		(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper

		Component	Initial Acceptance	Periodic Frequency	Method
					signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
		(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4	Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.	
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.	
22.	Alarm notification appliances	-	-	-	
		(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and

-	Component	Initial Acceptance	Periodic Frequency	Method	
				evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound	

		Component	Initial Acceptance	Periodic Frequency	Method	
					level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
				-	-	
		-	-	N/A	Annually	[q]For p testing the op of the notifica applia
	-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
		-	-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published		

-	Component	Initial Acceptance	Periodic Frequency	Method
			instructions.	
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
26.	Special procedures	-	-	-
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector

-	Component	Initial Acceptance	Periodic Frequency	Method
				circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-
			-	-
27.	Supervising station alarm systems — receiving equipment	-	-	-	
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than

	-	Component	Initial Acceptance	Periodic Frequency	Method
					6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
	-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
	-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
	-	(3) Master box	-	-	-
	-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
	-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection	

-	Component	Initial Acceptance	Periodic Frequency	Method
			system operation:	
			-	-
			-	-
			-	-
			-	-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output

-	Component	Initial Acceptance	Periodic Frequency	Method
				when the audible emergency evacuation signal is on.
			-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Secondary batteries have become more of an issue for fire alarm systems. So much so that NFPA 72 last cycle added requirements for batteries to be listed or component recognized. Chargers used today can offer so much more information, verification, testing data, etc. for the batteries connected to the system. An option should be to allow manufacturers to have their FACUs listed to offer these functions and if listed should be deemed equivalent to the use of battery testers. This is similar to smoke detector sensitivity testing where a FACU can provide that testing is listed for the purpose.

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Public Input No. 368-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3. Alarm control unit trouble signals	-	-	-	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

-	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5. Emergency communications equipment	-	-	-	
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6. Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7. Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	
		-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica appliar circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the

-	Component	Initial Acceptance	Periodic Frequency	Method
				respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
	monoxide alarms connected to protected premises systems			
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]

-	Component	Initial Acceptance	Periodic Frequency	Method
-		-	-	-
-		-	-	
		-		-
-		-	-	
-		-	-	-
-		-	-	
18. Special hazard equipment	-	-	-	
-	(1) Abort switch (dead-man type)	X	Annually	Activate suppression system initiating device. Operate and hold abort switch ~~and verify correct sequence and~~ -

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-	Component	Initial Acceptance	Periodic Frequency	Method	
				~~operation.~~	
(2) Abort switch (recycle type)	X	Annually	Activate suppression system initiating device. Operate abort switch and verify ~~development of correct matrix with each sensor operated.~~	-	counto cycle r and suppre systen actuat remair energi Allow counto compl verify actuat energi
(3) Abort switch (special type)	X	Annually	Activate suppression system initiating device. Operate abort switch and verify ~~correct sequence and~~ operation in accordance with ~~authority having jurisdiction. Observe~~ sequencing of operation as specified on as-built drawings ~~or in system owner's manual~~ .		
-	(4) Cross-zone detection circuit	X	Annually	~~Operate~~ Activate one ~~sensor or~~ detector ~~on~~ in each zone. Verify occurrence of correct sequence ~~with~~ of operation ~~of~~ for first zone and then ~~with operation of~~ for second zone.	

-		Component	Initial Acceptance	Periodic Frequency	Method
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence of operation with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	
-		(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-		(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
20.	Interface equipment[o]	X	See 14.4.4.4	Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.
22.	Alarm notification appliances	-	-	-
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in

-	Component	Initial Acceptance	Periodic Frequency	Method	
				accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
		-		-	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
	-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing,		

-	Component	Initial Acceptance	Periodic Frequency	Method
			verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
26.	Special procedures	-	-	-
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
27.	Supervising station alarm systems — receiving equipment	-	-	-	
-		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-

-		Component	Initial Acceptance	Periodic Frequency	Method
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-		(3) Master box	-	-	-
-		(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-		(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
				-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and

-	Component	Initial Acceptance	Periodic Frequency	Method
				confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted

-	Component	Initial Acceptance	Periodic Frequency	Method
				practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or

releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Additional Proposed Changes

File Name	Description	Approved
Table_14.4.3.2_Item_18_Abort_Sw.docx		

Statement of Problem and Substantiation for Public Input

The testing of abort switches currently refers to the sequence of operation for development of and/or verification of the system sequence of operation for simple abort function. The test requirement is vague and the sequence of operation should have already been determined prior to acceptance testing. This PI clarifies the testing of an abort switch.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 315-NFPA 72-2022 [Section No. 7.2.1]	

Submitter Information Verification

Submitter Full Name: Herbert Hurst
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State:
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Submittal Date: Wed May 25 08:12:50 EDT 2022
Committee: SIG-TMS

(1) Activate suppression system initiating device. Operate and hold abort switch. Verify suppression system actuators remain de-energized after completion of discharge countdown. Release abort switch and verify actuators energize.

(2) Activate suppression system initiating device. Operate abort switch and verify countdown cycle restarts and suppression system actuators remain de-energized. Allow countdown to complete and verify actuators energize.

(3) Activate suppression system initiating device. Operate abort switch and verify operation in accordance with sequencing of operation as specified on as-built drawings.

Public Input No. 394-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3. Alarm control unit trouble signals	-	-	-	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

-	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica appliar circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

		Component	Initial Acceptance	Periodic Frequency	Method	
		-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
				-	-
				-	-
-	-	-	-	-	
-		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the

-	Component	Initial Acceptance	Periodic Frequency	Method
				respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
	monoxide alarms connected to protected premises systems			
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]

		Component	Initial Acceptance	Periodic Frequency	Method
18.	Special hazard equipment				
		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.

		Component	Initial Acceptance	Periodic Frequency	Method
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method
	-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4		Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
22. Alarm notification appliances	-	-	-		
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
			-	-	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been		

-	Component	Initial Acceptance	Periodic Frequency	Method
			performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
26. Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
27.	Supervising station alarm systems — receiving equipment	-	-	-
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).

-	Component	Initial Acceptance	Periodic Frequency	Method
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	~~At a minimum, test~~ Test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for

-	Component	Initial Acceptance	Periodic Frequency	Method
				detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals*

	Component	Initial Acceptance	Periodic Frequency	Method
				with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be

notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Deleted non-enforceable language.

Submitter Information Verification

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Public Input No. 472-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X			See Table 14.3.1.
2. Control unit				
	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
	(2) Fuses	X	Annually	Verify rating and supervision.
	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3.	Alarm control unit trouble signals	-	-	-
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5. Emergency communications equipment	-	-	-	
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6. Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7. Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Record test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica appliar circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the

-	Component	Initial Acceptance	Periodic Frequency	Method
				respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
	monoxide alarms connected to protected premises systems			
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]

		Component	Initial Acceptance	Periodic Frequency	Method
18.	Special hazard equipment				
		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.

		Component	Initial Acceptance	Periodic Frequency	Method
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method
	-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4		Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
22.	Alarm notification appliances	-	-	-	
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
			-	-	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been		

-	Component	Initial Acceptance	Periodic Frequency	Method
			performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
26. Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
27.	Supervising station alarm systems — receiving equipment	-	-	-
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).

-	Component	Initial Acceptance	Periodic Frequency	Method
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	~~At a minimum,~~ ~~test~~ Test control ~~unit~~ equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals

-	Component	Initial Acceptance	Periodic Frequency	Method
				and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1:*

-	Component	Initial Acceptance	Periodic Frequency	Method
				Specifications, Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
			-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded

-	Component	Initial Acceptance	Periodic Frequency	Method
				log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer’s published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test.

No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Additional Proposed Changes

File Name	Description	Approved
NFPA_72_BS_SB_14_4_3_2_comments.docx		

Statement of Problem and Substantiation for Public Input

Deleted non enforceable language.

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Public Input No. 473-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3.	Alarm control unit trouble signals	-	-	-
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

-	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

-	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica appliar circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the

-	Component	Initial Acceptance	Periodic Frequency	Method
				respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
	monoxide alarms connected to protected premises systems			
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]

-	Component	Initial Acceptance	Periodic Frequency	Method
-		-	-	-
-		-	-	
			-	-
-		-	-	
-		-	-	-
-		-	-	
18.	Special hazard equipment	-	-	-
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.

		Component	Initial Acceptance	Periodic Frequency	Method
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method
	-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4		Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
22. Alarm notification appliances	-	-	-		
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
			-	-	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing that ea applia flashe
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been		

-	Component	Initial Acceptance	Periodic Frequency	Method
			performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-		Component	Initial Acceptance	Periodic Frequency	Method
26.	Special procedures	-	-	-	
-		(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-		(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
				-	-
				-	-
				-	-
				-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
27.	Supervising station alarm systems — receiving equipment	-	-	-
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple

	-	Component	Initial Acceptance	Periodic Frequency	Method
					communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
	-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
	-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
	-	(3) Master box	-	-	-
	-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
	-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).

-	Component	Initial Acceptance	Periodic Frequency	Method
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:

-	Component	Initial Acceptance	Periodic Frequency	Method
-			-	-
-			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for

-	Component	Initial Acceptance	Periodic Frequency	Method
				detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals*

	Component	Initial Acceptance	Periodic Frequency	Method
				with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

Move the footnotes to the body of the code if they are enforceable or they should go into the Annex.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby)

power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Additional Proposed Changes

File Name	Description	Approved
NFPA_72_BS_SB_14.4.3.2_comments.docx		

Statement of Problem and Substantiation for Public Input

Not many people read the footnotes and many question if they are enforceable.

Submitter Information Verification

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Committee: SIG-TMS

Public Input No. 511-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3.	Alarm control unit trouble signals	-	-	-
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

-	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica appliar circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

	Component	Initial Acceptance	Periodic Frequency	Method	
-	-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17. Initiating devices[i]	-	-	-		
-	(1) Electromechanical releasing device	-	-	-	
-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
-	(4) Heat detectors	-	-	-	
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the

-	Component	Initial Acceptance	Periodic Frequency	Method
				respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
	monoxide alarms connected to protected premises systems			
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]

-	Component	Initial Acceptance	Periodic Frequency	Method
-		-	-	-
-		-	-	
			-	-
-		-	-	
-		-	-	-
-		-	-	
18.	Special hazard equipment	-	-	-
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.

-		Component	Initial Acceptance	Periodic Frequency	Method
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method
	-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4		Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
22. Alarm notification appliances	-	-	-		
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
			-	-	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-		-	N/A	Annually	For pe testing that ea applia flashe
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been		

-	Component	Initial Acceptance	Periodic Frequency	Method
			performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
26. Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
27.	Supervising station alarm systems — receiving equipment	-	-	-
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).

-	Component	Initial Acceptance	Periodic Frequency	Method
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	~~At a minimum, test~~ Test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for

-	Component	Initial Acceptance	Periodic Frequency	Method
				detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals*

	Component	Initial Acceptance	Periodic Frequency	Method
				with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be

notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Deleted non enforceable language

Submitter Information Verification

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Public Input No. 512-NFPA 72-2022 [Section No. 14.4.3.2]

Move the footnotes to the body of the code if they are enforceable or they should go into the Annex.

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3.	Alarm control unit trouble signals	-	-	-
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, provided secondary (standby)

-	Component	Initial Acceptance	Periodic Frequency	Method
				power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

-	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device notifica appliar circuit, signali circuit correc

		Component	Initial Acceptance	Periodic Frequency	Method	
						indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
	-	(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	

		Component	Initial Acceptance	Periodic Frequency	Method	
		-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		
	-	(1) Electromechanical releasing device	-	-	-	
	-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	
	-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions.	

		Component	Initial Acceptance	Periodic Frequency	Method
		(excluding pneumatic tube type)			Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
		(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
		(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
		(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions of the detector or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into

-	Component	Initial Acceptance	Periodic Frequency	Method
				the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the

-	Component	Initial Acceptance	Periodic Frequency	Method
				respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[I]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
	monoxide alarms connected to protected premises systems			
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the

-	Component	Initial Acceptance	Periodic Frequency	Method
				manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]

		Component	Initial Acceptance	Periodic Frequency	Method
18.	Special hazard equipment				
		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.

		Component	Initial Acceptance	Periodic Frequency	Method
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method
	-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4		Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
22. Alarm notification appliances	-	-	-		
-	(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
			-	-	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been		

-	Component	Initial Acceptance	Periodic Frequency	Method
			performed by the supplier or by the supplier's designated representative.	
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
26. Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
27.	Supervising station alarm systems — receiving equipment	-	-	-
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple

	-	Component	Initial Acceptance	Periodic Frequency	Method
					communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
	-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
	-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
	-	(3) Master box	-	-	-
	-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
	-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).

-	Component	Initial Acceptance	Periodic Frequency	Method
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for

-	Component	Initial Acceptance	Periodic Frequency	Method
				detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals*

-	Component	Initial Acceptance	Periodic Frequency	Method
				with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
			-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be

notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Not many people read the footnotes and many question if they are enforceable

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Public Input No. 58-NFPA 72-2022 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control unit	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.

-	Component	Initial Acceptance	Periodic Frequency	Method
3.	Alarm control unit trouble signals	-	-	-
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
4. Supervising station alarm systems — transmission equipment	-	-	-	
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-
			-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line

-	Component	Initial Acceptance	Periodic Frequency	Method
				(number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			(2) Ground	
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, ~~provided~~ test secondary

-	Component	Initial Acceptance	Periodic Frequency	Method
				(standby) power ~~sources shall be tested in~~ sources in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Emergency power supply system/stored-emergency power supply system (EPSS/SEPSS)	X	Annually	If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
			EPSS/SEPSS in accordance with NFPA 111.		
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.	
9.	VRLA battery and charger[d]	-	-		Prior t conduc any ba testing by the conduc test, th system softwa stored volatile memo protec loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure.
-	(2) Charger test[e]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[f]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment

-	Component	Initial Acceptance	Periodic Frequency	Method	
				manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semia
-	(5) Replacement/Load test[g]	-		3 years	Replac battery condu test of battery capaci test th based

-	Component	Initial Acceptance	Periodic Frequency	Method	
					manuf specifi for a d rate of or mor applyi curren indicat the se hourly discha contin until th termin voltag decrea the en voltag specifi the manuf Recor test du and ca the ba capaci includi adjust ambie tempe Repla battery capaci less th equal or at th sched interva battery capaci less th
10.	Public emergency alarm reporting system — wired system	X	Daily	~~Manual tests of the~~ Manually test the power supply for public reporting circuits ~~shall be made and recorded at~~ and document the tests at least once during each 24-hour period. ~~Such tests shall include~~ Test the	

-	Component	Initial Acceptance	Periodic Frequency	Method
		following:		
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Wireless communications	X	Annually	Test per the manufacturer's published instructions.
15.	Conductors — metallic	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed

		Component	Initial Acceptance	Periodic Frequency	Method	
					equipment.	
-		(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
		-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
16.	Nonmetallic pathways	-	-	-		
-		(1) Optical fiber cables	X	N/A	Test the transmission characteristics of optical fibers by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must	

	-	Component	Initial Acceptance	Periodic Frequency	Method	
					meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
		-	-	N/A	Annually	For pe testing each i device notifica applia circuit, signali circuit correc indicat the co unit. C all circ perfor indicat Sectio 23.6, a 23.7.
17.	Initiating devices[i]	-	-	-		

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Electromechanical releasing device	-	-	-
-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.
-	(b) Restorable-type link[j]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.
-	(4) Heat detectors	-	-	-
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot	X	See Method	After 15 years from initial installation, replace all devices or

	Component	Initial Acceptance	Periodic Frequency	Method
	type			have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
	(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit), with a listed and labeled heat source or in accordance with the manufacturer's published instructions of the detector or conduct a test with pressure pump.
	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.
	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[k]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(17)(7)(a) and Table 14.4.3.2(17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide detectors/carbon monoxide alarms connected to protected premises systems	-	-	-
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in

-	Component	Initial Acceptance	Periodic Frequency	Method
				accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	~~Water shall be flowed~~ Flow water through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing, or individual sensors together if the technology allows individual sensor responses to be verified, or where sensors cannot be tested individually, test the primary sensor.[m]
-		-	-	-
-		-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method
		-		-
-		-	-	
-		-	-	-
-		-	-	
18. Special hazard equipment	-	-	-	
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-	(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system

		Component	Initial Acceptance	Periodic Frequency	Method
					owner's manual.
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-		(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-		(6) Release solenoid circuit[n]	X	Annually	Verify operation of solenoid.
-		(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-		(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-		(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	
-		(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-		(2) Carbon monoxide device/system	X	Annually	Test communication between the device connecting the carbon monoxide

-	Component	Initial Acceptance	Periodic Frequency	Method
				device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[o]	X	See 14.4.4.4	Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.
22.	Alarm notification appliances	-	-	-	
-		(1) Audible[p]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements.

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Measure sound pressure levels to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[q]For p testing the op of the notifica applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they are in compliance with Chapter 18 and the required performance, as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-	

		Component	Initial Acceptance	Periodic Frequency	Method	
					weighted characteristic F (FAST).	
				-	-	
		-	-	N/A	Annually	[q]For p testing the op of the notifica applia
	-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
		-	-	N/A	Annually	For pe testing that ea applia flashes
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[r]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device		

-	Component	Initial Acceptance	Periodic Frequency	Method
			activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			-	-
26.	Special procedures	-	-	-
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under

-	Component	Initial Acceptance	Periodic Frequency	Method
				both primary and secondary power.
			-	-
			-	-
			-	-
			-	-
27.	Supervising station alarm systems — receiving equipment	-	-	-	
-		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
			-	-
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following

-	Component	Initial Acceptance	Periodic Frequency	Method
				conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
			-	-
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of

-	Component	Initial Acceptance	Periodic Frequency	Method
				correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.

-	Component	Initial Acceptance	Periodic Frequency	Method
28.	Public emergency alarm reporting system transmission equipment	-	-	-
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-			-	-
-			-	-
-			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised.

-	Component	Initial Acceptance	Periodic Frequency	Method
				Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASAS1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt.

-	Component	Initial Acceptance	Periodic Frequency	Method
				Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2, Item 9, are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with Table 14.4.3.2, Item 9(5), with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[f]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[g]See A.14.4.3.2 Item 9(5).

[h]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[i]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[j]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[k]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[l] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[m]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[n]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[o]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[p]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[q]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[r]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.
To facilitate locating these changes in such a large table, changes were made to:
Line Item 4 (6)
Line Item 10
Line Item 17 (11)

Submitter Information Verification

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Submittal Date:	Wed Jan 12 09:20:14 EST 2022
Committee:	SIG-TMS

Public Input No. 275-NFPA 72-2022 [New Section after 14.4.3.3]

14.4.3.4 Thermal image fire detectors shall be inspected, tested, and maintained in accordance with the manufacturer's published instructions.

Statement of Problem and Substantiation for Public Input

Thermal image fire detectors are much like video image smoke and flame detectors and they should be inspected, tested, and maintenance in accordance with manufacturer's instructions. As these products become more mainstream, specific guidance can be developed. I have also submitted a definition for these products and guidance for Chapter 17.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 177-NFPA 72-2022 [New Section after 3.3.77.23]	new definition
Public Input No. 178-NFPA 72-2022 [New Section after 17.10.2.4]	new requirements

Submitter Information Verification

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Submittal Date: Fri May 06 14:37:41 EDT 2022
Committee: SIG-TMS

Public Input No. 492-NFPA 72-2022 [New Section after 14.4.3.5]

TITLE OF NEW CONTENT

14.4.4 Inspection of Carbon Monoxide Alarms. Carbon monoxide alarms installed in an area or room of a commercial building that is remote from dwelling units, sleeping units, guest rooms, or guest suites shall be visually inspected according to Table 14.3.1.

14.4.5 Testing of Carbon Monoxide Alarms. Carbon monoxide alarms installed in an area or room of a commercial building that is remote from dwelling units, sleeping units, guest rooms, or guest suites shall be tested according to Table 14.4.3.2.

Table 14.3.1 Visual Inspection

Component: 17(10) Carbon monoxide alarms installed in an area or room of a commercial building that is remote from dwelling units, sleeping units, guest rooms, or guest suites

Initial Acceptance: X

Periodic Frequency: Semiannual

Method: Verify the CO alarm is installed in its *approved* location, and the CO alarm has not reached it's EOL

Reference: 14.4.4

Table 14.4.3.2 Testing

Component: 17(10)* Carbon monoxide alarms installed in an area or room of a commercial building that is remote from dwelling units, sleeping units, guest rooms, or guest suites

Initial Acceptance: X

Periodic Frequency: Annually

Method: Functionally test the device in place by using a test button ~~or by the introduction of CO gas into the sensing chamber~~ .

Reference: 14.4.5

Statement of Problem and Substantiation for Public Input

Provides methods and frequencies for the inspection and testing of Carbon Monoxide Alarms that are installed in commercial buildings.

New requirements in the 2024 edition of the International Fire Code and International Building Code will permit carbon monoxide alarms to be installed in commercial buildings that are not required to have a fire alarm system if there is a known carbon monoxide source.

Submitter Information Verification

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Committee:	SIG-TMS

Public Input No. 59-NFPA 72-2022 [Section No. 14.4.4.1]

14.4.4.1*

Devices or equipment that are inaccessible for safety considerations (e.g., continuous process operations, energized electrical equipment, radiation, and excessive height) shall be permitted to be tested during scheduled shutdowns if approved by the authority having jurisdiction. ~~Extended intervals shall~~ , provided the extended intervals do not exceed 18 months.

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.

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Committee: SIG-TMS

Public Input No. 60-NFPA 72-2022 [Section No. 14.4.4.2]

14.4.4.2

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 ~~.~~ and Table 14.4.3.2 ~~shall apply~~ applies .

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.

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Committee: SIG-TMS

Public Input No. 256-NFPA 72-2022 [Section No. 14.4.4.5.5]

14.4.4.~~5.5~~ – 6

Carbon monoxide apparatus that require resetting to maintain normal operation shall be restored to normal as promptly as possible after each test and alarm and kept in normal condition for operation. All test signals received shall be recorded to indicate date and time.

Statement of Problem and Substantiation for Public Input

This clause needs to be renumbered to be 14.4.4.6 because it does not relate to heat detectors as described in the main clause (14.4.4.5). Then 14.4.4.6 and subsequent paragraphs need to be renumbered as well.

Submitter Information Verification

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Submittal Date: Fri Apr 29 08:27:44 EDT 2022
Committee: SIG-TMS

Public Input No. 61-NFPA 72-2022 [Section No. 14.4.4.5.5]

14.4.4.~~5.5~~ 6

Carbon monoxide apparatus that require resetting to maintain normal operation shall be restored to normal as promptly as possible after each test and alarm and kept in normal condition for operation.

14.4.4.6.1 _

All carbon monoxide test signals received shall be recorded to indicate date and time.

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.
This will require re-numbering current 14.4.4.6 to 14.4.4.7

Submitter Information Verification

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Submittal Date: Wed Jan 12 09:54:00 EST 2022
Committee: SIG-TMS

Public Input No. 262-NFPA 72-2022 [Section No. 14.4.10]

14.4.10 In-Building Emergency Radio Communication Systems. (SIG-ECS)

In-building emergency radio communication systems shall be inspected and operationally tested in accordance with the requirements of ~~NFPA 1221~~ NFPA 1225 .

Statement of Problem and Substantiation for Public Input

As part of the Emergency Response and Responder Safety Document Consolidation Plan (consolidation plan) as approved by the NFPA Standards Council, NFPA 1221 has been combined into a new consolidated Standard, NFPA 1225.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
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Submittal Date: Fri Apr 29 08:57:34 EDT 2022
Committee: SIG-TMS

Public Input No. 20-NFPA 72-2021 [New Section after 14.4.11]

NFPA 72 - 5 year testing requirement

NFPA 72 Proposed

Additions to the 2022 Edition for 2025 edition

New code requirement / section

14.4.12- Fire Alarm 5 year ITM – ***New Section***

14.4.12.1

- **Frequency** : Every 5 years under the annual requirements of 14:14.3 and 14:14.4 additional inspection and testing as listed below shall be performed by qualified personnel in accordance with 72:10.5.3.

*14.4.12.2**

- All wiring is to be inspected in all areas, including above T-bar ceilings.

  Non accessible areas shall not be included.

  Fire Alarm wiring that is found not to be installed in accordance with NFPA 70 [70:760.24(A)(B)] and other governing codes shall be reinstalled correctly.

  A.14.4.12.2: Wiring is removed from supports for service reasons and not re-installed correctly per { **70** :760.24}

  A.14.4.12.2: Wiring installed correctly above T-Bar or Gypsum board ceilings is only checked on rough in and acceptance testing. In the following weeks, month, years, service repairs, building changes and retrofits are done to the building or structure, sometimes during the reworks, the initial installation of the fire alarm wiring is removed.

14.4.12.3

- Abandoned Fire Alarm wiring shall be tagged for future use or removed. [**70** :760.25]

*14.4.12.4**

- Accessibility of duct detectors is to be inspected. Duct Detectors that are found to be located above T-Bar ceilings that do not have visible alarm indicators as stated in 72:10.18, or meet the requirements of 72:17.4.6, 72:17.4.6.1 and 72:17.4.6.2 or a test switch installed for location identification, a remote indicator or remote indicator with test switch shall be installed.
- **Exception:** Detectors installed in concealed locations where the specific detector alarm or supervisory signal is indicated at the control unit (and on the drawings with its specific location and function) shall not be required to be provided with a remote alarm indicators as specified in [72:17.4.6.3]

  A.14.4.12.4 : Duct detectors should be installed by qualified personnel.

14.4.12.5*

- Battery Testing shall be done under full load of the fire alarm system. Testing to be performed per NFPA 72; current edition; Chapter 14, Table 14.4.3.2, subsection #8: Secondary (standby) power supply.

Secondary (standby) power supply: Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.

A.14.4.12.5: Batteries should be checked with load testers and /or meters during the annual ITM.

14.4.12.6

- All Inspection and testing methods as shown in Tables 14.3.1 and 14.4.3.2 shall be followed during the 5 year ITM.

14.4.12.6.1

- All devices shall be installed, inspected and tested as shown in tables 14.3.1 and 14.4.3.2 during the 5 year ITM.

14.4.12.6.2

- If required by the AHJ, 5 year ITM shall include the requirements of NFPA 4: Standard for Integrated Fire Protection and Life Safety System Testing.

14.4.12.6.3

- Documentation of integrated equipment testing shall be as required in 4:7.2
- Documentation of inspection and testing shall be as required in 72:7.6 14.4.12.7.1

14.4.12.7.1

- ITM tags shall be installed (placed) at the main control panel or at the documents box indicating the status of the buildings fire alarm system upon completion of the 5 year ITM.
- ITM tags shall be color coded and completed as adopted and approved by the AHJ.
- ITM tags shall be made of durable, weatherproof, colorfast materials.

..

Statement of Problem and Substantiation for Public Input

By approving the 5 year fire alarm testing requirement would ensure that the service technicians and retro / replacement installers have a good record of the existing fire alarms wiring, interconnections and operation . When most replacements are done existing wiring and devices are used / reused to lower the expense to the end user, this requirement will assist in reduction of change orders and troubleshooting of technicians thus lower site time and costs.

The end user, owner of the FA system will have confidence in their fire alarm system.

We do this for sprinkler systems for the same reasons, to ensure the system is complaint.

Submitter Information Verification

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Submittal Date:	Mon Nov 08 18:33:40 EST 2021
Committee:	SIG-TMS

Public Input No. 156-NFPA 72-2022 [New Section after 14.4.11.3]

Additions to the 2019 Edition for 2022 edition

New code requirement / section

14.4.12- Fire Alarm 5 year ITM – New Section

14.4.12.1

Frequency : Every 5 years under the annual requirements of 14:14.3 and 14:14.4 additional inspection and testing as listed below shall be performed by qualified personnel in accordance with 72:10.5.3.

14.4.12.2*

All wiring is to be inspected in all areas, including above T-bar ceilings.

Non accessible areas shall not be included.

Fire Alarm wiring that is found not to be installed in accordance with NFPA 70 [70:760.24(A)(B)] and other governing codes shall be reinstalled correctly.

A.14.4.12.2: Wiring is removed from supports for service reasons and not re-installed correctly in accordance with 70:760.24

A.14.4.12.2: Wiring installed correctly above T-Bar or Gypsum board ceilings is only checked on rough in and acceptance testing. In the following weeks, month, years, service repairs, building changes and retrofits are done to the building or structure, sometimes during the reworks, the initial installation of the fire alarm wiring is removed.

14.4.12.3

Abandoned Fire Alarm wiring shall be tagged for future use or removed. [70 :760.25]

14.4.12.4*

Accessibility of duct detectors is to be inspected. Duct Detectors that are found to be located above T-Bar ceilings that do not have visible alarm indicators as stated in 72:10.18 or 72:17.4.6., 17.4.6.1 and 17.4.6.2 or test switch installed for location identification, a remote indicator shall be installed.

Exception: Detectors installed in concealed locations where the specific detector alarm or supervisory signal is indicated at the control unit (and on the drawings with its specific location and function) shall not be required to be provided with a remote alarm indicators as specified in [72:17.4.6.3]

A.14.4.12.4 : Duct detectors should be installed by qualified personnel.

14.4.12.5*

Battery Testing shall be done under full load of the fire alarm system. (find section of full load battery testing)

A.14.4.12.5 : Batteries should be checked with load testers and /or meters during the annual ITM.

14.4.12.6

All Inspection and testing methods as shown in Tables 14.3.1 and 14.4.3.2 shall be followed during the 5 year ITM.

14.4.12.6.1

All devices shall be installed, inspected and tested as shown in tables 14.3.1 and 14.4.3.2 during the 5 year ITM.

14.4.12.6.2

Documentation of inspection and testing shall be as required in 72:7.6

Additional Proposed Changes

File Name	Description	Approved
72_Held_PC_101_SIG-TMS_.pdf		

Statement of Problem and Substantiation for Public Input

NOTE: This Public Input appeared as “Rejected but Held” in Public Comment No. 101 of the A2021 Second Draft Report for NFPA 72 and per the Regs. at 4.4.8.3.1.

SUBSTANTIATION:

NFPA 25 has a 5 year requirements for Sprinkler Systems yet NFPA 72 does not have 5 year requirements for fire alarm systems.

By adding the requirements the fire alarm system life span will be increased and should reduce nuisance alarms and costly repairs.

As a technician for 30+ years, there have been several instances where fire alarm system problems were found due to the lack of inspecting wiring above ceilings, verifying accessibility of duct detectors and checking batteries under system loads.

If NFPA deices to add these requirements, the end user will have verification that their fire alarms systems are maintained and operating the same as when installed.

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Committee: SIG-TMS

Public Input No. 62-NFPA 72-2022 [Section No. 14.4.11.3]

14.4.11.3

~~Quantitative~~ Although not required by this Code, quantitative measurements as described in Annex D shall be permitted ~~but shall not be required~~ .

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.

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Public Input No. 63-NFPA 72-2022 [Section No. 14.6.1.3]

14.6.1.3

The system owner shall be responsible for maintaining these records for the life of the system for examination by any authority having jurisdiction.

14.6.1.4

Paper or electronic media shall be permitted.

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.

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Public Input No. 561-NFPA 72-2022 [Section No. 14.6.2.1]

14.6.2.1

~~Records shall be retained until~~ The system owner shall be responsible for retaining maintenance, inspection, and testing records until the next test and for 1 year thereafter.

Statement of Problem and Substantiation for Public Input

Permanent Records are identified as the responsibility of the building owner to maintain. ITM records, however, are not assigned to any entity for retention. This PI assigns the responsibility for these types of records to the same entity as for permanent records in order to eliminate any uncertainty as to who is ultimately responsible for retention, especially when examination of these records is required by the AHJ.

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Committee: SIG-TMS

Public Input No. 64-NFPA 72-2022 [Section No. 14.6.2.3]

14.6.2.3

The records shall be on a medium that will survive the retention period. ~~Paper or electronic media shall be permitted.~~

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 65-NFPA 72-2022 [Section No. 14.6.2.4]	
Public Input No. 65-NFPA 72-2022 [Section No. 14.6.2.4]	

Submitter Information Verification

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Committee: SIG-TMS

Public Input No. 65-NFPA 72-2022 [Section No. 14.6.2.4]

14.6.2.4 Paper or electronic media shall be permitted.

14.6.2.5

A record of all inspections, testing, and maintenance shall be provided in accordance with 7.6.6.

Statement of Problem and Substantiation for Public Input

PI submitted by Manual of Style Task Group to improve adherence to MOS requirements.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 64-NFPA 72-2022 [Section No. 14.6.2.3]	
Public Input No. 64-NFPA 72-2022 [Section No. 14.6.2.3]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
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Committee: SIG-TMS

Public Input No. 68-NFPA 72-2022 [Section No. A.7.8.2(2)]

~~A.7.8.2(2)~~ —

~~Figure 7.8.2(g) through Figure 7.8.2(l) are sample forms intended to reflect the general information that should be provided as part of a system inspection and test report, but they are not intended to mandate a specific format for the report. A report format customized to the specific system configuration, devices, appliances, and system functions being tested meets the intent of the requirement.~~

~~In Figure 7.8.2(k), Section 2.1, an example of a single-voice-channel emergency communications system is a system that provides a single message or evacuation signal to multiple floors or areas at the same time. An example of a multiple-voice-channel emergency communications system is a system that can provide multiple messages or evacuation signals to multiple floors or areas at the same time.~~

Statement of Problem and Substantiation for Public Input

This PI is related to PIs 80, 81 and 67, which call for the removal of the current Section 7.8.2 (2) and the relocation of its current corresponding annex note along with the Inspection and Testing forms to Section A.7.6.6.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 67-NFPA 72-2022 [Section No. 7.8.2]	
Public Input No. 80-NFPA 72-2022 [Section No. 7.6.6]	
Public Input No. 81-NFPA 72-2022 [New Section after A.7.7.1.2]	
Public Input No. 81-NFPA 72-2022 [New Section after A.7.7.1.2]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
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Submittal Date: Thu Jan 13 13:35:08 EST 2022
Committee: SIG-TMS

Public Input No. 406-NFPA 72-2022 [New Section after A.14.4.2]

A14.4.2.3

Control unit hardware could include, but is not limited to the central processing unit, power supply, and signaling line circuit.

Statement of Problem and Substantiation for Public Input

Clarify the intent of this section.

Submitter Information Verification

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Submittal Date: Wed May 25 19:07:25 EDT 2022
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Public Input No. 478-NFPA 72-2022 [New Section after A.14.4.2]

TITLE OF NEW CONTENT

A14.4.2.3 Control unit hardware could include, but is not limited to the central processing unit, power supply, and signaling line circuit

Additional Proposed Changes

File Name	Description	Approved
NFPA_72_BS_SB_A14_4_2_3_comments.docx		

Statement of Problem and Substantiation for Public Input

Clarify intent of the section

Submitter Information Verification

Submitter Full Name: Tim Knisely
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Submittal Date: Fri May 27 11:52:13 EDT 2022
Committee: SIG-TMS

Public Input No. 524-NFPA 72-2022 [New Section after A.14.4.2]

A.14.4.2.3

Control unit hardware could include, but is not limited to the central processing unit, power supply, and signaling line circuit.

Statement of Problem and Substantiation for Public Input

Clarify intent of the section.

Submitter Information Verification

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Submittal Date: Tue May 31 10:31:37 EDT 2022
Committee: SIG-TMS

Public Input No. 376-NFPA 72-2022 [Section No. A.14.4.3]

A.14.4.3

Fire alarm system testing can be conducted using silent testing and the bypassing of emergency control functions. All input signals should be verified according to the system ~~matrix~~ sequence of operation to ensure they create the appropriate outputs. Tests of audible notification appliances and emergency control functions should be conducted at the conclusion of satisfactory tests of all inputs.

The intent is to reduce the amount of time spent causing audible and visual occupant notification during tests in an occupied building. This reduction will help reduce the negative (cry wolf) impact on occupants caused by excessive operation of notification appliances. System printouts or history logs are an effective way of verifying the correct receipt of signals. However, many outputs such as occupant notification and emergency control functions are tested for correct operation, because logs do not necessarily verify operation of the system output. Operation of audible and visual notification appliances could be accomplished in a lump sum fashion after all inputs are proven correct by silent testing. All inputs tested in this manner must be proved to cause the appropriate signal by verifying alarm receipt at the controls as each device is actuated. Manufacturer-specific protocols such as “walk test” or “alarm bypass” are an acceptable means of testing under this section. Other methods of mitigating the negative impact include off-hours tests when the building is not occupied.

Statement of Problem and Substantiation for Public Input

The code currently allows a sequence of operation to be defined in narrative form or an input/output matrix. Changing the text to the more generic term acknowledges the narrative form, matrix, or other acceptable documents that define the sequence of operation.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 315-NFPA 72-2022 [Section No. 7.2.1]	
Public Input No. 315-NFPA 72-2022 [Section No. 7.2.1]	

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Committee: SIG-TMS

Public Input No. 463-NFPA 72-2022 [Section No. A.14.6.1.1]

A.14.6.1.1

~~One method~~ Two methods used to define the required sequence of operations and to document the actual sequence of operations ~~is~~ are a logic diagram and an input/output matrix *(see ~~Figure~~ Figures A.14.6.1.1(a) and (b))* .

Figure A.14.6.1.1(a)

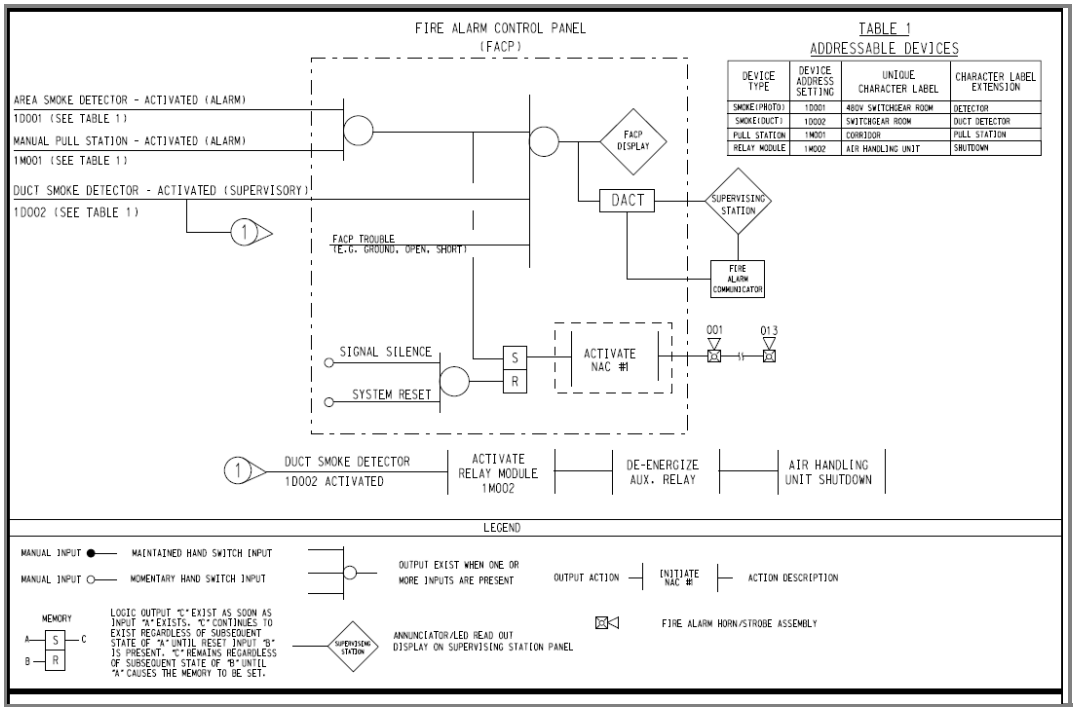
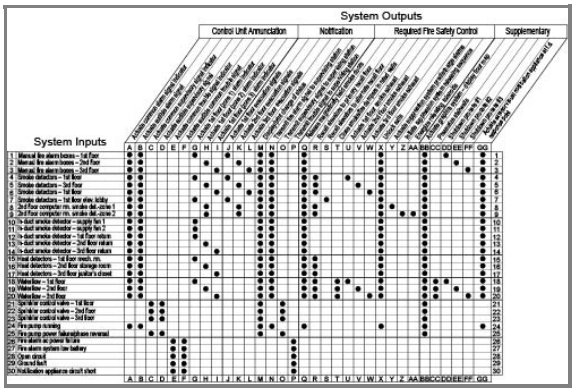


Figure A.14.6.1. ~~1 Typical~~ 1(b) Typical Input/Output Matrix .



Additional Proposed Changes

File Name	Description	Approved
NFPA_72_Figure_A.14.6.1.1_a_Final_002_.1653601205227.pdf	Logic Diagram	

Statement of Problem and Substantiation for Public Input

Provide consistent language among paragraphs related to the sequence of operation and add logic diagram as a means to depict the sequence of operation.

In addition to a narrative or an input/output matrix, a logic diagram is also a valid method to document the sequence of operation of a system. Sections of the Code that currently refer to documenting the sequence of operation only refer to a narrative description and/or an input/output matrix. Approvers of system design documentation are sometimes hesitant to approve or will not approve a design without a narrative or an input /output matrix even when a logic diagram is part of the design and provides more concise information, because NFPA 72 doesn't include a logic diagram as means to show the sequence of operation.

A logic diagram depicts the sequence of operation in easy-to-understand graphics, by interconnection of symbols representing the design of the entire system, not only showing the output for various inputs, but also the inter-working relationship between hardware and software within the system. A typical logic diagram will include internal components such as monitor modules, control modules, control relays, program addresses and custom messages for system inputs required for actuation of evacuation signals and ancillary functions for the intended sequence of operation. A logic diagram is particularly useful for addressable systems where an enormous amount of information representing the sequence of operation is required in large buildings or complex systems, whereas an input/output matrix is often confusing to produce and read (so many dots) when the system is large or complex. (NFPA 72 Figure A.14.6.1.1, for example, shows duplicate entries for 1st floor detectors, no 2nd floor detectors, and duct detectors that actuate alarm signals).

Older model addressable systems that require panel upgrades (CPU) for maintenance issues will come with firmware versions that won't likely support the older model software revision. In fact the older software revision software may require out of date laptop computer software (i.e., windows 98) to read it. The software media required to be controlled by NFPA 72 in cases such as this could be useless. A good logic diagram in a design is capable of providing the programming information necessary to restore the original sequence of operation because all programmable hardware is shown on the drawing with custom messages and program addresses.

A logic diagram is also a useful tool to convey detailed programming information to the programmer to ensure that site-specific software is configured to meet the owner's intended sequence of operation. Some facilities for example may be directed to implement software design control processes (i.e., NQA-1, Quality Assurance Requirements for Nuclear Facility Applications) that identify and document software design requirements including the operating system, function, interfaces, performance criteria, and design inputs of a computer program, such as site-specific fire alarm programs that can be created or modified. These software design requirements can be met with a logic diagram whereas an input/output matrix lacks interconnection detail between hardware and software.Provide consistent language among paragraphs related to the sequence of operation and add logic diagram as a means to depict the sequence of operation.

In addition to a narrative or an input/output matrix, a logic diagram is also a valid method to document the sequence of operation of a system. Sections of the Code that currently refer to documenting the sequence of operation only refer to a narrative description and/or an input/output matrix. Approvers of system design documentation are sometimes hesitant to approve or will not approve a design without a narrative or an input /output matrix even when a logic diagram is part of the design and provides more concise information, because NFPA 72 doesn't include a logic diagram as means to show the sequence of operation.

A logic diagram depicts the sequence of operation in easy-to-understand graphics, by interconnection of symbols representing the design of the entire system, not only showing the output for various inputs, but also the inter-working relationship between hardware and software within the system. A typical logic diagram will include internal components such as monitor modules, control modules, control relays, program addresses and custom messages for system inputs required for actuation of evacuation signals and ancillary functions for the intended sequence of operation. A logic diagram is particularly useful for addressable systems where an enormous amount of information representing the sequence of operation is required in large buildings or complex systems, whereas an input/output matrix is often confusing to produce and read (so many dots) when the system is large or complex. (NFPA 72 Figure A.14.6.1.1, for example, shows duplicate entries for 1st floor detectors, no 2nd floor detectors, and duct detectors that actuate alarm signals).

Older model addressable systems that require panel upgrades (CPU) for maintenance issues will come with firmware versions that won't likely support the older model software revision. In fact the older software revision software may require out of date laptop computer software (i.e., windows 98) to read it. The software media required to be controlled by NFPA 72 in cases such as this could be useless. A good logic diagram in a design is capable of providing the programming information necessary to restore the original sequence of operation because all programmable hardware is shown on the drawing with custom messages and program addresses.

A logic diagram is also a useful tool to convey detailed programming information to the programmer to ensure that site-specific software is configured to meet the owner's intended sequence of operation. Some facilities for example may be directed to implement software design control processes (i.e., NQA-1, Quality Assurance Requirements for Nuclear Facility Applications) that identify and document software design requirements including the operating system, function, interfaces, performance criteria, and design inputs of a computer program, such as site-specific fire alarm programs that can be created or modified. These software design requirements can be met with a logic diagram whereas an input/output matrix lacks interconnection detail between hardware and software.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 315-NFPA 72-2022 [Section No. 7.2.1]	
Public Input No. 315-NFPA 72-2022 [Section No. 7.2.1]	

Submitter Information Verification

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Committee: SIG-TMS

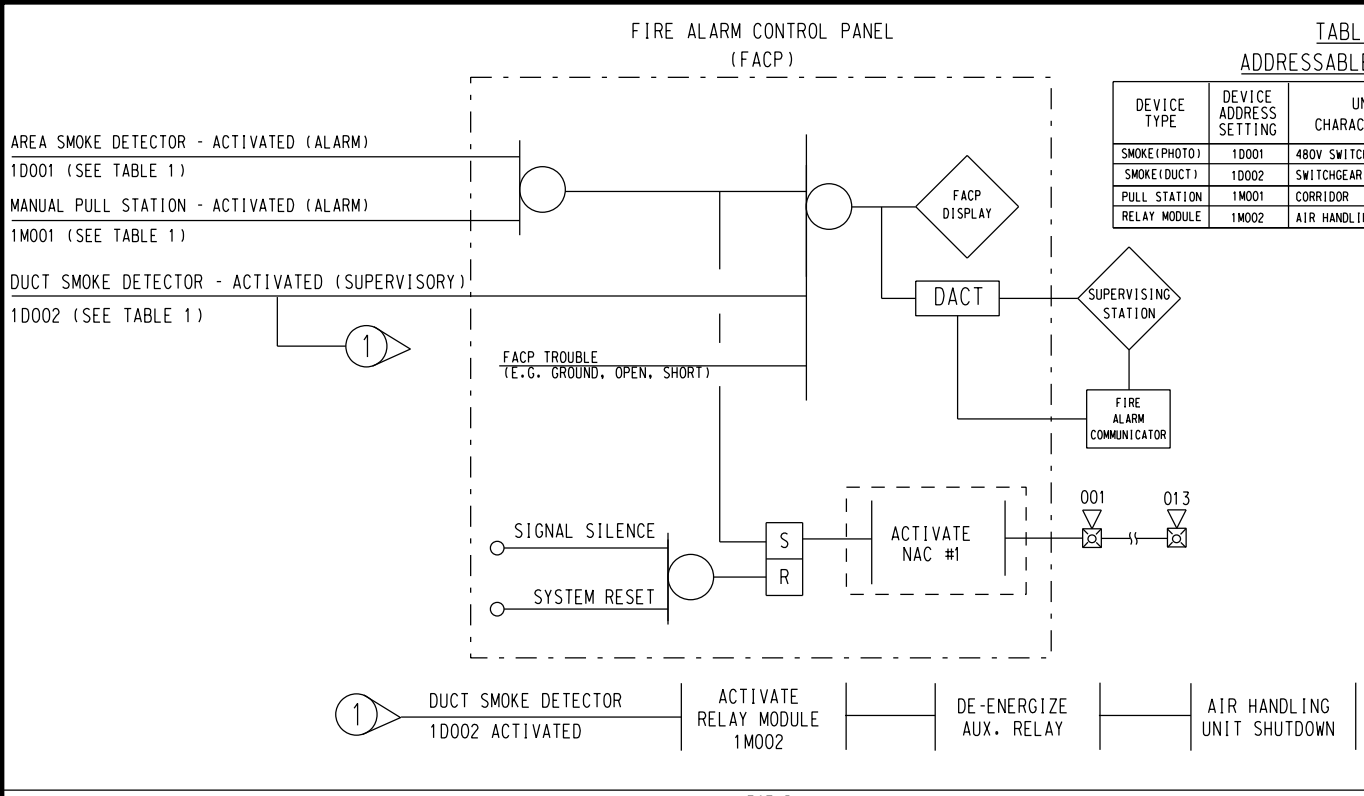


TABLE 1
ADDRESSABLE DEVICES

DEVICE TYPE	DEVICE ADDRESS SETTING	UNIQUE CHARACTER LABEL	CHARACTER LABEL EXTENSION
SMOKE(PHOTO)	1D001	480V SWITCHGEAR ROOM	DETECTOR
SMOKE(DUCT)	1D002	SWITCHGEAR ROOM	DUCT DETECTOR
PULL STATION	1M001	CORRIDOR	PULL STATION
RELAY MODULE	1M002	AIR HANDLING UNIT	SHUTDOWN

LEGEND

MANUAL INPUT ● MAINTAINED HAND SWITCH INPUT

MANUAL INPUT ○ MOMENTARY HAND SWITCH INPUT

OUTPUT EXIST WHEN ONE OR MORE INPUTS ARE PRESENT

OUTPUT ACTION — INITIATE NAC #1 — ACTION DESCRIPTION

MEMORY

A — S — C
B — R

LOGIC OUTPUT "C" EXIST AS SOON AS INPUT "A" EXISTS. "C" CONTINUES TO EXIST REGARDLESS OF SUBSEQUENT STATE OF "A" UNTIL RESET INPUT "B" IS PRESENT. "C" REMAINS REGARDLESS OF SUBSEQUENT STATE OF "B" UNTIL "A" CAUSES THE MEMORY TO BE SET.

SUPERVISING STATION — ANNUNCIATOR/LED READ OUT DISPLAY ON SUPERVISING STATION PANEL

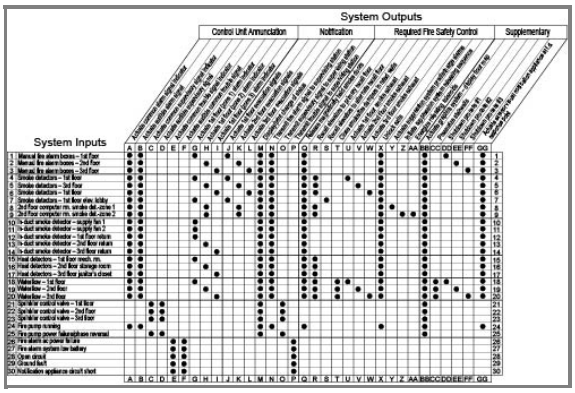
FIRE ALARM HORN/STROBE ASSEMBLY

Public Input No. 577-NFPA 72-2022 [Section No. A.14.6.1.1]

A.14.6.1.1

One method used to define the required sequence of operations and to document the actual sequence of operations is an input/output matrix *(see Figure A.14.6.1.1).* When documenting a sequence of operations on a shop drawing or to document actual programmed features of an alarm system, one or more matrices may be necessary, or a combination of a written narrative and a matrix may be necessary. This documentation should include all of the applicable features noted in 7.4.9.

Figure A.14.6.1.1 Typical Input/Output Matrix.



Statement of Problem and Substantiation for Public Input

It is critical that the Owner receives a copy of the sequence of operation that is actually programmed into the fire alarm system. It is also impossible to test an alarm system without understanding how the system is actually programmed. As such, a detailed list is included in PI No. 575 and should be referenced in this Annex material so reference is made back to this inclusive list.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 575-NFPA 72-2022 [Section No. 7.4.9]	Reference to detailed list

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