



Public Comment No. 201-NFPA 72-2023 [New Section after 3.3.75]

After 3.3.75

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

-

Statement of Problem and Substantiation for Public Comment

The term "Observation" was added in the 2022 edition of NFPA 72. The Automatic Fire Alarm Association is in favor of ITM technicians being able to point out possible improvements to the fire alarm or signaling system, even if these items are not impairments or deficiencies. However, we feel additional clarifications are needed in order to reduce the liability of ITM companies who have ITM technicians servicing systems and making good faith observations that the owner may want to consider. It needs to be clear that an observation made about one part of a system, or the protected premise, does not mean that the ITM technician has done a complete review of the entire system and the building and that the observation, or observations cover all possible hazards. ITM technicians are not design professionals or trained fire protection engineers and their opinions on possible improvements to the fire life safety of a premise should not be considered to be a complete or thorough review of all of the hazards or code requirements that may come into play. In my previous public inputs. We refer to this type of system and premise review as a "Design Review" which was proposed to be defined as "A review of an installed system by a qualified design professional for compliance to the original or current installation codes and standards." (Public Input 342)

As the code now is written, ITM companies will discourage ITM technicians from making any observations, as these may be considered to be part of a "Design Review", which could open the ITM company up to litigation. For example, if an ITM technician noticed that a building owner was storing flammable chemicals in a closet that did not have a smoke detector, in good faith, the technician could make the observation to the building owner that they might want to consider adding a smoke detector to that closet. So the owner adds a smoke detector to that closet. But, sometime down the road, there is a fire in a different closet that does not have a smoke detector in it, in a completely different area of the building that also had some chemicals in it, that the ITM technician never entered. It is not hard to imagine a building owner initiating litigation against the ITM company because the technician did not tell them about the other closet and it not having a smoke detector, even though the ITM technician was never in that room. ITM companies will simply tell their ITM technicians to not make any observations.

Mr. Jason Dupuis submitted public inputs 340, 341, and 342 which were intended to help address this concern. PI 340 was identical to this public comment, looking to amend the definition of "Observation". PI 341 looked to add a definition for "Design Review" as mentioned above. PI 342 looked to add section 14.1.6 which would state that "This chapter does not require inspection, test, or maintenance personnel to verify the adequacy of the design of existing previously approved systems." This language was borrowed from NFPA 25 – section 1.1.3.1. We are resubmitting these three Public Inputs as Public Comments and hope that the technical committee will reconsider them.

Mr. Warren Olsen also submitted Public Input 204 which also looked to address this issue. We urge the technical committee to review Mr. Olsen's PI, and presumably his public comments which we believe he is submitting. We urge the committee to reconsider their initial position and add some language that will allow ITM technicians to make good faith life safety observations to building owners that will not at the same time open up the ITM companies to litigation.

Related Public Comments for This Document

Related Comment

[Public Comment No. 200-NFPA 72-2023 \[New Section after 14.1.5\]](#)

[Public Comment No. 202-NFPA 72-2023 \[Section No. 3.3.196\]](#)

Related Item

- 340, 341, 342

Relationship

Group with Public Comments 201, 202

Group with Public Comments 200, 201

Submitter Information Verification

Submitter Full Name: Shane Clary

Organization: Bay Alarm Company

Affiliation: Automatic Fire Alarm Association

Street Address:

City:

State:

Zip:

Submittal Date: Tue May 30 23:59:13 EDT 2023

Committee: SIG-TMS

Committee Statement

Committee Action: Rejected

Resolution: The new definition of Design Review is unnecessary, a building owner can undertake a design review with a qualified professional at any time.



Public Comment No. 39-NFPA 72-2023 [New Section after 3.3.75]

New Definition for "Design Review"

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

Statement of Problem and Substantiation for Public Comment

The term "Observation" was added in the 2022 edition of NFPA 72. I am in favor of ITM technicians being able to point out possible improvements to the fire alarm or signaling system, even if these items are not impairments or deficiencies. However, I feel additional clarifications are needed in order to reduce the liability of ITM companies who have ITM technicians servicing systems and making good faith observations that the owner may want to consider. It needs to be clear that an observation made about one part of a system, or the protected premise, does not mean that the ITM technician has done a complete review of the entire system and the building and that the observation, or observations cover all possible hazards. ITM technicians are not design professionals or trained fire protection engineers and their opinions on possible improvements to the fire life safety of a premise should not be considered to be a complete or thorough review of all of the hazards or code requirements that may come into play. In my previous public inputs, I refer to this type of system and premise review as a "Design Review" which I proposed be defined as "A review of an installed system by a qualified design professional for compliance to the original or current installation codes and standards." (Public Input 342).

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I submitted public inputs 340, 341, and 342 which were intended to help address this concern. PI 340 was identical to this public comment, looking to amend the definition of "Observation". PI 341 looked to add a definition for "Design Review" as mentioned above. PI 342 looked to add section 14.1.6 which would state that "This chapter does not require inspection, test, or maintenance personnel to verify the adequacy of the design of existing previously approved systems." This language was borrowed from NFPA 25 - section 1.1.3.1. I am resubmitting these three Public Inputs as Public Comments and hope that the technical committee will reconsider them.

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Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 40-NFPA 72-2023 [New Section after 14.1.5]	Group with public comments 38, 39, and 40

[Public Comment No. 38-NFPA 72-2023 \[Section No. 3.3.196\]](#)

[Public Comment No. 38-NFPA 72-2023 \[Section No. 3.3.196\]](#)

[Public Comment No. 40-NFPA 72-2023 \[New Section after 14.1.5\]](#)

Group with public comments 38, 39, and 40

Related Item

- Public Inputs 340, 341, and 342

Submitter Information Verification

Submitter Full Name: Jason Dupuis
Organization: Cintas Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Wed Apr 26 17:03:54 EDT 2023
Committee: SIG-TMS

Committee Statement

Committee Action: Rejected
Resolution: The new definition of Design Review is unnecessary, a building owner can undertake a design review with a qualified professional at any time.



Public Comment No. 202-NFPA 72-2023 [Section No. 3.3.196]

3.3.196 * – 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)

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Statement of Problem and Substantiation for Public Comment

The term "Observation" was added in the 2022 edition of NFPA 72. The Automatic Fire Alarm Association is in favor of ITM technicians being able to point out possible improvements to the fire alarm or signaling system, even if these items are not impairments or deficiencies. However, we feel additional clarifications are needed in order to reduce the liability of ITM companies who have ITM technicians servicing systems and making good faith observations that the owner may want to consider. It needs to be clear that an observation made about one part of a system, or the protected premise, does not mean that the ITM technician has done a complete review of the entire system and the building and that the observation, or observations cover all possible hazards. ITM technicians are not design professionals or trained fire protection engineers and their opinions on possible improvements to the fire life safety of a premise should not be considered to be a complete or thorough review of all of the hazards or code requirements that may come into play. In my previous public inputs. We refer to this type of system and premise review as a "Design Review" which was proposed to be defined as "A review of an installed system by a qualified design professional for compliance to the original or current installation codes and standards." (Public Input 342)

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Related Item

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Submitter Information Verification

Submitter Full Name: Shane Clary
Organization: Bay Alarm Company
Affiliation: Automatic Fire Alarm Association
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 31 00:08:03 EDT 2023
Committee: SIG-TMS

Committee Statement

Committee Action: Rejected

Resolution: The existing definition language is clear as to the intent and does not require any modification. The ITM Tables in Chapter 14 do require items of the design to be verified. Additional annex language from Chapter 10 on Inspection and Testing Personnel clarify the responsibility of the ITM personnel.



Public Comment No. 38-NFPA 72-2023 [Section No. 3.3.196]

3.3.196* 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 Comment

The term "Observation" was added in the 2022 edition of NFPA 72. I am in favor of ITM technicians being able to point out possible improvements to the fire alarm or signaling system, even if these items are not impairments or deficiencies. However, I feel additional clarifications are needed in order to reduce the liability of ITM companies who have ITM technicians servicing systems and making good faith observations that the owner may want to consider. It needs to be clear that an observation made about one part of a system, or the protected premise, does not mean that the ITM technician has done a complete review of the entire system and the building and that the observation, or observations cover all possible hazards. ITM technicians are not design professionals or trained fire protection engineers and their opinions on possible improvements to the fire life safety of a premise should not be considered to be a complete or thorough review of all of the hazards or code requirements that may come into play. In my previous public inputs, I refer to this type of system and premise review as a "Design Review" which I proposed be defined as "A review of an installed system by a qualified design professional for compliance to the original or current installation codes and standards." (Public Input 342).

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Group with public comments 38, 39, and 40

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Related Item

- Public Inputs 340, 341, and 342

Submitter Information Verification

Submitter Full Name: Jason Dupuis

Organization: Cintas Fire Protection

Street Address:

City:

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Submittal Date: Wed Apr 26 16:15:56 EDT 2023

Committee: SIG-TMS

Committee Statement

Committee Action: Rejected

Resolution: The existing definition language is clear as to the intent and does not require any modification. The ITM Tables in Chapter 14 do require items of the design to be verified. Additional annex language from Chapter 10 on Inspection and Testing Personnel clarify the responsibility of the ITM personnel.



Public Comment No. 170-NFPA 72-2023 [Chapter 14]

Chapter 14 Inspection, Testing, and Maintenance

14.1 Application.

I am sending this requesting that Fire Systems such as the Simplex 4100 series not be required for annual testing. Exceptons to this would be if the system is not monitored. I currently have three of the Simplex 4100's in different buildings which I pay to be monitored 24 hours a day 365 days a year. These systems are constantly self testing all components along with the system hardware and provide troubles to alert my staff if there are any shortcomings. The systems do not self test the main system back up batteries as well as the NAC batteries. The system will provide a trouble if the outputs of these batteries aren't sufficent, but not if their capacity decreases. I have replacement of all batteries set up on a three year schedule. I currently am spending over \$12,000 annually for systems inspections. The only issues that we have found over the years are some strobe-horns that were installed during a project would not function and needed to be replaced with appropraite devices. I follow all required regulations in regards to the buildings aned equipment on Campus. It is my opinion that the Inspection, Testing and Maintenance chapter should be revised to reflect current technology. Thanks for considering.

14.1.1

The inspection, testing, and maintenance of systems, their initiating devices, and notification appliances shall comply with the requirements of this chapter.

14.1.2

The inspection, testing, and maintenance of single- and multiple-station alarms and household alarm systems shall comply with 14.4.5 and 14.4.6. (SIG-HOU)

14.1.3

Procedures that are required by other parties and that exceed the requirements of this chapter shall be permitted.

14.1.4

The requirements of this chapter shall apply to both new and existing systems.

14.1.5

The requirements of Chapter 7 shall apply where referenced in Chapter 14.

14.2 General.

14.2.1 Purpose.

14.2.1.1*

The purpose for initial and reacceptance inspections shall be to ensure compliance with approved design documents and to ensure installation in accordance with this Code and other required installation standards.

14.2.1.2*

The purpose for initial and reacceptance tests of fire alarm and signaling systems shall be to ensure system operation in accordance with the design documents.

14.2.1.3*

The purpose for periodic inspections shall be to assure that obvious damages or changes that might affect the system operability are visually identified.

14.2.1.4*

The purpose for periodic testing shall be to statistically assure operational reliability.

14.2.2 Performance.**14.2.2.1 Performance Verification.**

To ensure operational integrity, the system shall have an inspection, testing, and maintenance program.

14.2.2.1.1

Inspection, testing, and maintenance programs shall satisfy the requirements of this Code and conform to the equipment manufacturer's published instructions.

14.2.2.1.2*

Inspection, testing, and maintenance programs shall verify correct operation of the system.

14.2.2.2 Impairments.

Where an automatic function of a fire alarm or signaling system is taken out of service for testing and a manual means or other compensatory measures are unavailable, the system or portion thereof is impaired and shall comply with the requirements of Section 10.21 until the automatic function is restored.

14.2.2.3 Deficiencies.**14.2.2.3.1**

System deficiencies shall be corrected.

14.2.2.3.2

If a deficiency is not corrected at the conclusion of system inspection, testing, or maintenance, the system owner or the owner's designated representative shall be informed of the deficiency in writing within 24 hours.

14.2.2.3.3

In the event that any equipment is observed to be part of a recall program, the system owner or the system owner's designated representative shall be notified in writing.

14.2.2.4 Observations.**14.2.2.4.1**

If observations are noted, they shall be permitted to be communicated to the system owner.

14.2.2.4.2

The system owner shall not be required to address such observations unless the observations become an impairment or deficiency.

14.2.3 Responsibilities.**14.2.3.1***

The property or building or system owner or the owner's designated representative shall be responsible for inspection, testing, and maintenance of the system and for alterations or additions to this system.

14.2.3.2

Where the property owner is not the occupant, the property owner shall be permitted to delegate the authority and responsibility for inspecting, testing, and maintaining the fire protection systems to the occupant, management firm, or managing individual through specific provisions in the lease, written use agreement, or management contract.

14.2.3.3

Inspection, testing, or maintenance shall be permitted to be done by the building or system owner or a person or organization other than the building or system owner if conducted under a written contract.

14.2.3.4

Where the building or system owner has delegated any responsibilities for inspection, testing, or maintenance, a copy of the written delegation required by 14.2.3.3 shall be provided to the authority having jurisdiction upon request.

14.2.3.5

Testing and maintenance of central station service systems shall be performed under the contractual arrangements specified in 26.3.3.

14.2.3.6* Service Personnel Qualifications and Experience.

Service personnel shall be qualified and experienced in accordance with the requirements of 10.5.3.

14.2.4* Notification.**14.2.4.1**

Before proceeding with any testing, all persons and facilities receiving alarm, supervisory, or trouble signals and all building occupants shall be notified of the testing to prevent unnecessary response.

14.2.4.2

At the conclusion of testing, those previously notified (and others, as necessary) shall be notified that testing has been concluded.

14.2.4.3

The owner or the owner's designated representative and service personnel shall coordinate system testing to prevent interruption of critical building systems or equipment.

14.2.5 System Documentation.

Prior to system maintenance or testing, the record of completion and any information required by Chapter 7 regarding the system and system alterations, including specifications, wiring diagrams, and floor plans, shall be provided by the owner or a designated representative to the service personnel upon request.

14.2.5.1

The provided documentation shall include the current revisions of all fire alarm software and the revisions of software of any systems with which the fire alarm software interfaces.

14.2.5.2

The revisions of fire alarm software, and the revisions of the software in the systems with which the fire alarm software interfaces, shall be verified for compatibility in accordance with the requirements of 23.2.2.1.1.

14.2.6 Releasing Systems.

Requirements pertinent to testing the fire alarm systems initiating fire suppression system releasing functions shall be covered by 14.2.6.1 through 14.2.6.6.

14.2.6.1

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

14.2.6.2

Occupant notification shall be required whenever a fire alarm system configured for releasing service is being serviced or tested.

14.2.6.3

Discharge testing of suppression systems shall not be required by this Code.

14.2.6.4

Suppression systems shall be secured from inadvertent actuation, including disconnection of releasing solenoids or electric actuators, closing of valves, other actions, or combinations thereof, for the specific system, for the duration of the fire alarm system testing.

14.2.6.5

Testing shall include verification that the releasing circuits and components energized or actuated by the fire alarm system are electrically monitored for integrity and operate as intended on alarm.

14.2.6.6

Suppression systems and releasing components shall be returned to their functional operating condition upon completion of system testing.

14.2.7 Interface Equipment and Emergency Control Functions.**14.2.7.1***

Testing personnel shall be qualified and experienced in the arrangement and operation of interface equipment and emergency control functions.

14.2.7.2

Testing shall be accomplished in accordance with Table 14.4.3.2.

14.2.8 Automated Testing.**14.2.8.1**

Automated testing arrangements that provide equivalent means of testing devices to those specified in Table 14.4.3.2 at a frequency at least equivalent to those specified in Table 14.4.3.2 shall be permitted to be used to comply with the requirements of this chapter.

14.2.8.2

Failure of a device on an automated test shall result in an audible and visual trouble signal.

14.2.9* Performance-Based Inspection and Testing.

As an alternate means of compliance, subject to the authority having jurisdiction, components and systems shall be permitted to be inspected and tested under a performance-based program.

14.2.10* Test Plan.**14.2.10.1**

A test plan shall be developed to clearly establish the scope of the testing for the fire alarm or signaling system.

14.2.10.2

The test plan and results shall be documented with the testing records.

14.3 Inspection.

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the authority having jurisdiction or with the schedules provided in Table 14.3.1, whichever is more frequent.

Table 14.3.1 Visual Inspection

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>
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	-	-	-	-
- (a) Fuses	-	X	Weekly	-

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>
(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 transmitter		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 marked in the month/year

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>
-	(b) Marking	N/A	Semiannual	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. 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. 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. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months from the installed date. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if
-	(2) Primary (dry cell) batteries other than those used in low-power radio (wireless) systems in accordance with Chapter 23	X	Semiannual	-
-		-	-	-

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>
10. Reserved	-	-	-	corrosion or leakage is observed.
11. Remote annunciators	X	Semiannual	Verify location and condition.	-
12. Notification appliance circuit (NAC) 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

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>
-	(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 to sample the airstream at the proper location in the duct. Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.
-	(b) Sampling tube	X	Annual	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
-	(9) Smoke detectors	X	Semiannual	-

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>
(excluding one- and two-family dwellings)				
- (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 interfaces and emergency control function interfaces	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 fire alarm control unit-controlled (FACU-controlled) candela rating agrees with the
				18.5.5

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>
				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 (MNS)	-	-	-	-
- (1) Monitored for integrity		-	-	-
- (a) Control equipment		-	-	-
- (i) Fuses		X	Annual	-
(ii) Interfaces	X	Annual	-	-

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>	
-	(iii) Lamps and LEDs	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 and LEDs	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.	-	-

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.

14.3.2*

Devices or equipment that is inaccessible for safety considerations (e.g., continuous process operations, energized electrical equipment, radiation, and excessive height) shall be permitted to be inspected during scheduled shutdowns if approved by the authority having jurisdiction.

14.3.3

Extended intervals shall not exceed 18 months.

14.3.4

Initial and reacceptance inspections shall be made to ensure compliance with approved design documents and to ensure installation in accordance with this Code and other required installation standards.

14.3.5

Periodic visual inspections in accordance with Table 14.3.1 shall be made to assure that there are no changes that affect equipment performance.

14.4 Testing.**14.4.1 Initial Acceptance Testing.****14.4.1.1**

All new systems shall be inspected and tested in accordance with the requirements of Chapter 14.

14.4.1.2

The authority having jurisdiction shall be notified prior to the initial acceptance test.

14.4.2* Reacceptance Testing.**14.4.2.1**

When an initiating device, notification appliance, or control relay is added, it shall be functionally tested.

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 functionally tested.

14.4.2.3*

When control unit hardware is modified or repaired, the control unit shall be tested in accordance with items 2(1) and 2(4) of Table 14.4.3.2.

14.4.2.4

When site-specific software is changed, the following shall apply:

- (1) All functions known to be affected by the change, or identified by a means that indicates changes, shall be 100 percent tested.
- (2) Ten percent of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, shall be tested to verify correct system operation.
- (3) A revised record of completion in accordance with 7.5.6 shall be prepared to reflect the change.

14.4.2.5

Changes to the system executive software shall require a 10 percent functional test of the system, including a test of at least one device on each input and output circuit to verify critical system functions such as notification appliances, control functions, and off-premises reporting.

14.4.2.6

Where changes are made to system executive software or site-specific software for control equipment or transmitting equipment from a remote location not on the protected premises, such changes shall not be made without an individual, meeting the qualifications of 10.5.3.2, 10.5.3.3, or 10.5.3.5, being at the protected premises to verify that testing is accomplished in accordance with 14.4.2.

14.4.3* Test Methods.**14.4.3.1***

At the request of the authority having jurisdiction, the central station facility installation shall be inspected for complete information regarding the central station system, including specifications, wiring diagrams, and floor plans that have been submitted for approval prior to installation of equipment and wiring.

14.4.3.2*

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

Table 14.4.3.2 Testing

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
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.

-		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
					Reconnect all secondary (standby) power at end of test. Test 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. 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.	
-	(2) Disconnect switches	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.	
-	(3) Ground-fault monitoring circuit	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.	
-	(4) Transmission of signals to off-premises location	X	Annually		
					-
					-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
4.	Supervising station alarm systems — transmission equipment	-	-	-
-	(1) All equipment	X	Annually	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. ^a
			-	-

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of <i>NFPA 72</i> 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.

:	<u>Component</u>	<u>Initial</u> <u>Acceptance</u>	<u>Periodic</u> <u>Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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. Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.
-	(4) McCulloh transmitter	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			-	-
			(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-	X	Annually	Perform tests to ensure the

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	based technologies			monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, test secondary (standby) power sources in accordance with item 7, 8, or 9, as applicable.
		-	-	-
-		-	-	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
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	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				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 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 for 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 conducting any battery testing, verify by the per

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				conducting test that a system software stored in volatile memory is protected 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	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. If the charger is adjustable, adjust the output voltage to 2.265 volts, ±0.015 volts, per cell at 77°F (25°C)

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Cell/Unit voltage test	X	Semiannually	or as specified by the alarm equipment manufacturer. 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. 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.
-	(4) Ohmic test ^e	X	N/A	- Semiannually

		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-					
-	(5) Replacement/Load test ^f		-	Every 3 years	Replace the battery or conduct a test of the battery capacity. Load test the battery, based on the manufacturer's specification for a discharge rate of 3 hours or more, by applying the current indicated for the selected hourly discharge continuously until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity.

-	Component	Initial Acceptance	Periodic Frequency	Method
				including adjustmen ambient temperatu Replace th battery if capacity is less than 6 equal to 8 percent or the next scheduled interval if battery capacity is less than 6 percent.
Public emergency 10. alarm reporting system — wired system	X	Daily	Manually test the power supply for public reporting circuits and document the tests at least once during each 24-hour period. Test the following:	
			-	-
			-	-
			-	-

	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-				
-				

:		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				-	-
				-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciators under a fault condition.	
12.	Reserved	-	-	-	
13.	Reserved	-	-	-	
14.	Wireless communications	X	Annually	Test in accordance with 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	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. Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground in accordance with 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 in accordance with 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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	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. For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the FACU. 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 period testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.

:		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
16.	Nonmetallic pathways	-	-	-	Test the transmission characteristics of optical fibers with an optical power meter or with an optical time domain reflectometer used to measure the relative power loss of the line.
-	(1) Optical fiber cables	X	N/A	Test result data must meet or exceed ANSI/TIA 568.3, <i>Optical Fiber Cabling and Components Standard</i> , 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 FACU. 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 period testing, te

		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
					each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication of the control unit. Configure all circuits to perform as indicated in Sections 23.6, and 23.7.
17.	Initiating devices ^h	-	-	-	
-	(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 ⁱ	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 FACU.
-	(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,	X	Annually (see 14.4.4.5)		Perform heat test with a listed and labeled heat source or in accordance with

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	spot type (excluding pneumatic tube type)			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. Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(b) Fixed- temperature, nonrestorable line type	X	Annually	After 15 years from initial installation, replace all devices or have 2 per every 100 detectors 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.
-	(c) Fixed- temperature, nonrestorable spot type	X	See Method column	
-				

-		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				-	-
-	-	-	-	-	
-		(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 the manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-		(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes in accordance with 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

:	Component	Initial	Periodic	Method
		Acceptance	Frequency	
				published instructions to determine that each detector is operative.
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(7) Smoke detectors — functional test	-	-	Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. ¹ 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, or into the sensing chamber can be used. Magnets are not acceptable for smoke entry tests.
-	(a) In other than one- and two-family dwellings, system detectors	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Conduct functional tests according to the manufacturer's
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(d) Air sampling	X	Annually	published instructions. 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. In addition to the testing required in item (17)(7)(a) and item (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.
-	(e) Duct type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(f) Projected beam type	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(g) Smoke detector with built- in thermal element	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the
-	(h) Smoke detectors with control output functions	X	Annually	

		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	-	-	-	-	same initiating device circuit or signaling line circuit are in an alarm state.
-	-	(8) Smoke detectors in other than one- and two-family dwellings, system detectors — sensitivity testing	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. ^k
				-	-
				-	-
				-	-
				-	-
				-	-
				-	-
				-	-
-	-	(9) Carbon monoxide (CO) detectors/CO 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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions. In accordance with 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	Semiannually	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	within one-fifth of the travel distance, or in accordance with 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. 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 the 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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	design documents. 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 restoration 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	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

54/151

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-		-	-	
-		-	-	-
-		-	-	
18.	Special hazard equipment	-	-	
-	(1) Abort switch (dead-man type)	X	Annually	Activate suppression system initiating device. Operate and hold the abort switch. Verify that suppression system actuators remain de-energized after completion of discharge countdown. Release abort switch and verify that actuators energize.
-	(2) Abort switch (recycle type)	X	Annually	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	verify that actuators energize. Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as- built drawings.
-	(4) Cross-zone detection circuit	X	Annually	Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the 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 ^m	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	X	Annually	Test communication

		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-		electronic monitoring device/system			between the device connecting the fire extinguisher electronic monitoring device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable. Test communication between the device connecting the CO
-		(2) CO device/system	X	Annually	device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.
20. Interface equipment ⁿ		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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
Alarm 22. notification appliances	-	-	-	
-	(1) Audible ^o	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/ASA S1.4/Part 1, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure sound pressure levels to determine if they comply with Chapter 18 and the required performance, as documented in accordance with 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, <i>Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)</i> , using the time-weighted characteristic F (FAST).
	-	-	N/A	Annually
-	(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 level

For period testing, verify the operation of the notification appliances

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	to convey voice messages)			meter meeting ANSI/ASA S1.4/Part 1, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they comply with Chapter 18 and the required performance, as documented in accordance with 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, <i>Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)</i> , using the time-weighted characteristic F (FAST).
		-	-	-
	-	-	N/A	Annually
				For period testing, verify the operation of the notification appliances
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be in accordance with

:	Component	Initial Acceptance	Periodic Frequency	Method
				the 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 period testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with the manufacturer's published instructions.
24.	Emergency control functions ^q	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

:		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
					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.
				-	-
				-	-
				-	-
				-	-

		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			-	-	-
			-	-	-
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.	
			-	-	-
			-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-
Supervising station alarm 27. 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.
		-	-	-
		-	-	-

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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:
			-	-
			-	-
			-	-
			-	-

[illegible]

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-
		-	-	-
-	(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:
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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 <i>NFPA 72</i>). Restore the communication path. Where multiple communication paths are used, disconnect all communication paths and confirm that failure of the paths is annunciated at the supervising station within 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of <i>NFPA 72</i>). Restore all communication paths.

	:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
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:	

:	<u>Component</u>	<u>Initial</u>	<u>Periodic</u>	<u>Method</u>
		<u>Acceptance</u>	<u>Frequency</u>	
		-	-	-
		-	-	-
		-	-	-
		-	-	-

	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-				
-				

	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	-	-	-	-
Mass notification system (MNS)	-	-	-	-
-	(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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(4) Lamps and LEDs	X	Annually	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. 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/ASA S1.4/Part 1, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, <i>Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation</i>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				<i>Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.</i>
			-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be in accordance with the approved layout and confirm that no floor plan changes affect the approved layout. Verify that 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.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(16) Transceivers	X	Annually	electrical connections with no observable corrosion. Verify proper operation and mounting is not compromised.

N/A: Not applicable, no minimum requirement established.

^aSome transmission equipment (e.g., cable modems, fiber-optic interface nodes, 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 items 7 through 9 for secondary (standby) power supply testing.

^bThe automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

^cSee item 4(1) for the testing of transmission equipment. A control unit's charger/power supply that is listed for the purpose of verifying secondary power demand is permitted to be approved for equivalency with this section.

^dThe battery tests in item 9 are based on VRLA batteries and it is intended that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with 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.

^eSee item 9(4).

^fSee item 9(5).

^gThe 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.

^hInitiating 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 (see 9.6.6 of *NFPA 101*) to initiate supervisory signals at the FACU should be tested at the same frequency (annually) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

ⁱFusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the FACU. They are actuated by the presence of external heat, causing 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.

^jIt 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.

^kThere are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

^lFor example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

^mManufacturer'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 14.2.10.

ⁿA 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 FACU, it is not necessary to test for phase reversal four times a year.

^oChapter 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.

^pWhere 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 in accordance with the initial acceptance testing criteria.

^qSee A.14.4.3.2 and item 24.

14.4.3.3

Video image smoke and flame detectors shall be inspected, tested, and maintained in accordance with the manufacturer's published instructions.

14.4.3.4

Thermal image fire detectors shall be inspected, tested, and maintained in accordance with the manufacturer's published instructions.

14.4.3.5

Gas detectors shall be inspected, tested, and maintained in accordance with manufacturers' published instructions.

14.4.3.6 Testing of Carbon Monoxide System Detectors.

For all carbon monoxide system detectors carbon monoxide tests shall be performed at initial acceptance and annually by the introduction of carbon monoxide into the sensing chamber or element.

14.4.4* Testing Frequency.

Unless otherwise permitted by other sections of this Code, testing shall be performed in accordance with the authority having jurisdiction or with the schedules provided in Table 14.4.3.2, whichever is more frequent.

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 and if the extended intervals do not exceed 18 months.

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 in accordance with Table 14.4.3.2.

14.4.4.3*

In other than one- and two-family dwellings, sensitivity of smoke detectors shall be tested in accordance with 14.4.4.3.1 through 14.4.4.3.6.

14.4.4.3.1

Sensitivity shall be checked within 1 year after installation.

14.4.4.3.2

Sensitivity shall be checked every alternate year thereafter unless otherwise permitted by compliance with 14.4.4.3.3.

14.4.4.3.3

After the second required calibration test, if sensitivity tests indicate that the device has remained within its listed and marked sensitivity range, the length of time between calibration tests shall be permitted to be extended to a maximum of 5 years.

14.4.4.3.3.1

If the frequency is extended, records of nuisance alarms and subsequent trends of these alarms shall be maintained.

14.4.4.3.3.2

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

14.4.4.3.4

Unless otherwise permitted by 14.4.4.3.5, smoke detectors found to have a sensitivity outside the listed and marked sensitivity range shall be cleaned and recalibrated or be replaced.

14.4.4.3.5

Smoke detectors listed as field adjustable shall be permitted to either be adjusted within the listed and marked sensitivity range, cleaned, and recalibrated, or be replaced.

14.4.4.3.6

The detector sensitivity shall not be tested or measured using any device that administers an unmeasured concentration of smoke or other aerosol into the detector or smoke alarm.

14.4.4.4

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

14.4.4.5

Restorable fixed-temperature, spot-type heat detectors shall be tested in accordance with 14.4.4.5.1 through 14.4.4.5.4.

14.4.4.5.1

Two or more detectors shall be tested on each initiating circuit annually.

14.4.4.5.2

Different detectors shall be tested each year.

14.4.4.5.3

Test records shall be kept by the building owner specifying which detectors have been tested.

14.4.4.5.4

Within 5 years, each detector shall have been tested.

14.4.4.6

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.

14.4.4.7*

Circuit and pathway testing of each monitored circuit or pathway shall be conducted with initial acceptance or reacceptance testing to verify signals are indicated at the control unit for each of the abnormal conditions specified in Sections 23.5 through 23.7.

14.4.4.8

Unless otherwise permitted by 14.4.4.9, the retransmission means as defined in Section 26.3 shall be tested at intervals of not more than 12 hours.

14.4.4.9

When the retransmission means is the public-switched telephone network, testing shall be permitted at weekly intervals to confirm its operation to each communications center.

14.4.4.10

As a part of the testing required in 14.4.4.8, the retransmission signal and the time and date of the retransmission shall be recorded in the central station.

14.4.5 Single- and Multiple-Station Alarms. (SIG-HOU)**14.4.5.1**

Single- and multiple-station alarms and connected appliances shall be inspected, tested, and maintained in accordance with Table 14.3.1, Table 14.4.3.2, and the manufacturer's published instructions.

14.4.5.2

Alarms and connected appliances shall be inspected and tested at least monthly.

14.4.5.3*

The responsibility for inspection, testing, and maintenance of smoke alarms and connected appliances shall be in accordance with 14.2.3.

14.4.5.4*

Notwithstanding other requirements of 14.2.3, the occupant of a dwelling unit shall be deemed qualified to perform inspection, testing, and maintenance on single- and multiple-station alarms protecting that dwelling unit when provided with information from the manufacturer or a manufacturer's certified representative.

14.4.5.5

Alarms and connected appliances shall be replaced when they fail to respond to operability tests.

14.4.5.6

Smoke alarms shall not remain in service longer than 10 years from the date of manufacture, unless otherwise provided by the manufacturer's published instructions.

14.4.5.7

Carbon monoxide alarms shall be replaced when either the end-of-life signal is actuated or the manufacturer's replacement date is reached.

14.4.5.8

Combination smoke/carbon monoxide alarms shall be replaced when the end-of-life signal actuates or 10 years from the date of manufacture, whichever comes first, unless otherwise provided by the manufacturer's published instructions.

14.4.5.9

Where batteries are used as a source of energy for alarms, the batteries shall be replaced in accordance with the alarm equipment manufacturer's published instructions.

14.4.6 Household Fire Alarm Systems. (SIG-HOU)

14.4.6.1

Household alarm systems shall be inspected, tested, and maintained at least annually according to Table 14.3.1, Table 14.4.3.2, and the manufacturer's published instructions.

14.4.6.2

The responsibility for inspection, testing, and maintenance of smoke alarms and connected appliances shall be in accordance with 14.2.3.

14.4.6.3*

Notwithstanding other requirements of 14.2.3, the occupant of a dwelling unit shall be deemed qualified to perform inspection, testing, and maintenance on a household alarm system protecting that dwelling unit when provided with information and/or training from the manufacturer or a manufacturer's certified representative.

14.4.6.4

The installing contractor shall be required to provide the information in 14.4.6.3 in writing to the customer upon completion of the system installation.

14.4.6.5

Carbon monoxide detectors shall be replaced when the end-of-life signal is actuated, the manufacturer's replacement date is reached, or when they fail to respond to operability tests.

14.4.6.6

Maintenance of household alarm systems shall be conducted according to the manufacturer's published instructions.

14.4.7 Circuits from Central Station. (SIG-SSS)

Circuits extending from the central station that have had no signal activity in the preceding 24 hours shall be tested at intervals of not more than 24 hours.

14.4.8 Household Carbon Monoxide Detection Systems. (SIG-HOU)**14.4.8.1 Testing of Household Carbon Monoxide Detection Systems.****14.4.8.1.1**

Household carbon monoxide detection systems shall be tested by a qualified service technician at least every 3 years according to the methods in line 1 of Table 14.4.3.2.

14.4.8.1.2

Household carbon monoxide detection systems shall be tested in accordance with the manufacturer's published instructions.

14.4.8.1.3*

Notwithstanding other requirements of 14.2.3.6, the occupant of a dwelling unit shall be deemed qualified to perform inspection, testing, and maintenance on an alarm system protecting that dwelling unit when provided with information and training from the manufacturer or a manufacturer's certified representative.

14.4.9 Public Emergency Alarm Reporting Systems. (SIG-PRS)**14.4.9.1**

Emergency power sources other than batteries shall be tested at least weekly in accordance with 14.4.9.1.1 and 14.4.9.1.2.

14.4.9.1.1

Testing shall include operation of the power source to supply the system for a continuous period of 1 hour.

14.4.9.1.2

Testing shall require simulated failure of the normal power source.

14.4.9.2

Unless otherwise permitted by 14.4.9.3, testing facilities shall be installed at the communications center and each subsidiary communications center, if used.

14.4.9.3

Testing facilities for systems leased from a nonmunicipal organization shall be permitted to be installed at locations other than the communications center if approved by the authority having jurisdiction.

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 1225.

14.4.11 Emergency Communications Systems (ECSs) Ancillary Functions. (SIG-ECS)

Ancillary functions of emergency communications systems (ECSs) shall be inspected and tested annually to verify they will not impair operation of the fire alarm system or the mass notification system.

14.4.12* Voice Intelligibility.**14.4.12.1**

Voice communication using prerecorded messages and manual voice announcements shall be verified as being intelligible in accordance with the requirements of 18.4.11.

14.4.12.2

Intelligibility shall not be required to be determined through quantitative measurements.

14.4.12.3

Quantitative measurements as described in Annex D shall be permitted.

14.5 Maintenance.**14.5.1**

System equipment shall be maintained in accordance with the manufacturer's published instructions.

14.5.2

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

14.5.3

The frequency of cleaning of system equipment shall depend on the type of equipment and the local ambient conditions.

14.5.4

All apparatus requiring rewinding or resetting to maintain normal operation shall be rewound or reset as promptly as possible after each test and alarm.

14.6 Records.**14.6.1* Permanent Records.**

After successful completion of acceptance tests approved by the authority having jurisdiction, the requirements in 14.6.1.1 through 14.6.1.3 shall apply.

14.6.1.1*

A set of reproducible as-built installation drawings, operation and maintenance manuals, and a written sequence of operation shall be provided to the building owner or the owner's designated representative.

14.6.1.2*

The requirements of 7.5.7 shall apply to site-specific software.

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.

14.6.2 Maintenance, Inspection, and Testing Records.**14.6.2.1**

The system owner shall be responsible for retaining maintenance, inspection, and testing records until the next test and for 1 year thereafter.

14.6.2.2

For systems with restorable fixed-temperature, spot-type heat detectors tested over multiple years, records shall be retained for the 5 years of testing and for 1 year thereafter.

14.6.2.3

The records shall be on a medium that will survive the retention period.

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.

14.6.3 Supervising Station Records.

For supervising station alarm systems, records pertaining to signals received at the supervising station that result from maintenance, inspection, and testing shall be maintained for not less than 12 months.

14.6.3.1

Records shall be permitted to be maintained on either paper or electronic media.

14.6.3.2

Upon request, a hard copy record shall be provided to the authority having jurisdiction.

14.6.4 Simulated Operation Note.

If the operation of a device, circuit, fire alarm control unit function, or special hazard system interface is simulated, it shall be noted on the inspection/test form that the operation was simulated.

Statement of Problem and Substantiation for Public Comment

This would reduce the cost of operating and still maintain safe facilities.

Related Item

- NFPA 72

Submitter Information Verification

Submitter Full Name: Paul Hayes

Organization: Mount Saint Francis

Affiliation: Mount Saint Francis

Street Address:

City:

State:

Zip:

Submittal Date: Thu May 25 11:56:58 EDT 2023

Committee: SIG-TMS

Committee Statement

Committee Action: Rejected

Resolution: The visual inspection and testing requirements of Chapter 14 apply to all fire alarm systems. There is no data to support not requiring certain fire alarm systems from these requirements. The supervision of the equipment does not supersede the periodic inspection of the equipment.



Public Comment No. 200-NFPA 72-2023 [New Section after 14.1.5]

TITLE OF NEW CONTENT

New Section

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 Comment

The term "Observation" was added in the 2022 edition of NFPA 72. The Automatic Fire Alarm Association is in favor of ITM technicians being able to point out possible improvements to the fire alarm or signaling system, even if these items are not impairments or deficiencies. However, we feel additional clarifications are needed in order to reduce the liability of ITM companies who have ITM technicians servicing systems and making good faith observations that the owner may want to consider. It needs to be clear that an observation made about one part of a system, or the protected premise, does not mean that the ITM technician has done a complete review of the entire system and the building and that the observation, or observations cover all possible hazards. ITM technicians are not design professionals or trained fire protection engineers and their opinions on possible improvements to the fire life safety of a premise should not be considered to be a complete or thorough review of all of the hazards or code requirements that may come into play. In my previous public inputs, We refer to this type of system and premise review as a "Design Review" which was proposed to be defined as "A review of an installed system by a qualified design professional for compliance to the original or current installation codes and standards." (Public Input 342)

As the code now is written, ITM companies will discourage ITM technicians from making any observations, as these may be considered to be part of a "Design Review", which could open the ITM company up to litigation. For example, if an ITM technician noticed that a building owner was storing flammable chemicals in a closet that did not have a smoke detector, in good faith, the technician could make the observation to the building owner that they might want to consider adding a smoke detector to that closet. So the owner adds a smoke detector to that closet. But, sometime down the road, there is a fire in a different closet that does not have a smoke detector in it, in a completely different area of the building that also had some chemicals in it, that the ITM technician never entered. It is not hard to imagine a building owner initiating litigation against the ITM company because the technician did not tell them about the other closet and it not having a smoke detector, even though the ITM technician was never in that room. ITM companies will simply tell their ITM technicians to not make any observations.

Mr. Jason Dupuis submitted public inputs 340, 341, and 342 which were intended to help address this concern. PI 340 was identical to this public comment, looking to amend the definition of "Observation". PI 341 looked to add a definition for "Design Review" as mentioned above. PI 342 looked to add section 14.1.6 which would

state
 that "This chapter does not require inspection, test, or maintenance personnel to verify the adequacy of the design of existing previously approved systems." This language was borrowed from NFPA 25 - section 1.1.3.1. We are resubmitting these three Public Inputs as Public Comments and hope that the technical committee will reconsider them.

Mr. Warren Olsen also submitted Public Input 204 which also looked to address this issue. We urge the technical committee to review Mr. Olsen's PI, and presumably his public comments which we believe he is submitting. We urge the committee to reconsider their initial position and add some language that will allow ITM technicians to make good faith life safety observations to building owners that will not at the same time open up the ITM companies to litigation.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 201-NFPA 72-2023 [New Section after 3.3.75]	Group with Public Input 200, 202
Public Comment No. 202-NFPA 72-2023 [Section No. 3.3.196]	Group with Public Input 200, 201
Public Comment No. 201-NFPA 72-2023 [New Section after 3.3.75]	
Public Comment No. 202-NFPA 72-2023 [Section No. 3.3.196]	

Related Item

- PI 340, 341, 342

Submitter Information Verification

Submitter Full Name: Shane Clary
Organization: Bay Alarm Company
Affiliation: Automatic Fire Alarm Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 30 23:31:54 EDT 2023
Committee: SIG-TMS

Committee Statement

Committee Action: Rejected but see related SR
Resolution: [SR-5044-NFPA 72-2023](#)
Statement: This revision clarifies that it is not the responsibility of the inspection, testing, and maintenance personnel to verify the design of existing approved systems during periodic inspection, testing, and maintenance.



Public Comment No. 40-NFPA 72-2023 [New Section after 14.1.5]

New Section

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 Comment

The term "Observation" was added in the 2022 edition of NFPA 72. I am in favor of ITM technicians being able to point out possible improvements to the fire alarm or signaling system, even if these items are not impairments or deficiencies. However, I feel additional clarifications are needed in order to reduce the liability of ITM companies who have ITM technicians servicing systems and making good faith observations that the owner may want to consider. It needs to be clear that an observation made about one part of a system, or the protected premise, does not mean that the ITM technician has done a complete review of the entire system and the building and that the observation, or observations cover all possible hazards. ITM technicians are not design professionals or trained fire protection engineers and their opinions on possible improvements to the fire life safety of a premise should not be considered to be a complete or thorough review of all of the hazards or code requirements that may come into play. In my previous public inputs, I refer to this type of system and premise review as a "Design Review" which I proposed be defined as "A review of an installed system by a qualified design professional for compliance to the original or current installation codes and standards." (Public Input 342).

As the code now is written, ITM companies will discourage ITM technicians from making any observations, as these may be considered to be part of a "Design Review", which could open the ITM company up to litigation. For example, if an ITM technician noticed that a building owner was storing flammable chemicals in a closet that did not have a smoke detector, in good faith, the technician could make the observation to the building owner that they might want to consider adding a smoke detector to that closet. So the owner adds a smoke detector to that closet. But, sometime down the road, there is a fire in a different closet that does not have a smoke detector in it, in a completely different area of the building that also had some chemicals in it, that the ITM technician never entered. It is not hard to imagine a building owner initiating litigation against the ITM company because the technician did not tell them about the other closet and it not having a smoke detector, even though the ITM technician was never in that room. ITM companies will simply tell their ITM technicians to not make any observations.

I submitted public inputs 340, 341, and 342 which were intended to help address this concern. PI 340 was identical to this public comment, looking to amend the definition of "Observation". PI 341 looked to add a definition for "Design Review" as mentioned above. PI 342 looked to add section 14.1.6 which would state that "This chapter does not require inspection, test, or maintenance personnel to verify the adequacy of the design of existing previously approved systems." This language was borrowed from NFPA 25 - section 1.1.3.1. I am resubmitting these three Public Inputs as Public Comments and hope that the technical committee will reconsider them.

Warren Olsen also submitted Public Input 204 which also looked to address this issue. I urge the technical committee to review Warren's PI, and presumably his public comments which I believe he is submitting. I urge the committee to reconsider their initial position and add some language that will allow ITM technicians to make good faith life safety observations to building owners that will not at the same time open up the ITM companies to litigation.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 38-NFPA 72-2023 [Section No. 3.3.196]	Group with public comments 38, 39, and 40

[Public Comment No. 39-NFPA 72-2023 \[New Section after 3.3.75\]](#)

Group with public comments 38, 39, and 40

[Public Comment No. 38-NFPA 72-2023 \[Section No. 3.3.196\]](#)

[Public Comment No. 39-NFPA 72-2023 \[New Section after 3.3.75\]](#)

Related Item

- Public Inputs 340, 341, and 342 • Public Comments 38 and 39

Submitter Information Verification

Submitter Full Name: Jason Dupuis

Organization: Cintas Fire Protection

Street Address:

City:

State:

Zip:

Submittal Date: Wed Apr 26 17:07:19 EDT 2023

Committee: SIG-TMS

Committee Statement

Committee Action: Rejected but see related SR

Resolution: [SR-5044-NFPA 72-2023](#)

Statement: This revision clarifies that it is not the responsibility of the inspection, testing, and maintenance personnel to verify the design of existing approved systems during periodic inspection, testing, and maintenance.

**Public Comment No. 124-NFPA 72-2023 [New Section after 14.2.10.1]****14.2.10.2***

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

A.14.2.10.2

Although some specific 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 verify 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 Comment

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.

The Committee resolved the Public Input saying that Paragraphs 14.3.2 and 14.3.4.1 already address the issue. Unfortunately, that is not accurate. Paragraph 14.3.2 allows for a similar modification but it is really more directed towards industrial facilities. The paragraph refers to scheduled shutdowns. Facilities, such as health care facilities, that were impacted by COVID 19 will not have a scheduled shutdown period. The reference to Paragraph 14.3.4.1 most likely was intended to refer to 14.4.4.1, which again refers to shutdown periods. The proposed language is more restrictive than the two paragraphs referenced in that it limits the revised frequencies to those determined appropriate by a risk analysis. Admittedly, the proposed language is broader than the paragraphs referenced in that it is not limited to industrial type facilities that have a planned shutdown.

Similar language has been included in the 2023 Edition of NFPA 25 (4.9.7.3 and A.4.9.7.3). The Committee is encouraged to reconsider their previous position to address this situation and to provide consistency between NFPA 25 and NFPA 72.

Related Item

- Public Input 569

Submitter Information Verification

Submitter Full Name: William Koffel

Organization: Koffel Associates, Inc.

Street Address:

City:

State:

Zip:
Submittal Date: Thu May 18 21:34:10 EDT 2023
Committee: SIG-TMS

Committee Statement

Committee Action: Rejected
Resolution: Delaying testing due to emergencies can be coordinated between the building owner and the AHJ on a case-by-case basis, the proposed language is not necessary.



Public Comment No. 205-NFPA 72-2023 [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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
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.

:		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
					Reconnect all secondary (standby) power at end of test. Test 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. 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.	
-	(2) Disconnect switches	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.	
-	(3) Ground-fault monitoring circuit	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.	
-	(4) Transmission of signals to off-premises location	X	Annually		
			-	-	-
			-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
4.	Supervising station alarm systems — transmission equipment	-	-	-
-	(1) All equipment	X	Annually	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. ^a
			-	-

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of <i>NFPA 72</i> 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.

:	<u>Component</u>	<u>Initial</u> <u>Acceptance</u>	<u>Periodic</u> <u>Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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. Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.
-	(4) McCulloh transmitter	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			-	-
			(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-	X	Annually	Perform tests to ensure the

	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	based technologies			monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, test secondary (standby) power sources in accordance with item 7, 8, or 9, as applicable.
		-	-	-
-		-	-	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
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	

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				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 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 for 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 conducting any battery testing, verify by the per

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Temperature test	X	Semiannually	conducting test that a system software stored in volatile memory is protected loss. 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	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. If the charger is adjustable, adjust the output voltage to 2.265 volts, ±0.015 volts, per cell at 77°F (25°C)

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Cell/Unit voltage test	X	Semiannually	or as specified by the alarm equipment manufacturer. 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. 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.
-	(4) Ohmic test ^e	X	N/A	- Semiannually

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Replacement/Load test ^f	-	Every 3 years	Replace the battery or conduct a test of the battery capacity. Load test the battery, based on the manufacturer's specification for a discharge rate of 3 hours or more, by applying the current indicated for the selected hourly discharge continuously until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity.

-	Component	Initial Acceptance	Periodic Frequency	Method
				including adjustmen ambient temperatu Replace th battery if capacity is less than 6 equal to 8 percent or the next scheduled interval if battery capacity is less than 6 percent.
Public emergency 10. alarm reporting system — wired system	X	Daily	Manually test the power supply for public reporting circuits and document the tests at least once during each 24-hour period. Test the following:	
			-	-
			-	-
			-	-

	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-				
-				

:		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				-	-
				-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciators under a fault condition.	
12.	Reserved	-	-	-	
13.	Reserved	-	-	-	
14.	Wireless communications	X	Annually	Test in accordance with 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	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. Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground in accordance with 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 in accordance with 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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	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. For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the FACU. 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 period testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.

:		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
16.	Nonmetallic pathways	-	-	-	Test the transmission characteristics of optical fibers with an optical power meter or with an optical time domain reflectometer used to measure the relative power loss of the line.
-	(1) Optical fiber cables	X	N/A	Test result data must meet or exceed ANSI/TIA 568.3, <i>Optical Fiber Cabling and Components Standard</i> , 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 FACU. 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 period testing, te

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				each initial device circuit, notification appliance circuit, and signaling line circuit for correct indication of the control unit. Configure all circuits to perform as indicated in Sections 23.6, and 23.7.
17.	Initiating devices ^h	-	-	-
-	(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 ⁱ	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 FACU.
-	(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,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	spot type (excluding pneumatic tube type)			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. Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(b) Fixed- temperature, nonrestorable line type	X	Annually	After 15 years from initial installation, replace all devices or have 2 per every 100 detectors 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.
-	(c) Fixed- temperature, nonrestorable spot type	X	See Method column	
-				

-		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				-	-
-	-	-	-	-	
-		(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 the manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-		(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes in accordance with 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

:	Component	Initial	Periodic	Method
		Acceptance	Frequency	
				published instructions to determine that each detector is operative.
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(7) Smoke detectors — functional test	-	-	Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. ¹ 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, or into the sensing chamber can be used. Magnets are not acceptable for smoke entry tests.
-	(a) In other than one- and two-family dwellings, system detectors	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Conduct functional tests according to the manufacturer's
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(d) Air sampling	X	Annually	published instructions. 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. In addition to the testing required in item (17)(7)(a) and item (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.
-	(e) Duct type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(f) Projected beam type	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(g) Smoke detector with built- in thermal element	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the
-	(h) Smoke detectors with control output functions	X	Annually	

		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	-	-	-	-	same initiating device circuit or signaling line circuit are in an alarm state.
-	-	(8) Smoke detectors in other than one- and two-family dwellings, system detectors — sensitivity testing	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. ^k
				-	-
				-	-
				-	-
				-	-
				-	-
				-	-
				-	-
-	-	(9) Carbon monoxide (CO) detectors/CO 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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions. In accordance with 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	Semiannually	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	within one-fifth of the travel distance, or in accordance with 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. 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 the <u>dry pipe or preaction</u> 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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	design documents. 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 restoration 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	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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25. (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) independently for the specific detection principle, regardless of the configuration status at the time of testing, or test individual sensors together if the technology allows individual sensor responses to be verified. Where sensors cannot be tested individually, test the primary sensor.¹
-		-	-	-
-		-	-	
			-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-		-	-	
-		-	-	-
-		-	-	
18. Special hazard equipment	-	-	-	
-	(1) Abort switch (dead-man type)	X	Annually	Activate suppression system initiating device. Operate and hold the abort switch. Verify that suppression system actuators remain de-energized after completion of discharge countdown. Release abort switch and verify that actuators energize.
-	(2) Abort switch (recycle type)	X	Annually	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	verify that actuators energize. Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as- built drawings.
-	(4) Cross-zone detection circuit	X	Annually	Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the 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 ^m	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	X	Annually	Test communication

		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-		electronic monitoring device/system			between the device connecting the fire extinguisher electronic monitoring device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable. Test communication between the device connecting the CO
-		(2) CO device/system	X	Annually	device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.
20. Interface equipment ⁿ		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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
Alarm 22. notification appliances	-	-	-	
-	(1) Audible ^o	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/ASA S1.4/Part 1, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure sound pressure levels to determine if they comply with Chapter 18 and the required performance, as documented in accordance with 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, <i>Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)</i> , using the time-weighted characteristic F (FAST).
	-	-	N/A	Annually
-	(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 level

For period testing, verify the operation of the notification appliances

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	to convey voice messages)			meter meeting ANSI/ASA S1.4/Part 1, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they comply with Chapter 18 and the required performance, as documented in accordance with 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, <i>Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)</i> , using the time-weighted characteristic F (FAST).
		-	-	-
	-	-	N/A	Annually
				For period testing, verify the operation of the notification appliances
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be in accordance with

:	Component	Initial Acceptance	Periodic Frequency	Method
				the 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 period testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with the manufacturer's published instructions.
24.	Emergency control functions ^q	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

:		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
					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.
				-	-
				-	-
				-	-
				-	-

		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			-	-	-
			-	-	-
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.	
			-	-	-
			-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-
Supervising station alarm 27. 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.
		-	-	-
		-	-	-

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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:
			-	-
			-	-
			-	-
			-	-

:		<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-				-	-
-		(4) McCulloh system	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:
				-	-
				-	-
				-	-
				-	-
				-	-
				-	-
				-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-
		-	-	-
-	(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:
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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 <i>NFPA 72</i>). Restore the communication path. Where multiple communication paths are used, disconnect all communication paths and confirm that failure of the paths is annunciated at the supervising station within 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of <i>NFPA 72</i>). Restore all communication paths.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
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. 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.
-	(2) Auxiliary box	X	Annually	
-	(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	Periodic	Method
		Acceptance	Frequency	
		-	-	-
		-	-	-
		-	-	-
		-	-	-

	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-				
-				

	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	-	-	-	-
Mass notification system (MNS)	-	-	-	-
-	(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

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(4) Lamps and LEDs	X	Annually	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. 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/ASA S1.4/Part 1, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, <i>Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation</i>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				<i>Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.</i>
			-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be in accordance with the approved layout and confirm that no floor plan changes affect the approved layout. Verify that 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.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(16) Transceivers	X	Annually	electrical connections with no observable corrosion. Verify proper operation and mounting is not compromised.

N/A: Not applicable, no minimum requirement established.

^aSome transmission equipment (e.g., cable modems, fiber-optic interface nodes, 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 items 7 through 9 for secondary (standby) power supply testing.

^bThe automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

^cSee item 4(1) for the testing of transmission equipment. A control unit's charger/power supply that is listed for the purpose of verifying secondary power demand is permitted to be approved for equivalency with this section.

^dThe battery tests in item 9 are based on VRLA batteries and it is intended that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with 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.

^eSee item 9(4).

^fSee item 9(5).

^gThe 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.

^hInitiating 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 (see 9.6.6 of *NFPA 101*) to initiate supervisory signals at the FACU should be tested at the same frequency (annually) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

ⁱFusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the FACU. They are actuated by the presence of external heat, causing 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.

^jIt 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.

^kThere are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

^lFor example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

^mManufacturer'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 14.2.10.

ⁿA 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 FACU, it is not necessary to test for phase reversal four times a year.

^oChapter 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.

^pWhere 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 in accordance with the initial acceptance testing criteria.

^qSee A.14.4.3.2 and item 24.

Statement of Problem and Substantiation for Public Comment

prior to low pressure actuated dry valves 10 psi off normal signal was the norm. Now that low pressure actuated valves are typically installed, 10 psi above or below normal pressure is too large of a range. Some manufacturers suggest a 2-4 psi range and others are 3-5 psi. The air normal pressure is based on the valve manufacturer and the incoming water supply, there is no "normal" air pressure for dry pipe valves and the hi/low air pressure signals must be set according to manufacturer and water pressure. Also adding this language will clarify that the valve manufacture's requirements should be followed and is not dictated by the pressure switch manufacturer.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 204-NFPA 72-2023 [Section No. 17.19.2.2.2(B)]	low air switch testing requirements
Public Comment No. 207-NFPA 72-2023 [New Section after A.14.3.2]	

Related Item

- PI 179

Submitter Information Verification

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Submittal Date: Wed May 31 10:35:36 EDT 2023

Committee: SIG-TMS

Committee Statement

Committee Action: Rejected but see related SR

Resolution: [SR-5051-NFPA 72-2023](#)

Statement: This revision adds clarification for the operation of new technology for low pressure dry pipe and preaction valves regarding the supervisory pressure setting.



Public Comment No. 246-NFPA 72-2023 [New Section after 14.4.10]

14.4.10.2

Emergency responder communication enhancement systems' supervisory signals monitored by a fire alarm system per 24.9.1 shall be tested in accordance with Table 14.4.3.2 Item 20.

Statement of Problem and Substantiation for Public Comment

FR-5368 added a new section 24.9.1 which requires ERCES supervisory signals to be monitored by a building fire alarm system when required by governing laws, codes or standards. When a building fire alarm system is monitoring these supervisory signals, they should be tested. This change makes the testing frequency to be dictated by Table 14.4.3.2 Item 20, which is for Interface Equipment. It states that the supervisory interface is tested at the frequency required by the equipment being supervised, in this case NFPA 1225.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 245-NFPA 72-2023 [Section No. 14.4.10]	Reference, numbering
<u>Related Item</u>	
• FR-5368 • FR-5273 • FR-5342	

Submitter Information Verification

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Committee: SIG-TMS

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-5046-NFPA 72-2023
Statement: Chapter 24 requires ERCES supervisory signals to be monitored by a building fire alarm system when required by governing laws, codes or standards. When a building fire alarm system is monitoring these supervisory signals, they should be tested. This change makes the testing frequency to be dictated by Table 14.4.3.2 Item 20, which is for Interface Equipment. It states that the supervisory interface is tested at the frequency required by the equipment being supervised, in this case NFPA 1225.



Public Comment No. 245-NFPA 72-2023 [Section No. 14.4.10]

14.4.10 In-Building Emergency Radio Communication- Emergency Responder Communication Enhancement Systems. (SIG-ECS)

~~In-building emergency radio communication~~ 14.4.10.1 Emergency responder communication enhancement systems shall be inspected and operationally tested in accordance with the requirements of NFPA 1225.

Statement of Problem and Substantiation for Public Comment

FR-5273 for section 24.9 (SIG-ECS) changed the name of these systems to the new name of Emergency Responder Communication Enhancement Systems (ERCES) rather than the old names shown in Chapter 14 and 24. This change is in line with the changes made with FR-5342 (for PI-262) and Correlating Committee Note No. 32.

Changing this statement to be 14.4.10.1 as a second testing requirement will be added to this ERCES section as 14.4.10.2 with Public Comment No. 246.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 246-NFPA 72-2023 [New Section after 14.4.10]	
<u>Related Item</u>	
• FR-5342 • FR-5273 • Correlating Committee Note No. 32	

Submitter Information Verification

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Submittal Date: Wed May 31 18:19:23 EDT 2023
Committee: SIG-TMS

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-5045-NFPA 72-2023
Statement: This revisions changes the name of Emergency Radio Communication Systems to Emergency Responder Communications Enhancement Systems (ERCES) to match the naming convention from NFPA 1225.



Public Comment No. 28-NFPA 72-2023 [Section No. 14.4.10]

14.4.10 In-Building Emergency- Radio Communication Systems - Responder Communications Enhancement Systems (ERCES). (SIG-ECS TMS)

In-building emergency radio communication systems shall be inspected and operationally tested in accordance with the requirements of NFPA 1225.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_No._32.pdf	NFPA 72 Correlating Note No. 32	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 32 appeared in the First Draft Report on First Revisions No. 5342.

Review the language of section 14.4.10 which was relocated from Chapter 24 into Chapter 14 by SIG ECS. Recommend removing SIG ECS acronym from 14.4.10 and 14.4.11 as these now should belong to SIG TMS. Review the heading and body of 14.4.10 for consistency with NFPA 1225 3.3.66, recommend revising the heading to "In-Building Emergency Responder Communications Enhancement Systems (ERCES)."

Related Item

- FR-5342

Submitter Information Verification

Submitter Full Name: CC on SIG-AAC

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Submittal Date: Tue Apr 11 12:26:01 EDT 2023

Committee: SIG-TMS

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-5045-NFPA 72-2023

Statement: This revisions changes the name of Emergency Radio Communication Systems to Emergency Responder Communications Enhancement Systems (ERCES) to match the naming convention from NFPA 1225.



Public Comment No. 247-NFPA 72-2023 [New Section after 14.4.12.3]

14.4.13 Restricted Audible Mode Operation (RAMO) Notification

Where RAMO notification is used in accordance with 18.4.1.8, annual testing shall include all of the following:

14.4.13.1 The ambient and maximum sound pressure levels shall be recorded annually in the protected space and compared against the RAMO design documentation.

14.4.13.2 RAMO areas shall be reviewed annually to determine if the occupancy has changed.

14.4.14 Maximum Public Mode Audible Levels

Where maximum public mode audible levels is used in accordance with 18.4.1.9, annual testing shall include all of the following:

14.4.14.1 The ambient and maximum sound pressure levels shall be recorded annually in the protected space and compared against the design documentation required by 18.4.1.9.

14.4.14.2 Each area where the public mode sound pressure level has been reduced shall be reviewed annually to determine if the application has changed.

Statement of Problem and Substantiation for Public Comment

FR-5352 added two new sections in Chapter 18 (18.4.1.8 and 18.4.1.9). This FR-5352 included annual testing requirements that should not be located in Chapter 18 but need to be moved to Chapter 14 as new sections. These two new sections have been added using the language provided in FR-5352. Changes made at Second Draft to 18.4.1.8 or 18.4.1.9 should be coordinated with these new requirements in Chapter 14 via the SIG-NAS task group on this topic.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
<u>Public Comment No. 248-NFPA 72-2023 [Section No. 18.4.1.8.8]</u>	
<u>Public Comment No. 249-NFPA 72-2023 [Section No. 18.4.1.9.1.2]</u>	
<u>Public Comment No. 250-NFPA 72-2023 [New Section after 7.3.4.6]</u>	

Related Item

- FR-5352

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Submittal Date: Wed May 31 18:58:50 EDT 2023

Committee: SIG-TMS

Committee Statement

Committee Rejected but see related SR

Action:

Resolution: [SR-5047-NFPA 72-2023](#)

Statement: Annual testing requirements should be located in Chapter 14. These two new sections include testing frequency requirements for RAMO and Maximum Public Mode Audible Levels.



Public Comment No. 207-NFPA 72-2023 [New Section after A.14.3.2]

[A.14.3.2 \(17\)\(10\)\(b\)](#)

[See Annex Section A.19.17.2.2.2](#)

Statement of Problem and Substantiation for Public Comment

prior to low pressure actuated dry valves 10 psi off normal signal was the norm. Now that low pressure actuated valves are typically installed, 10 psi above or below normal pressure is too large of a range. Some manufacturers suggest a 2-4 psi range and others are 3-5 psi. The air normal pressure is based on the valve manufacturer and the incoming water supply, there is no "normal" air pressure for dry pipe valves and the hi/low air pressure signals must be set according to manufacturer and water pressure.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 205-NFPA 72-2023 [Section No. 14.4.3.2]	
<u>Related Item</u>	
• PI 179	

Submitter Information Verification

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Committee: SIG-TMS

Committee Statement

Committee Action: Rejected but see related SR
Resolution: [SR-5051-NFPA 72-2023](#)
Statement: This revision adds clarification for the operation of new technology for low pressure dry pipe and preaction valves regarding the supervisory pressure setting.



Public Comment No. 76-NFPA 72-2023 [Section No. A.14.6.1.1]

A.14.6.1.1

Examples of acceptable methods used to define the required sequence of operations and to document the actual sequence of operations include a logic diagram [see Figure A.14.6.1.1(a)] and an input/output matrix [see Figure A.14.6.1.1(b)]. The required and actual sequence of operation should include all applicable items found in the list in A.7.4.9.

Figure A.14.6.1.1(a) Typical Logic Diagram.

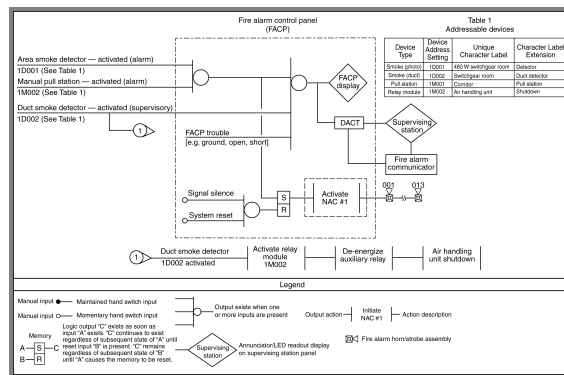
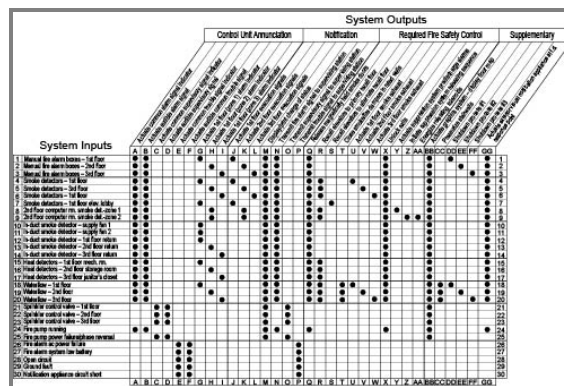


Figure A.14.6.1.1(b) Typical Input/Output Matrix.



Statement of Problem and Substantiation for Public Comment

A.14.6.1.1 is referenced by both A.7.4.9 and A.7.5.5.2 for an example of the sequence of operation matrix. It is critical that the Owner receives a copy of the sequence of operation that is actually programmed into the fire alarm system. As such, a detailed list is included in PC No. 74 for A.7.4.9 and should be referenced in this Annex material so reference is made back to this inclusive list. The "Typical Input/Output Matrix" shown as an example is not all inclusive of everything that should be documented. This is why CI 5362 asked a task group to review the matrix. The inclusive list found in PC No. 74 for A.7.4.9 should be of assistance to the task group.

Related Public Comments for This Document

Related Comment

Public Comment No. 74-NFPA 72-2023 [Section No. A.7.4.9]

Related Item

• PI 577 • CI 5362

Relationship

Dependent

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Submittal Date: Mon May 15 17:48:21 EDT 2023

Committee: SIG-TMS

Committee Statement

Committee Action: Accepted

Resolution: SR-5048-NFPA 72-2023

Statement: A.14.6.1.1 is referenced by both A.7.4.9 and A.7.5.5.2 for an example of the sequence of operation matrix. It is critical that the Owner receives a copy of the sequence of operation that is actually programmed into the fire alarm system. As such, this revision points to a detailed list is in Chapter 7 and should be referenced in this Annex material so reference is made back to this inclusive list. The "Typical Input/Output Matrix" shown as an example is not all inclusive of everything that should be documented.