



NATIONAL FIRE PROTECTION ASSOCIATION

The leading information and knowledge resource on fire, electrical and related hazards

AGENDA

**NFPA Technical Committee on Testing and Maintenance of Fire Alarm and Signaling
Systems (SIG-TMS)
NFPA 72 First Draft Meeting (A2027)**

July 30-31, 2025
8:00 a.m. – 5:00 p.m. (MDT)

Salt Lake City, UT
To join the meeting, please contact jdepew@nfpa.org

1. **Call to order.** David Kerr.
2. **Introductions.** See committee roster attached.
3. **Chair report.** David Kerr.
4. **Staff liaison report.** Stephen Ganoe.
5. **Previous meeting minutes.** July 18-19, 2023, Web/Teleconference. See attached.
6. **NFPA 72 First Draft.**
 - a. **Public Inputs.** See attached.
7. **Other Business.**
8. **Future meetings.**
9. **Adjournment.**

Address List No Phone

06/24/2025

Patrick Bakaj

SIG-TMS

Testing and Maintenance of Fire Alarm and Signaling Systems

Signaling Systems for the Protection of Life and Property

J. David Kerr Chair Melissa Fire Department 87 Greenview Lane Van Alstyne, TX 75495	E 01/01/1990 SIG-TMS	Charles Berra Principal Sprinkler Fitters LU 268 JAC 1544 South 3rd Street St. Louis, MO 63104 United Assn. of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry	L 08/23/2023 SIG-TMS
John CC Biggs Principal Intrepid 6541 Via Del Oro, Suite A1 San Jose, CA 95119 California Automatic Fire Alarm Association Inc. Alternate: Steven Criag Schwartz	IM 12/06/2019 SIG-TMS	Anthony Bloodworth Principal Siemens Industries, Inc. 1000 Deerfield Parkway Buffalo Grove, IL 60089 Alternate: Troy O'Neal	M 04/04/2017 SIG-TMS
Joshua Brackett Principal Banner Health 240 W. Osborn Road Unit 5005 Phoenix, AZ 85013 American Society for Healthcare Engineering	U 8/8/2019 SIG-TMS	Scott D. Carlson Principal Fire Defense Equipment Company, Inc. 3463 Kossuth Court Lake Orion, MI 48360 Alternate: Neal Kelly	IM 8/5/2009 SIG-TMS
Louis Chavez Principal UL LLC 333 Pfingsten Road Northbrook, IL 60062-2096	RT 4/15/2004 SIG-TMS	Franklin Chenoweth Principal Fireline Corporation 4506 Hollins Ferry Road Baltimore, MD 21227-4609 Fire Suppression Systems Association Alternate: Scott Bailey	M 03/03/2014 SIG-TMS
Jack P. Coffelt Principal ServiceTrade/Asurio 5003 South Miami Boulevard Suite 500 Durham, NC 27703 National Fire Sprinkler Association Alternate: Vincent Powers	M 04/14/2021 SIG-TMS	Scott D. Corrin Principal C T Services 3336 Chestnut Street Riverside, CA 92501	SE 12/06/2017 SIG-TMS
Donald Wayne Duplechian Principal Wilson Fire Equipment 7303 Empire Central Drive Houston, TX 77040	IM 04/09/2025 SIG-TMS	Eugene D. Farmer Principal Veterans Affairs - Black Hills Health Care System 113 Comanche Road Fort Meade, SD 57741 US Department of Veterans Affairs Alternate: Franklin True	U 04/09/2025 SIG-TMS

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Testing and Maintenance of Fire Alarm and Signaling Systems Signaling Systems for the Protection of Life and Property

Rick Heffernan Principal SDi 545 River Moorings Drive Merritt Island, FL 32953 National Electrical Manufacturers Association Alternate: Shane Courbier	M 3/15/2007 SIG-TMS	Herbert B. Hurst, Jr. Principal Savannah River Nuclear Solutions, LLC Building 705-3C Aiken, SC 29808	U 7/28/2006 SIG-TMS
Bill Isemann Principal Guardian Fire Protection Services LLC 7668 Standish Place Rockville, MD 20855 National Association of Fire Equipment Distributors Alternate: Paul Akins	IM 3/21/2006 SIG-TMS	E. J. Kleintop Principal Johnson Controls 6330 Hedgewood Drive Suite 250 Allentown, PA 18106-9297	M 08/09/2012 SIG-TMS
Joshua P. McDonald Principal American Fire Sprinkler Association (AFSA) 12750 Merit Drive Suite 350 Dallas, TX 75251 Alternate: Eric Andresen	IM 08/23/2023 SIG-TMS	Grady Medcalf Principal Comcast 125 Summershore Drive Auburndale, FL 33823 Electronic Security Association Alternate: Brian Patrick Kirtley	IM 12/07/2021 SIG-TMS
Daniel Morrin, Jr. Principal NECCO Security Company Inc. 1700 Byberry Road Bensalem, PA 19020 Automatic Fire Alarm Association Alternate: Tammy Mayo	M 12/02/2020 SIG-TMS	James Murphy Principal Vector Security Inc. 23 Casey Avenue Wilkes Barre, PA 18702-7498 The Monitoring Association	IM 3/4/2008 SIG-TMS
Katherine A. Pothier Principal Fisher Engineering, Inc. 10475 Medlock Bridge Road Suite 520 Johns Creek, GA 30097	SE 12/06/2017 SIG-TMS	Christopher Rawson Principal International Brotherhood of Electrical Workers (IBEW) Program Coordinator EJATT 6201 West 115th Street Alsip, IL 60803 International Brotherhood of Electrical Workers	L 12/06/2019 SIG-TMS
Joe Scibetta Principal BuildingReports 1325 Satellite Boulevard Suite 1607 Suwanee, GA 30024-4657	M 8/2/2010 SIG-TMS	Michael J. Slattery Principal AFA Protective Systems, Inc. 200 High Street Boston, MA 02110 Alternate: Matthew Jackson	IM 8/9/2011 SIG-TMS

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Testing and Maintenance of Fire Alarm and Signaling Systems

Signaling Systems for the Protection of Life and Property

Timothy M. Soverino Principal 6 Trotters Lane Nantucket, MA 02554 International Municipal Signal Association	U 1/12/2000 SIG-TMS	Charles K. Stormer Principal US General Services Administration 230 South Dearborn Street Room 3500 Chicago, IL 60604-1578 US General Services Administration Alternate: Je Weon Sung	U 08/11/2014 SIG-TMS
Brad Stroud Principal Texas Instruments Fire Alarm Specialist 3925 Leon Drive Plano, TX 75074	U 12/07/2021 SIG-TMS	Ariana Kistner Voting Alternate City of Rockwall Fire Department 385 South Goliad Rockwall, TX 75087 NFPA Fire and Emergency Services (FES)	E 07/29/2013 SIG-TMS
Paul Akins Alternate Davis Ulmer Fire Protection 47 N. Mission Road, Suite 104 Wappingers Falls, NY 12590 National Association of Fire Equipment Distributors Principal: Bill Isemann	IM 12/07/2022 SIG-TMS	Eric Andresen Alternate American Fire Sprinkler Association (AFSA) 1410 East Renner Road Suite 150 Richardson, TX 75082 Principal: Joshua P. McDonald	IM 11/29/2023 SIG-TMS
Scott Bailey Alternate Koorsen Fire & Security 2719 North Arlington Avenue Indianapolis, IN 46218-3322 Fire Suppression Systems Association Principal: Franklin Chenoweth	M 11/30/2016 SIG-TMS	Shane Courbier Alternate Gentex Corporation 9001 Riley Street Zeeland, MI 49464 National Electrical Manufacturers Association Principal: Rick Heffernan	M 03/07/2013 SIG-TMS
Matthew Jackson Alternate AFA Protective Systems Inc. 961 Joyce Kilmer Avenue North Brunswick, NJ 08902 Principal: Michael J. Slattery	IM 12/08/2015 SIG-TMS	Neal Kelly Alternate Fire Defense Equipment Company, Inc. 4350 Delemere Boulevard Royal Oak, MI 48073 Principal: Scott D. Carlson	IM 08/24/2021 SIG-TMS
Brian Patrick Kirtley Alternate Comcast Xfinity Home 208 Juniper Street Mansfield, TX 76063 Electronic Security Association Principal: Grady Medcalf	IM 12/06/2019 SIG-TMS	Tammy Mayo Alternate Telgian 10230 S. 50th Place Suite 100 Phoenix, AZ 85044 Automatic Fire Alarm Association Principal: Daniel Morrin, Jr.	M 04/12/2022 SIG-TMS

Address List No Phone

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Testing and Maintenance of Fire Alarm and Signaling Systems

Signaling Systems for the Protection of Life and Property

Troy O'Neal	M 12/06/2019	Vincent Powers	M 08/11/2020
Alternate Siemens 3719 Edgewood Court Grand Prairie, TX 75052 Principal: Anthony Bloodworth	SIG-TMS	Alternate National Fire Sprinkler Association (NFSA) 514 Progress Drive Linthicum, MD 21090 Principal: Jack P. Coffelt	SIG-TMS
Steven Criag Schwartz	IM 12/06/2019	Je Weon Sung	U 12/07/2018
Alternate Consolidated Fire Protection, Inc. 153 Technology, Suite 200 Irvine, CA 92618 California Automatic Fire Alarm Association Inc. Principal: John CC Biggs	SIG-TMS	Alternate U.S. General Services Administration 400 15th Street SW Auburn, WA 98001 Principal: Charles K. Stormer	SIG-TMS
Franklin True	U 08/29/2024	Patrick Bakaj	1/20/2023
Alternate US Department of Veterans Affairs Veterans Health Administration 13 McKinney Road Harpwell, ME 04079 Principal: Eugene D. Farmer	SIG-TMS	Staff Liaison National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169-7471	SIG-TMS



NATIONAL FIRE PROTECTION ASSOCIATION

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MINUTES

NFPA Technical Committee on Testing and Maintenance of Fire Alarm and Signaling Systems (SIG-TMS) NFPA 72 Second Draft Meeting (A2024)

July 18-19, 2023
10:00 am – 1:50 pm (EST)

Web/Teleconference

1. **Call to order.** J. David Kerr., chair, called the meeting to order at 10:00 am on July 18, 2023.
2. **Introductions.** Attendees introduced themselves and identified their affiliation. NFPA staff took attendance.
3. **Chair report.** J. David Kerr. welcomed attendees and provided an overview of the meeting.
4. **Staff liaison report.** Patrick Bakaj provided an overview of the standards development process and the revision cycle schedule.
5. **Previous meeting minutes.** The minutes from July 21-22, 2022, Indianapolis, IN were approved without revision.
6. **NFPA 72 Second Draft.**
 - a. **Review of Public Comments and Committee Inputs.** The Technical Committee reviewed the Public Comments and Committee Inputs and developed Second Revisions as necessary. These will be available in the Second Draft Report at www.nfpa.org/72.
 - b. **Task group report(s).** The following task groups provided their reports and recommendations.
 - i. **Task Group 1 - Cybersecurity.** Timothy Soverino. The task group provided a report, second revisions were made. The task group has been discharged with thanks.
 - ii. **Task Group 2 – Footnotes for Table 14.4.3.2.** Peter Larrimer. The task group provided a report, second revisions were made. The task group has been discharged with thanks.
7. **Future meetings.** This was the final meeting of this committee for the revision cycle. Public Inputs for the next edition are expected to close June 2025. A meeting notification will be posted at www.nfpa.org/72next when the next meeting is scheduled.
8. **Adjournment.** The meeting was adjourned at 1:50 pm on July 17, 2023.

Attendees**Committee Members:**

X	Kerr, J. David	Chair	Melissa Fire Department
X	Biggs, John	Principal	California Automatic Fire Alarm
X	Bloodworth, Anthony	Principal	Siemens Industries, Inc.
	Brockett, Charles	Principal	Global Asset Protection Services, LLC
X	Carlson, Scott	Principal	Fire Defense Equipment Company, Inc.
X	Chavez, Louis	Principal	UL Solutions
X	Chenoweth, Franklin	Principal	Fire Suppression Systems Association
X	Coffelt, Jack	Principal	National Fire Sprinkler Association
X	Corrin, Scott	Principal	C T Services
	Duplechian, Donald	Principal	Brella Fire Solutions
X	Heffernan, Rick	Principal	National Electrical Manufacturers
X	Hurst, Herbert	Principal	Savannah River Nuclear Solutions, LLC
X	Isemann, Bill	Principal	National Association of Fire Equipment
X	Kleintop, E. J.	Principal	Johnson Controls
X	Larrimer, Peter	Principal	US Department of Veterans Affairs
	Medcalf, Grady	Principal	Electronic Security Association
	Morrin, Daniel	Principal	Automatic Fire Alarm Association, Inc.
X	Murphy, James	Principal	The Monitoring Association
X	Pothier, Katherine	Principal	Fisher Engineering, Inc.
X	Rawson, Christopher	Principal	International Brotherhood of Electrical
X	Scibetta, Joe	Principal	BuildingReports
X	Slattery, Michael	Principal	AFA Protective Systems, Inc.
X	Soverino, Timothy	Principal	International Municipal Signal Association
X	Stormer, Charles	Principal	US General Services Administration
	Stroud, Brad	Principal	Texas Instruments, Inc.
X	Brackett, Joshua	Voting Alternate	American Society for Healthcare
	Denhardt, John	Voting Alternate	American Fire Sprinkler Association
X	Kistner, Ariana	Voting Alternate	NFPA Fire Service Section
X	Akins, Paul	Alternate	National Association of Fire Equipment
X	Bailey, Scott	Alternate	Fire Suppression Systems Association
X	Courbier, Shane	Alternate	National Electrical Manufacturers

X	Jackson, Matthew	Alternate	AFA Protective Systems Inc.
X	Kelly, Neal	Alternate	Fire Defense Equipment Company, Inc.
	Kirtley, Brian	Alternate	Electronic Security Association
X	Leszczak, Peter	Alternate	US Department of Veterans Affairs
X	Mayo, Tammy	Alternate	Automatic Fire Alarm Association, Inc.
	O'Neal, Troy	Alternate	Siemens
X	Powers, Vincent	Alternate	National Fire Sprinkler Association
X	Schwartz, Steven	Alternate	California Automatic Fire Alarm
	Sides, Michael	Alternate	Global Asset Protection Services, LLC
	Sung, Je	Alternate	US General Services Administration
	Victor, Terry	Alternate	Johnson Controls
X	Bakaj, Patrick	Staff Liaison	National Fire Protection Association

Guests:

Michael Pallet	Pallet Corner Consulting
Christopher Creamer	UL Solutions
Warren Olsen	Fire Safety Consultants, Inc.
Tom Harris	NFPA Staff
Steve Kaitharath	NFPA Staff
Chad Duffy	NFPA Staff
Josh McDonald	AFSA

Total number in attendance: 39



Public Input No. 206-NFPA 72-2025 [Section No. 3.3.76]

3.3.76* Deficiency.

~~A Any condition that interferes with the service or reliability for which the part, system, or equipment was intended fails to meet the minimum requirements of this Code but that does not rise to the level of an impairment . (SIG-TMS)~~

A.3.3.76

~~Examples of deficiencies could include, but are not limited to, lack of identification of circuit disconnecting means at the FACU, obstructed manual fire alarm boxes, an unreadable annunciator display or a missing system documents cabinet. Such examples do not interfere with or prevent system operability or proper notification of occupants in the event of a fire or other emergency. The inoperability of a system, component or function should be considered an impairment. See 3.3.149.~~

Statement of Problem and Substantiation for Public Input

Currently as written, the distinction between deficiencies and impairments isn't clear. This proposed rewording is intended to differentiate conditions where minimum requirements are not being met but the system is still operable (Deficiencies) from conditions of inoperability (Impairments). At the very least, this will give the responsible committee an opportunity to review the current wording of this definition, compare it to the Impairment definition and, if needed, make the necessary changes to improve the understanding of these two terms.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 21 09:57:39 EDT 2025
Committee: SIG-TMS



Public Input No. 221-NFPA 72-2025 [Section No. 14.1.6]

14.1.6

This chapter shall not require inspection, testing, or maintenance personnel to verify the adequacy of the design or installation of existing previously approved systems during periodic inspection, testing, and maintenance.

Statement of Problem and Substantiation for Public Input

By adding the words "or installation" to the statement brings this code section in alignment with NFPA 25 section 1.1.3.1

Submitter Information Verification

Submitter Full Name: Steven Schwartz
Organization: CFP Fire Protection Inc
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 26 09:26:49 EDT 2025
Committee: SIG-TMS



Public Input No. 5-NFPA 72-2024 [Section No. 14.1.6]

14.1.6

~~This chapter shall not require~~ Unless otherwise required in this chapter, inspection, testing, or maintenance personnel shall not be required to verify the adequacy of the design of existing, previously approved systems during periodic inspection, testing, and maintenance.

Statement of Problem and Substantiation for Public Input

The re-wording of this section maintains the intent of the statement, while also clarifying that there are, in fact, instances where Chapter 14 does require personnel to confirm the adequacy of design on periodic inspections and tests, most notably with reference to RAMO-designated notification zones, where ambient and maximum sound pressure levels are to be compared annually against RAMO design documentation. Without this re-wording, the statement is at odds with inspection and test methods in the respective tables in Chapter 14, where design comparison to determine adequacy is actually required.

Submitter Information Verification

Submitter Full Name: Joe Scibetta

Organization: BuildingReports

Street Address:

City:

State:

Zip:

Submittal Date: Tue Nov 19 16:47:39 EST 2024

Committee: SIG-TMS



Public Input No. 372-NFPA 72-2025 [Section No. 14.2.2.2]

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.~~

14.21.1

The system owner or the owner's designated representative shall be notified within 8 hours when a system or part thereof is impaired.

14.21.2

Impairments to systems shall include out-of-service events.

14.21.3

A record of the impairments shall be maintained by the system owner or the owner's designated representative for a period of 1 year from the date the impairment is corrected.

14.21.4

The supervising station shall report to the authority having jurisdiction any system for which required monitoring has been terminated.

14.21.5*

The service provider shall report to the authority having jurisdiction any system that is out of service for more than 8 hours.

14.21.6*

Where required by the authority having jurisdiction, mitigating measures shall be implemented for the period that the system is impaired.

14.21.7

The system owner or the owner's designated representative and the authority having jurisdiction shall be notified when an impairment period ends.

Statement of Problem and Substantiation for Public Input

This PI is in conjunction with PI 370. It does not make sense to have the section on Impairments in chapter 10 and the section on Deficiencies in chapter 14. They both belong in chapter 14 since they are both most often discovered during inspection and testing. Chapter 10 applies to new installations and it is not logical that you would have an "impairment" on a system that is being installed. The impairment would be discovered during inspection or testing as per chapter 14.

All of the suggested language in this PI is directly extracted and copied from section 10.21. There are no changes to the language.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 370-NFPA 72-2025 [Section No. 10.21]</u>	
<u>Public Input No. 370-NFPA 72-2025 [Section No. 10.21]</u>	

Submitter Information Verification

Submitter Full Name: Jason Dupuis

Organization: Cintas Fire Protection f19

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 04 15:33:27 EDT 2025

Committee: SIG-TMS



Public Input No. 363-NFPA 72-2025 [Section No. 14.3.1]

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	<p>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.</p> <p>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.</p> <p>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</p>
-	(2) Primary (dry cell) batteries other than those used in low-power radio (wireless) systems in accordance with Chapter 23	X	Semiannual	<p>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</p>
-		-	-	

<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	-	-	or points are not obstructed.	
-	(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.	17.7.6.5
-	(b) Sampling tube	X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.	17.7.6.5
-	(3) Electromechanical releasing devices	X	Semiannual	-	-
-	(4) Fire extinguishing system(s) or suppression system(s) switches	X	Semiannual	-	-
-	(5) Manual fire alarm boxes	X	Semiannual	-	-
-	(6) <u>Spot-type</u> 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) <u>Spot type</u> 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

<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	-	-	-	Ve sy nc cc
-	(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.

Statement of Problem and Substantiation for Public Input

Chapter 17 uses the term "Spot-type" for heat and smoke detectors. Chapter 14 does not use the term. For correlation within NFPA 72 this PI proposes to use the same terms.

Submitter Information Verification

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Submittal Date: Wed Jun 04 13:21:54 EDT 2025
Committee: SIG-TMS



Public Input No. 45-NFPA 72-2025 [Section No. 14.3.1]

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

—(12)

<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	-	-	-	Ve sy nc cc
-	(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	-	-	-	Ve sy nc cc
-	(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	<p>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.</p> <p>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.</p> <p>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</p>
-	(2) Primary (dry cell) batteries other than those used in low-power radio (wireless) systems in accordance with Chapter 23	X	Semiannual	<p>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</p>
-		-	-	

<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	-	-	-	or points are not obstructed.
-	(a) General	X	Semiannual	17.7.6.5	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.
-	(b) Sampling tube	X	Annual	17.7.6.5	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.
-	(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	17.8	Verify no point requiring detection is obstructed or outside the detector's field of view.
-	(8) Video image smoke and fire <u>flame</u> detectors	X	Quarterly	17.7.8; 17.8.5	Verify no point requiring detection is obstructed or outside the detector's field of view.
-	(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) Thermal image fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	
(13) 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	-

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>	
-	(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 approved drawings. 18.5.5	
23.	Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	-
24.	Reserved	-	-	-	-
25.	Two-way emergency communications systems	X	Annual	Verify location and condition.	-
26.	Reserved	-	-	-	-
27.	Supervising station alarm systems — receivers	-	-	-	-
-	(1) Signal receipt	X	Daily	Verify receipt of signal.	-
-	(2) Receivers	X	Annual	Verify location and normal condition.	-
28.	Public emergency alarm reporting system transmission equipment	-	-	-	Verify location and condition.
-	(1) Publicly accessible alarm box	X	Semiannual	-	-
-	(2) Auxiliary box	X	Annual	-	-
-	(3) Master box	-	-	-	-
-	(a) Manual operation	X	Semiannual	-	-
-	(b) Auxiliary operation	X	Annual	-	-
29.	Reserved	-	-	-	-
30.	Mass notification system (MNS)	-	-	-	-
-	(1) Monitored for integrity	-	-	-	Ve sy

<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	<u>Reference</u>		
-	(a) Control equipment	-	-	-	-	no cc
-	i. Fuses	X	Annual	-	-	
ii. Interfaces	X	Annual	-	-	-	
-	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	-	-	-	-	Ve sy no cc
-	(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.

Statement of Problem and Substantiation for Public Input

While there are requirements for testing, inspection, and maintenance of video and thermal image fire detectors in clauses 14.4.3.3 and 14.4.3.4, they should also be represented in both the visual inspection and testing tables to avoid possible confusion.

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Committee: SIG-TMS



Public Input No. 171-NFPA 72-2025 [New Section after 14.3.4]

14.3.4.1 Fire Alarm Equipment (Panel) Room - Inspection

14.3.4.2 The fire alarm Equipment (panel) Room shall be inspected annually.

14.3.4.3 The inspection is to verify the requirements of section # 10.3.6 in Chapter 10, Fundamentals.

Statement of Problem and Substantiation for Public Input

Substantiation:

Inspection of the panel room is to be annually during the fire alarm annual ITM.

There are many instances where the room site related materials blocking access to the FACU

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Committee: SIG-TMS



Public Input No. 296-NFPA 72-2025 [New Section after 14.4.2.6]

14.4.2.7 When the firmware in fire alarm and signaling equipment is updated, it shall be functionally tested per Table 14.4.3.2.

A.14.4.2.7 Many initiating devices and notification appliances are designed with microprocessors running firmware. In some cases, the firmware can be field updated. Aspirated smoke detectors commonly have the capability of firmware updates. This clause clarifies that the equipment must be tested after the update, and it makes a distinction between field devices and the fire alarm control unit. Updating the executive software of a control unit will require reacceptance testing.

Statement of Problem and Substantiation for Public Input

It is becoming more common for fire alarm equipment including initiating devices and notification appliances to have onboard firmware that can be updated in the field. If a device's firmware is updated, it needs to be tested to make sure that the update worked correctly, and that the device is functioning properly. Some users of the standard are confusing control unit executive software requirements with device firmware.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 297-NFPA 72-2025 [New Section after 3.3.293.3]</u>	

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Committee: SIG-TMS



Public Input No. 211-NFPA 72-2025 [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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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>
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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
			-	-
			-	-
			-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
16.	Nonmetallic pathways	-	-	<p>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. 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.</p> <p>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.</p>
-	(1) Optical fiber cables	X	N/A	
-	(2) Circuit integrity	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication of the control unit. Confirm all circuits 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	compensation, restorable line, spot type (excluding pneumatic tube type)			source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate- of-rise/fixed- temperature element detector.
-	(b) Fixed- temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed- temperature, nonrestorable spot type	X	See Method column	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.
-	-	-		

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's 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. ^j Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and	X	Annually	Conduct functional tests according to the

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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	handwheel or 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 dry pipe or preaction valve 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	in approved 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 <u>confirming that activation of the initiating device occurs within 90 seconds of water flow</u> or other

:	<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	<p>listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.</p> <p>(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</p>
-		-	-	-
-		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	<p>suppression system actuators remain de-energized. Allow countdown to complete and verify that actuators energize.</p> <p>Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings.</p>
-	(4) Cross-zone detection circuit	X	Annually	<p>Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone.</p>
-	(5) Matrix-type circuit	X	Annually	<p>Operate all sensors in system. Verify development of correct matrix with each sensor operated.</p>
-	(6) Release solenoid circuit ^m	X	Annually	<p>Verify operation of solenoid.</p>
-	(7) Squibb release circuit	X	Annually	<p>Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.</p>
-	(8) Verified, sequential, or counting zone circuit	X	Annually	<p>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.</p>
-	(9) All above devices or circuits	X	Annually	<p>Verify supervision of circuits by</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	or combinations thereof			creating an open circuit.
19. Combination systems	-	-	-	
	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.
	(2) CO device/system	X	Annually	Test communication between the device connecting the CO device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
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.
22.	Alarm 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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> requirements. Measure sound pressure levels to determine if they comply with Chapter 18 and the required performance, as

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				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
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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</i>

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

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

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

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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				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.
28.	Public emergency alarm reporting system transmission equipment	-	-	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.
	(1) Publicly accessible alarm box	X	Semiannually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit.
	(2) Auxiliary box	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Master box	-	-	Verify receipt of not less than three complete rounds of signal impulses.
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
Low-power 29. 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 Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Fuses	X	Annually	(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. Verify the rating and supervision. 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.
-	(3) Interfaced equipment	X	Annually	Illuminate lamps and LEDs. 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.
-	(4) Lamps and LEDs	X	Annually	Measure sound pressure level
-	(5) Primary (main) power supply	X	Annually	
-	(6) Audible textual notification	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	appliances (loudspeakers and other appliances to convey voice messages)			with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics</i> — <i>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 Instructions (ESRI)</i> , using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes. Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(13) Secondary power test	X	Annually	accepted practice at site. 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. Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

Section 17.15.2 has the requirement that water flow from an inspectors test valve shall activate the initiating device within 90 seconds. This time requirement should be included in the testing table to provide clarity that it is a requirement during all tests.

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Public Input No. 212-NFPA 72-2025 [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. 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.
-	(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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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>
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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
			-	-
			-	-
			-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
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. 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.
	(1) Optical fiber cables	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.
	(2) Circuit integrity	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication of the control unit. Confirm all circuits 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	compensation, restorable line, spot type (excluding pneumatic tube type)		Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method column	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's published instructions to determine that each detector is operative.
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:	<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. ^J Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and	X	Annually	Conduct functional tests according to the

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	two-family dwellings		Annually	<p>manufacturer's published instructions.</p> <p>Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions <u>confirming that alarm initiation is within 120 seconds from the time that smoke or</u></p>
-	(d) Air sampling	X	Annually	<p><u>a listed and labeled product is administered at the farthest sampling port</u> . 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.</p>
-	(e) Duct type	X	Annually	<p>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.</p>
-	(f) Projected beam type	X	Annually	<p>Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.</p>
-	(g) Smoke detector with built-in thermal element	X	Annually	<p>Operate both portions of the detector</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(h) Smoke detectors with control output functions	X	Annually	independently as described for the respective devices. Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
- -	(8) Smoke detectors 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
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			-	-
			-	-
			-	-
			-	-
			-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Carbon monoxide (CO) detectors/CO alarms connected to protected premises systems	-	-	
-	(a) CO entry test	X	Annually	<p>Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.</p> <p>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.</p>
-	(b) Air sampling	X	Annually	<p>Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.</p>
-	(c) Duct type	X	Annually	<p>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</p>
-	(d) CO detector with control output functions	X	Annually	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(10) Initiating devices, supervisory	-	-	circuit are in an alarm state.
-	(a) Control valve switch	X	Semiannually	<p>Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or 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.</p> <p>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 dry pipe or preaction valve manufacturer's published instructions.</p>
-	(b) High- or low-air pressure switch	X	Annually	<p>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.</p>
-	(c) Steam pressure	X	Annually	<p>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.</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its 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

:	<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	<p>of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.</p> <p>(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</p>
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-		-	-	-

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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 verify that actuators energize.
-	(3) Abort switch (special type)	X	Annually	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) All above devices or circuits or combinations thereof	X	Annually	sequence of operation with both the first and second detector in alarm. Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	<p>Test communication 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.</p> <p>Test communication between the device connecting the CO device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.</p>
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	
-	(2) CO device/system	X	Annually	
20.	Interface equipment ⁿ	X	See 14.4.4.4	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21. Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.
22. Alarm notification appliances	-	-	-	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, <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).
-	(1) Audible ^o	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	
-		-	N/A	Annually	For period testing, verify the operation of the notification appliances
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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 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 ⁹	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,

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	-
			-	-

:	<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	-	-	-	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.
-	(1) All equipment	X	Monthly	-
		-	-	-

:	<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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of <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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				28(2).
	Low-power 29. 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 Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Fuses	X	Annually	detection of loss of ac power and disconnection of secondary batteries. Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs. Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation.
-	(5) Primary (main) power supply	X	Annually	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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure and record levels throughout

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(10) Control unit security	X	Annually	Power down the central control unit computer and restart it. 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.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

Section 17.7.4.6.2.1 requires that the maximum air sample transport time from the farthest sampling port to the detector shall not exceed 120 seconds. This time requirement should be included in the testing table for clarity.

Submitter Information Verification

Submitter Full Name: Jason Dupuis
Organization: Cintas Fire Protection f19
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 21 17:04:25 EDT 2025
Committee: SIG-TMS



Public Input No. 214-NFPA 72-2025 [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. 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.
-	(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 Acceptance</u>	<u>Periodic 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	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.

:	<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>
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	<p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

conducting test that a system software stored in volatile memory is protected loss.

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
			-	-
			-	-
			-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
16.	Nonmetallic pathways	-	-	<p>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. 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.</p> <p>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.</p>
-	(1) Optical fiber cables	X	N/A	
-	(2) Circuit integrity	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(b) Fixed-temperature, nonrestorable line type	X	See Method column	-
-	(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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's 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. ^j Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and	X	Annually	Conduct functional tests according to the

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				connected to the 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	<p>by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.</p> <p>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.</p>
-	(c) Duct type	X	Annually	<p>Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.</p>
-	(d) CO detector with control output functions	X	Annually	<p>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.</p>
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannually	<p>Operate valve and verify signal receipt to be within the first two revolutions of the</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	handwheel or 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 dry pipe or preaction valve 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	in approved 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

:	<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	bypass 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	countdown to complete and 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	-	-	-	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication 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.
-	(2) CO device/system	X	Annually	Test communication between the device connecting the CO 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				published instructions.
Alarm 22. notification appliances	-	-	-	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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure sound pressure levels at <u>5 ft (1.5 m) above the floor in the area required</u> 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).
-	(1) Audible ^o	X	N/A	For period testing, verify the operation of the notification appliances
	-	-	N/A	Annually
-	(2) Audible textual notification	X	N/A	For initial and reacceptance

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	appliances (loudspeakers and other appliances to convey voice messages)			testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure sound pressure levels at <u>5 ft (1.5 m) above the floor</u> 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	<p>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 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.</p> <p>For period testing, verify that each appliance flashes.</p>
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,

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				including electromagnetic devices used for door releasing services as part of a fire alarm system.
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
				-
				-
				-
				-

:	<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	-	-	-	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.
-	(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>).

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

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

:	<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 30. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(4) Lamps and LEDs	X	Annually	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.
-	(5) Primary (main) power supply	X	Annually	Illuminate lamps and LEDs. 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, <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</i>

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(10) Control unit security	X	Annually	Power down the central control unit computer and restart it. 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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(16) Transceivers	X	Annually	Verify solid 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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

The testing table should include the requirement from 18.4.4.1 and 18.4.5.1 to measure sound pressure levels at 5 feet above the floor. This provides clarity to the table as to the method required for the tester.

Submitter Information Verification

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City:

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Submittal Date: Wed May 21 17:40:34 EDT 2025

Committee: SIG-TMS



Public Input No. 215-NFPA 72-2025 [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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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>
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.	<u>Valve-regulated lead-acid</u> (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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
		-	-	-
		-	-	-
		-	-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
16.	Nonmetallic pathways	-	-	<p>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. 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.</p> <p>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.</p>
	(1) Optical fiber cables	X	N/A	
	(2) Circuit integrity	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	compensation, restorable line, spot type (excluding pneumatic tube type)			source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method column	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.
-	-	-	-	-

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's 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. ^j Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and	X	Annually	Conduct functional tests according to the

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	two-family dwellings			manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in 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.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	<p>by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.</p> <p>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.</p>
-	(c) Duct type	X	Annually	<p>Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.</p>
-	(d) CO detector with control output functions	X	Annually	<p>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.</p>
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannually	<p>Operate valve and verify signal receipt to be within the first two revolutions of the</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	handwheel or 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 dry pipe or preaction valve 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	in approved 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

:	<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	bypass 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	countdown to complete and 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	-	-	-	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication 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.
-	(2) CO device/system	X	Annually	Test communication between the device connecting the CO 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				published instructions.
Alarm 22. notification appliances	-	-	-	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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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).
-	(1) Audible ^o	X	N/A	For period testing, verify the operation of the notification appliances
	-	-	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	<p>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.</p> <p>For period testing, verify that each appliance flashes.</p>
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	-	-	-	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.
-	(1) All equipment	X	Monthly	
			-	-

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				adoption of the 2013 edition of <i>NFPA 72</i> . Restore all communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	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.
-	(1) Publicly accessible alarm box	X	Semiannually	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	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			test methods to verify wireless protection system operation:	
		-	-	-
		-	-	-
		-	-	-
		-	-	-

:	<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>
-	(2) Fuses	X	Annually	Verify the rating and supervision. 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.
-	(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. 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.
-	(5) Primary (main) power supply	X	Annually	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, <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</i>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				<p><i>Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.</i></p>
-	(7) Visual	X	Annually	<p>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.</p>
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	files. Delete unnecessary error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents. 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. 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.
-	(11) Audible/visual functional test	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(12) Software backup	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.
-	(13) Secondary power test	X	Annually	Check forward/reflected radio power is within specifications.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

The acronym VRLA is still relatively new to the fire alarm community as in the past batteries were most commonly referred to as SLA. In Table 14.3.1(9) VRLA is spelled out for the user giving them its meaning of Valve-regulated lead-acid. For user clarity and consistency between the two tables, VRLA should also be spelled out in Table 14.4.3.2(9).

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Committee: SIG-TMS



Public Input No. 3-NFPA 72-2024 [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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

:	<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 Acceptance</u>	<u>Periodic 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 person conducting

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Temperature test	X	Semiannually	<p>test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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) or as specified by</p>

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

:	<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 specifications for a discharge rate of 3 hours or more, by applying the current indicated in the selected hourly discharge continuous until the terminal voltage decreases to the end voltage specified in the manufacturer's manual. Record the test duration and calculate the battery capacity.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				including adjustmer ambient temperatu Replace th battery if capacity is less than equal to 80 percent at the nex scheduled interval if battery capacity is less than 85 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	<p>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.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>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.</p> <p>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.</p>
-	-	N/A	Annually	<p>For periodic 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.</p>

:	<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 periodic 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. Confirm all circuits 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)	X	Annually	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	See Method column	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	-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	-	-	-	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.
-	(d) Restorable line type, pneumatic tube only	X	Annually	Conduct functional tests according to the manufacturer's published instructions. Do not test nonrestorable heat detectors with heat.
-	(e) Single- and multiple-station heat alarms	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.
-	(5) Manual fire alarm boxes	X	Annually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's

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

:	<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	<p>through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.</p> <p>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.</p>
-	(c) Duct type	X	Annually	<p>Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.</p>
-	(d) CO detector with control output functions	X	Annually	<p>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.</p>
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannually	<p>Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	<p>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.</p> <p>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 dry pipe or preaction valve manufacturer's published instructions.</p> <p>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.</p>
-	(c) Steam pressure	X	Annually	<p>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</p>
-	(d) Pressure supervisory devices for other sources	X	Annually	<p>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</p>

:	<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	<p>connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.</p> <p>(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</p>
-		-	-	-
-		-	-	
		-	-	-

:	<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	X	Annually	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 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	-	-	-	<p>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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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).</p>
-	(1) Audible ^o	X	N/A	<p>For periodic testing, see the operation of the notification appliance. For RAMC designate notification zones, test compliance with 14.4.</p>
	-	-	N/A	Annually

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	<p>For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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).</p>	Annually
-	-	N/A	Annually	<u>For periodic testing, verify the operation of the notification appliance:</u>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				- <u>For RAMC designate notification zones, test compliance with 14.4.</u>
	(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 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
	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

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

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				primary and secondary power.
		-	-	-
		-	-	-
		-	-	-
		-	-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				sections of Chapter 26.
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
-	(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

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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
Low-power 29. 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 Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-
Mass				
30. 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,

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Fuses	X	Annually	including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries. Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs. 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.
-	(5) Primary (main) power supply	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1:</i>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				<p><i>Specifications, Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.</i></p>
			-	-
-	(7) Visual	X	Annually	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	that each appliance flashes. Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(14) Wireless signals	X	Annually	unit. With ac power disconnected, verify battery voltage under load. Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

See Line 22 (1) and (2) for Audible Appliances - Periodic Testing - New annual requirements for testing in 14.4.13 should be accounted for in the test methods table for RAMO-designated notification zones. (TerraView underlined both statements but this PI is limited to the RAMO-specific language only).

Submitter Information Verification

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Committee:

SIG-TMS



Public Input No. 349-NFPA 72-2025 [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. 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.
-	(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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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>
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, ve by the per

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Temperature test	X	Semiannually	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
			-	-
			-	-
			-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(b) Fixed-temperature, nonrestorable line type	X	See Method column	-
-	(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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's 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. ^j Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and	X	Annually	Conduct functional tests according to the

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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	handwheel or 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 dry pipe or preaction valve 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	in approved 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				bypass connection for dry-pipe, pre-action, or deluge systems in accordance with <u>NFPA 25</u> and <u>verify alarm activation occurs within 90 seconds.</u>
	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	(1) Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke, heat, CO) 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	<p>abort switch and verify countdown cycle restarts and suppression system actuators remain de-energized. Allow countdown to complete and verify that actuators energize.</p> <p>Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings.</p>
-	(4) Cross-zone detection circuit	X	Annually	<p>Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone.</p>
-	(5) Matrix-type circuit	X	Annually	<p>Operate all sensors in system. Verify development of correct matrix with each sensor operated.</p>
-	(6) Release solenoid circuit ^m	X	Annually	<p>Verify operation of solenoid.</p>
-	(7) Squibb release circuit	X	Annually	<p>Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence of operation with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.
-	(2) CO device/system	X	Annually	Test communication between the device connecting the CO 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21. Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.
22. Alarm notification appliances	-	-	-	
-	(1) Audible ^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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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</i>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				<p><i>Instructions (ESRI), using the time-weighted characteristic F (FAST).</i></p> <p>For period testing, verify the operation of the notification appliances</p>
	-	-	N/A	<p>Annually</p> <p>For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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), using the time-weighted characteristic F (FAST).</i></p>
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	
-	-	-	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 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.	For period testing, verify 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 ⁹	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device	

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

:	<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	-	-	-	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.
-	(1) All equipment	X	Monthly	

:	<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

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
		-	-	-
		-	-	-
		-	-	-
		-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect <u>or</u> <u>disrupt (block)</u> 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				paths is announced 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.
28.	Public emergency alarm reporting system transmission equipment	-	-	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.
	(1) Publicly accessible alarm box	X	Semiannually	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	
-	(b) Auxiliary operation	X	Annually	28(1). Perform the tests prescribed for 28(2).	
Low-power 29. 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 Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Fuses	X	Annually	circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries. Verify the rating and supervision. 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.
-	(3) Interfaced equipment	X	Annually	Illuminate lamps and LEDs. 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.
-	(4) Lamps and LEDs	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i>
-	(5) Primary (main) power supply	X	Annually	
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(14) Wireless signals	X	Annually	disconnected, verify battery voltage under load. Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

Table 14.4.3.2, Item #8, Secondary (standby) power supply: The test conducted per Items 6, 7, and 9 ensure adequate testing of the secondary power supply.

Table 14.4.3.2, Item#17(11), Mechanical, electronic, or pressure-type waterflow devices: flow switches are under purview of NFPA 72 and reference to NFPA 25 is not required. The current method includes required flow path from NFPA 25. The wording "indicating the flow of water equal to that from a single sprinkler or the smallest orifice size installed in the system" does not add anything to the test method as it is implied by flowing through the inspectors test or alarm bypass valves. 90 second activation is required by Chapter 17.

Table 14.4.3.2, Item #27 (7), Performance-based technologies: This PI is issued as a result of a conference call between Herb Hurst (SIG-TMS), Richard Roberts (SIG-SSS), and Joe Parisi, Honeywell. Questions came up related to testing the different performance based technologies and whether current testing methods listed in Table 14.4.3.2 provide sufficient detail to perform adequate testing. A task team between Chapter 14 and Chapter 26 is recommended to determine if the current test method(s) are adequate and if not, provide revised requirements.

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Public Input No. 357-NFPA 72-2025 [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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

:	<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 Acceptance</u>	<u>Periodic 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	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.

:	<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>
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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
		-	-	-
		-	-	-
		-	-	-
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

=	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
16.	Nonmetallic pathways	-	-	<p>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. 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.</p> <p>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.</p>
	(1) Optical fiber cables	X	N/A	
	(2) Circuit integrity	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	compensation, restorable line, spot type (excluding pneumatic tube type)		Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method column	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's 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. ^j Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and	X	Annually	Conduct functional tests according to the

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	two-family dwellings			<p>manufacturer's published instructions.</p> <p>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.</p>
-	(d) Air sampling	X	Annually	<p>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.</p>
-	(e) Duct type	X	Annually	<p>Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path, <u>or in accordance with</u> <u>manufacturers' published instructions</u>.</p>
-	(f) Projected beam type	X	Annually	<p>Operate both portions of the detector independently as described for the respective devices.</p>
-	(g) Smoke detector with built-in thermal element	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	-	-	-	
-	(8) Smoke detectors 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	-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	to protected premises systems			
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.
-	(b) Air sampling	X	Annually	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,	-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	supervisory			
-	(a) Control valve switch	X	Semiannually	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or 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 dry pipe or preaction valve manufacturer's published instructions.
-	(b) High- or low-air pressure switch	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.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	increased or decreased from the normal operating pressure by an amount specified in approved 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

:	<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	<p>other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.</p> <p>(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</p>
-		-	-	-
-		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	<p>suppression system actuators remain de-energized. Allow countdown to complete and verify that actuators energize.</p> <p>Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings.</p>
-	(4) Cross-zone detection circuit	X	Annually	<p>Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone.</p>
-	(5) Matrix-type circuit	X	Annually	<p>Operate all sensors in system. Verify development of correct matrix with each sensor operated.</p>
-	(6) Release solenoid circuit ^m	X	Annually	<p>Verify operation of solenoid.</p>
-	(7) Squibb release circuit	X	Annually	<p>Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.</p>
-	(8) Verified, sequential, or counting zone circuit	X	Annually	<p>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.</p>
-	(9) All above devices or circuits	X	Annually	<p>Verify supervision of circuits by</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	or combinations thereof			creating an open circuit.
19. Combination systems	-	-	-	
	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.
	(2) CO device/system	X	Annually	Test communication between the device connecting the CO device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
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.
22.	Alarm 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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> requirements. Measure sound pressure levels to determine if they comply with Chapter 18 and the required performance, as

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				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
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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</i>

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

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

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

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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				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.
28.	Public emergency alarm reporting system transmission equipment	-	-	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.
	(1) Publicly accessible alarm box	X	Semiannually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit.
	(2) Auxiliary box	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Master box	-	-	Verify receipt of not less than three complete rounds of signal impulses.
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(1).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(2).
Low-power 29. 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 Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Fuses	X	Annually	(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.
-	(3) Interfaced equipment	X	Annually	Verify the rating and supervision. 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. Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation.
-	(5) Primary (main) power supply	X	Annually	Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification	X	Annually	Measure sound pressure level

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	appliances (loudspeakers and other appliances to convey voice messages)			with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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 Instructions (ESRI)</i> , using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes. Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(13) Secondary power test	X	Annually	accepted practice at site. 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. Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

Manufacturers' published instructions should be added to projected beam detectors in section 17 of the table.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 04 13:00:54 EDT 2025

Committee: SIG-TMS



Public Input No. 359-NFPA 72-2025 [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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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>
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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 percent
	Public emergency 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>
			-	-
			-	-
			-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
16.	Nonmetallic pathways	-	-	<p>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. 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.</p> <p>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.</p>
	(1) Optical fiber cables	X	N/A	
	(2) Circuit integrity	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication of the control unit. Confirm all circuits 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	compensation, restorable line, spot type (excluding pneumatic tube type)		Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method column	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's 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. ^j Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and	X	Annually	Conduct functional tests according to the

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	two-family dwellings			manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in 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.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	<p>by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.</p> <p>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.</p>
-	(c) Duct type	X	Annually	<p>Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.</p>
-	(d) CO detector with control output functions	X	Annually	<p>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.</p>
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannually	<p>Operate valve and verify signal receipt to be within the first two revolutions of the</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	handwheel or 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 dry pipe or preaction valve 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	in approved 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

:	<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	bypass 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	<p>countdown to complete and verify that actuators energize.</p> <p>Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings.</p>
-	(4) Cross-zone detection circuit	X	Annually	<p>Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone.</p>
-	(5) Matrix-type circuit	X	Annually	<p>Operate all sensors in system. Verify development of correct matrix with each sensor operated.</p>
-	(6) Release solenoid circuit ^m	X	Annually	<p>Verify operation of solenoid.</p>
-	(7) Squibb release circuit	X	Annually	<p>Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.</p>
-	(8) Verified, sequential, or counting zone circuit	X	Annually	<p>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.</p>
-	(9) All above devices or circuits or combinations thereof	X	Annually	<p>Verify supervision of circuits by creating an open circuit.</p>
19.	Combination systems	-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication 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.
-	(2) CO device/system	X	Annually	Test communication between the device connecting the CO 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				published instructions.
Alarm 22. notification appliances	-	-	-	For initial and reacceptance testing <u>or when an appliance is replaced</u> , measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASA S1.4, <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).
-	(1) Audible ^o	X	N/A	For period testing, verify the operation of the notification appliances
-	(2) Audible textual notification appliances	X	N/A	Annually
-	(2) Audible textual notification appliances	X	N/A	For initial and reacceptance testing <u>or when an</u>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	(loudspeakers and other appliances to convey voice messages)			<p>appliance is replaced, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <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).</p>
	-	-	N/A	Annually
	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's

For period testing, verify the operation of the notification appliances

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	<p>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 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.</p> <p>For period testing, verify that each appliance flashes.</p>
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,

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				including electromagnetic devices used for door releasing services as part of a fire alarm system.
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
				-
				-
				-
				-

:	<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	-	-	-	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.
-	(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>).

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

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

:	<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 30. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(4) Lamps and LEDs	X	Annually	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.
-	(5) Primary (main) power supply	X	Annually	Illuminate lamps and LEDs. 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, <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</i>

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(10) Control unit security	X	Annually	Power down the central control unit computer and restart it. 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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(16) Transceivers	X	Annually	Verify solid 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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

NFPA 72 requires audible testing with sound pressure levels are to be performed when a system is new or while undergoing reacceptance testing then it stands to reason the same tests should be performed when an appliance is replaced. If it is important when a new system is installed, then why not require the same testing for an appliance that is being replaced?

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Public Input No. 360-NFPA 72-2025 [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. 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.
-	(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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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>
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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
			-	-
			-	-
			-	-
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

=	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
16.	Nonmetallic pathways	-	-	<p>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. 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.</p> <p>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.</p>
	(1) Optical fiber cables	X	N/A	
	(2) Circuit integrity	X	N/A	

:	Component	Initial Acceptance	Periodic Frequency	Method	
	-	-	N/A	Annually	For period testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication of the control unit. Confirm all circuits perform as indicated in Sections 23.6, and 23.7.
17.	Initiating devices ^h	-	-	-	
-	(1) Electromechanical releasing device	-	-	-	Verify correct operation by removal of the fusible link and operation of the associated 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		Operate the switch mechanically or electrically and verify receipt of signal by the FACU.
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually		Test fire-gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.
-	(3) Fire-gas and other detectors	X	Annually		
-	(4) <u>Spot-type</u> Heat detectors	-	-	-	
-	(a) Fixed-temperature, rate-of-rise, rate of	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	compensation, restorable line, spot type (excluding pneumatic tube type)		Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method column	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's published instructions to determine that each detector is operative.
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(7) <u>Spot-type</u> Smoke detectors — functional test	-	-	<p>Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response.^J 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.</p> <p>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.</p> <p>Conduct functional tests according to the</p>
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	<p>Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response.^J 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.</p> <p>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.</p> <p>Conduct functional tests according to the</p>
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	<p>Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response.^J 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.</p> <p>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.</p> <p>Conduct functional tests according to the</p>
-	(c) System smoke detectors used in one- and	X	Annually	<p>Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response.^J 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.</p> <p>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.</p> <p>Conduct functional tests according to the</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	two-family dwellings (d) Air sampling	X	Annually	<p>manufacturer's published instructions.</p> <p>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.</p> <p>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.</p>
-	(e) Duct type	X	Annually	<p>Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.</p> <p>Operate both portions of the detector independently as described for the respective devices.</p>
-	(f) Projected beam type	X	Annually	
-	(g) <u>Spot-type</u> Smoke detector with built-in thermal element	X	Annually	
-	(h) <u>Spot-type</u> Smoke detectors with control output functions	X	Annually	<p>Verify that the control capability remains operable even if all of the initiating devices</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	<p>by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.</p> <p>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.</p>
-	(c) Duct type	X	Annually	<p>Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.</p>
-	(d) CO detector with control output functions	X	Annually	<p>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.</p>
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannually	<p>Operate valve and verify signal receipt to be within the first two revolutions of the</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	handwheel or 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 dry pipe or preaction valve 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	in approved 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

:	<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	bypass 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	<p>countdown to complete and verify that actuators energize.</p> <p>Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings.</p>
-	(4) Cross-zone detection circuit	X	Annually	<p>Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone.</p>
-	(5) Matrix-type circuit	X	Annually	<p>Operate all sensors in system. Verify development of correct matrix with each sensor operated.</p>
-	(6) Release solenoid circuit ^m	X	Annually	<p>Verify operation of solenoid.</p>
-	(7) Squibb release circuit	X	Annually	<p>Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.</p>
-	(8) Verified, sequential, or counting zone circuit	X	Annually	<p>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.</p>
-	(9) All above devices or circuits or combinations thereof	X	Annually	<p>Verify supervision of circuits by creating an open circuit.</p>
19.	Combination systems	-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication 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.
-	(2) CO device/system	X	Annually	Test communication between the device connecting the CO 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				published instructions.
	Alarm 22. notification appliances	-	-	
				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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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).
-	(1) Audible ^o	X	N/A	
				For period testing, verify the operation of the notification appliances
			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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	<p>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.</p> <p>For period testing, verify that each appliance flashes.</p>
			N/A	Annually
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	-	-	-	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.
-	(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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				adoption of the 2013 edition of <i>NFPA 72</i> . Restore all communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	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.
	(1) Publicly accessible alarm box	X	Semiannually	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	-	-	Perform the tests prescribed for 28(1).
	(a) Manual operation	X	Semiannually	
	(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	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			test methods to verify wireless protection system operation:	
		-	-	-
		-	-	-
		-	-	-
		-	-	-

:	<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>
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <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</i>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				<p><i>Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.</i></p>
-	(7) Visual	X	Annually	<p>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.</p>
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	files. Delete unnecessary error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents. 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.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

Throughout Chapter 17 the term "Spot-type" is used for heat and smoke detectors however that same term is not used in Chapter 14. There may be other instances where the term "spot-type" should be added to relevant "detectors". This change is to help correlation within NFPA 72.

Submitter Information Verification

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Public Input No. 46-NFPA 72-2025 [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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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>
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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
			-	-
			-	-
			-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
16.	Nonmetallic pathways	-	-	<p>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. 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.</p> <p>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.</p>
-	(1) Optical fiber cables	X	N/A	
-	(2) Circuit integrity	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually	<p>source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.</p> <p>Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.</p> <p>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.</p>
-	(b) Fixed-temperature, nonrestorable line type	X	See Method column	-
-	(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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				the manufacturer's 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. ^j Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and	X	Annually	Conduct functional tests according to the

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	two-family dwellings			manufacturer's published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in 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.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	<p>by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.</p> <p>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.</p>
-	(c) Duct type	X	Annually	<p>Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.</p>
-	(d) CO detector with control output functions	X	Annually	<p>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.</p>
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannually	<p>Operate valve and verify signal receipt to be within the first two revolutions of the</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	handwheel or 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 dry pipe or preaction valve 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	in approved 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

:	<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	bypass 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>
			-	-
			-	-
				(5) Record tests and results.
	<u>(13) Video and thermal image detectors</u>	X	<u>Annually</u>	<u>Test each detector in accordance with the manufacturer's published instructions.</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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	<p>system initiating device. Operate abort switch and verify countdown cycle restarts and suppression system actuators remain de-energized. Allow countdown to complete and verify that actuators energize.</p> <p>Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings.</p>
-	(4) Cross-zone detection circuit	X	Annually	<p>Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone.</p>
-	(5) Matrix-type circuit	X	Annually	<p>Operate all sensors in system. Verify development of correct matrix with each sensor operated.</p>
-	(6) Release solenoid circuit ^m	X	Annually	<p>Verify operation of solenoid.</p>
-	(7) Squibb release circuit	X	Annually	<p>Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.</p>
-	(8) Verified, sequential, or counting zone circuit	X	Annually	<p>Operate required sensors at a minimum of four locations in circuit. Verify correct sequence of operation with both the first and</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) All above devices or circuits or combinations thereof	X	Annually	second detector in alarm. Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	<p>Test communication 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.</p> <p>Test communication between the device connecting the CO device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.</p>
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	
-	(2) CO device/system	X	Annually	
20.	Interface equipment ⁿ	X	See 14.4.4.4	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				NFPA standard(s) for the equipment being supervised.
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.
22.	Alarm notification appliances	-	-	-
-	(1) Audible ^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, <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 For period testing, ve the operat

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	of the notification appliances
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics</i> — <i>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).	of the notification appliances
-	-	-	N/A	Annually	For period testing, verify the operat of the notification appliances
-	(3) Visual	X	N/A	Perform initial and reacceptance	For period testing, verify the operat of the notification appliances

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	<p>testing in accordance with the 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 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.</p> <p>For period testing, verify that each appliance flashes.</p>
			N/A	Annually
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	-
			-	-
			-	-
			-	-

:	<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	-	-	-	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.
-	(1) All equipment	X	Monthly	
		-	-	-

:	<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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				adoption of the 2013 edition of <i>NFPA 72</i> . Restore all communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	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.
	(1) Publicly accessible alarm box	X	Semiannually	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	-	-	Perform the tests prescribed for 28(1).
	(a) Manual operation	X	Semiannually	
	(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	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			test methods to verify wireless protection system operation:	
		-	-	-
		-	-	-
		-	-	-
		-	-	-

:	<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>
-	(2) Fuses	X	Annually	Verify the rating and supervision. 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.
-	(3) Interfaced equipment	X	Annually	Illuminate lamps and LEDs. 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.
-	(4) Lamps and LEDs	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <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</i>
-	(5) Primary (main) power supply	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <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</i>
-	(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, <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</i>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents. 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.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

While there are requirements for testing, inspection, and maintenance of video and thermal image fire detectors in clauses 14.4.3.3 and 14.4.3.4, they should also be represented in both the visual inspection and testing tables to avoid possible confusion.

Submitter Information Verification

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Submittal Date: Wed Jan 29 12:42:02 EST 2025
Committee: SIG-TMS



Public Input No. 59-NFPA 72-2025 [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. 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.
-	(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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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>
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Temperature test	X	Semiannually	<p>person conducting the test that all system software stored in volatile memory is protected from loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Cell/Unit voltage test	X	Semiannually	<p>cell at 77°F (25°C) or as specified by the alarm equipment manufacturer.</p> <p>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.</p> <p>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 baseline ohmic value on each battery cell/unit.</p>
-	(4) Ohmic test ^e	X	N/A	-

Semiannu

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Replacement/Load test ^f	-	Every 3 years	<u>14.4.4.1</u>

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				indicated in Sections 23.5, 23.6 and 23.7.
16.	Nonmetallic pathways	-	-	
-	(1) Optical fiber cables	X	N/A	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. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				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 to the control unit. Configure all circuits to perform as indicated in Sections 23.5, 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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(4) Heat detectors	-	-	Perform heat test with a listed and labeled heat source or in accordance with the
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	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.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method column	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				defective detectors.
		-	-	-
		-	-	-
-	-	-	-	-
-	(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit) with a listed and labeled heat source or in accordance with the manufacturer's published instructions of the detector, or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(6) Radiant energy fire detectors	X	Semiannually	manual fire alarm boxes. Test flame detectors and spark/ember detectors in accordance with the manufacturer's 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. 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	Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, or into the sensing chamber can be used. Magnets are not acceptable for smoke entry tests.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	alarm system by putting the smoke alarm into an alarm condition. Conduct functional tests according to the manufacturer's 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.
-	(d) Air sampling	X	Annually	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. Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(e) Duct type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path. Operate both portions of the detector independently as described for the
-	(f) Projected beam type	X	Annually	
-	(g) Smoke detector with built-in thermal element	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(h) Smoke detectors with control output functions	X	Annually	respective devices. 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.
-	-	-	-	Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range. ^k
-	(8) Smoke detectors in other than one- and two-family dwellings, system detectors — sensitivity testing	N/A	See 14.4.4.3	
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide (CO) detectors/CO	-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	alarms connected to protected premises systems (a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.
-	(b) Air sampling	X	Annually	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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(10) Initiating devices, supervisory	-	-	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or in accordance with the
-	(a) Control valve switch	X	Semiannually	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
-	(b) High- or low-air pressure switch	X	Annually	maximum 10 psi (70 kPa) from the required pressure level or in accordance with the dry pipe or preaction valve manufacturer's published instructions. Operate switch and verify receipt of signal is obtained before pressure decreases to
-	(c) Steam pressure	X	Annually	110 percent of the minimum operating pressure of the steam-operated equipment.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its 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

:	<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	<p>of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.</p> <p>(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</p>
-		-	-	-
-		-	-	-

:	<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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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 verify that actuators energize.
-	(3) Abort switch (special type)	X	Annually	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) All above devices or circuits or combinations thereof	X	Annually	sequence of operation with both the first and second detector in alarm. Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	<p>Test communication 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.</p> <p>Test communication between the device connecting the CO device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.</p>
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	
-	(2) CO device/system	X	Annually	
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				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.
Alarm 22. notification appliances	-	-	-	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, <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).
-	(1) Audible ^o	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	
-		-	N/A	Annually	For period testing, verify the operation of the notification appliances
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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 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 ⁹	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,

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	-
			-	-

:	<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	-	-	-	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.
-	(1) All equipment	X	Monthly	-

:	<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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of <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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				28(2).
	Low-power 29. 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 Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-
	Mass 30. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Fuses	X	Annually	detection of loss of ac power and disconnection of secondary batteries. Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs. Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation.
-	(5) Primary (main) power supply	X	Annually	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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure and record levels throughout

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(10) Control unit security	X	Annually	Power down the central control unit computer and restart it. 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.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

Batteries need to be load tested more often than every three years. See PI 58 for revised testing frequencies and substantiation. This PI points the reader to the new section for frequency requirements.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 58-NFPA 72-2025 [New Section after 14.4.4.10]	

Submitter Information Verification

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Submittal Date: Tue Feb 04 16:34:32 EST 2025
Committee: SIG-TMS



Public Input No. 6-NFPA 72-2024 [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.
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.
		-	-	-
		-	-	-

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

:	<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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications for a discharge rate of 3 hours or more, by applying the current indicated in the selected hourly discharge continuous until the terminal voltage decreases to the end voltage specified by the manufacturer.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment. 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 of the control unit. Confir

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				all circuits perform as indicated in Sections 23.6, and 23.7.
16.	Nonmetallic pathways	-	-	<p>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. 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.</p>
	(1) Optical fiber cables	X	N/A	
	(2) Circuit integrity	X	N/A	<p>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</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	<p>circuits perform as indicated in Sections 23.5, 23.6, and 23.7.</p> <p>For period testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication of the control unit. Confirm all circuits perform as indicated in Sections 23.6, and 23.7.</p>
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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(4) Heat detectors	-	-	Perform heat test with a listed and labeled heat source or in accordance with the
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	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.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method column	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				defective detectors.
		-	-	-
		-	-	-
-	-	-	-	-
-	(d) Restorable line type, pneumatic tube only	X	Annually	Perform heat tests (where test chambers are in circuit) with a listed and labeled heat source or in accordance with the manufacturer's published instructions of the detector, or conduct a test with pressure pump.
-	(e) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(6) Radiant energy fire detectors	X	Semiannually	manual fire alarm boxes. Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.
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			-	-
			-	-
			-	-
			-	-
			-	-
			-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(7) Smoke detectors — functional test	-	-	<p>Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, or into the sensing chamber can be used. Magnets are not acceptable for smoke entry tests.</p>
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	<p>Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, or into the sensing chamber can be used. Magnets are not acceptable for smoke entry tests.</p>
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	<p>Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	alarm system by putting the smoke alarm into an alarm condition. Conduct functional tests according to the manufacturer's 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.
-	(d) Air sampling	X	Annually	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
-	(g) Smoke detector with built-in thermal element	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(h) Smoke detectors with control output functions	X	Annually	respective devices. 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.
-	-	-	-	Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range. ^k
-	(8) Smoke detectors in other than one- and two-family dwellings, system detectors — sensitivity testing	N/A	See 14.4.4.3	
			-	-
			-	-
			-	-
			-	-
			-	-
-	(9) Carbon monoxide (CO) detectors/CO	-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	alarms connected to protected premises systems (a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions.
-	(b) Air sampling	X	Annually	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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(10) Initiating devices, supervisory	-	-	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or in accordance with the
-	(a) Control valve switch	X	Semiannually	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
-	(b) High- or low-air pressure switch	X	Annually	maximum 10 psi (70 kPa) from the required pressure level or in accordance with the dry pipe or preaction valve 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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its 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

:	<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	<p>of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.</p> <p>(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</p>
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-		-	-	-

:	<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.

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(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 verify that actuators energize.
-	(3) Abort switch (special type)	X	Annually	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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) All above devices or circuits or combinations thereof	X	Annually	sequence of operation with both the first and second detector in alarm. Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable.
-	(2) CO device/system	X	Annually	Test communication between the device connecting the CO 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				frequency required by the applicable NFPA standard(s) for the equipment being supervised.
21. Guard's tour equipment	X	Annually		Test the device in accordance with the manufacturer's published instructions.
22. Alarm notification appliances	-	-	-	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, <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).
-	(1) Audible ^o	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>	
-		-	N/A	Annually	For period testing, verify the operation of the notification appliances
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
				-
				-

:	<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	-	-	-	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.
-	(1) All equipment	X	Monthly	-

:	<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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of <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

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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				28(2).
Low-power 29. 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 Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	-
		-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Fuses	X	Annually	detection of loss of ac power and disconnection of secondary batteries. Verify the rating and supervision. 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.
-	(3) Interfaced equipment	X	Annually	Illuminate lamps and LEDs. 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.
-	(4) Lamps and LEDs	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure and record levels throughout
-	(5) Primary (main) power supply	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure and record levels throughout
-	(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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications</i> , Type 2 requirements. Measure and record levels throughout

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				<p>protected area. 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). Record the maximum output when the audible emergency evacuation signal is on.</p>
-	(7) Visual	X	Annually	<p>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.</p>
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	<p>Review event log file and verify that the correct events were logged.</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(10) Control unit security	X	Annually	Power down the central control unit computer and restart it. 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.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

With reference to Line 9(4) of the testing table, this language complies with the information in the associated annex section for ohmic testing and provides better guidance for testing personnel by clarifying what the measuring parameters are for ohmic testing when testing for conductance or resistance/impedance

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Public Input No. 93-NFPA 72-2025 [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 Acceptance</u>	<u>Periodic 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.
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.

:	<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>
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	<p>conducting test that a system software stored in volatile memory is protected loss.</p> <p>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.</p>
-	(2) Charger test	X	Semiannually	<p>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)</p>

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

:	<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 specifications 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				capacity including adjustment ambient temperature. Replace the battery if capacity is less than or equal to 80 percent at the next scheduled interval if battery capacity is less than 85 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>
			-	-
			-	-
			-	-
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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(2) Ground faults	X	N/A	<p>installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	(3) Short-circuit faults	X	N/A	<p>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.</p>
-	(4) Loop resistance	X	N/A	<p>With each initiating and indicating circuit installation conductor pair short-circuited at the far end,</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(5) Circuit integrity	X	N/A	<p>measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.</p> <p>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.</p>
-	-	N/A	Annually	<p>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 2</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				23.6, and 23.7.
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. 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.
	(1) Optical fiber cables	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.
	(2) Circuit integrity	X	N/A	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
	-	-	N/A	Annually
				For period testing, test 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	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	compensation, restorable line, spot type (excluding pneumatic tube type)		Annually	source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector. 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	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.
-	-	-	If detectors are tested instead of replaced, repeat tests at	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			intervals of 5 years.	
-				
-	(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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				accordance with the manufacturer's 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. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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. 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
-	(c) System smoke detectors	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	used in one- and two-family dwellings			<p>according to the manufacturer's published instructions.</p> <p>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.</p>
-	(d) Air sampling	X	Annually	<p>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.</p>
-	(e) Duct type	X	Annually	<p>Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.</p>
-	(f) Projected beam type	X	Annually	<p>Operate both portions of the detector independently as described for the respective devices.</p>
-	(g) Smoke detector with built-in thermal element	X	Annually	<p>Verify that the control capability remains operable even if all of the</p>
-	(h) Smoke detectors with control output functions	X	Annually	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	-	-	-	initiating devices connected to the 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) Air sampling	X	Annually	sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions. 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(b) High- or low-air pressure switch	X	Annually	<p>revolutions of the handwheel or 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.</p> <p>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 dry pipe or preaction valve manufacturer's published instructions.</p>
-	(c) Steam pressure	X	Annually	<p>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.</p>
-	(d) Pressure supervisory devices for other sources	X	Annually	<p>Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an</p>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(e) Room temperature switch	X	Annually	amount specified in approved 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,

:	<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	or an alarm test bypass 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(3) Abort switch (special type)	X	Annually	<p>countdown to complete and verify that actuators energize.</p> <p>Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings.</p>
-	(4) Cross-zone detection circuit	X	Annually	<p>Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone.</p>
-	(5) Matrix-type circuit	X	Annually	<p>Operate all sensors in system. Verify development of correct matrix with each sensor operated.</p>
-	(6) Release solenoid circuit ^m	X	Annually	<p>Verify operation of solenoid.</p>
-	(7) Squibb release circuit	X	Annually	<p>Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.</p>
-	(8) Verified, sequential, or counting zone circuit	X	Annually	<p>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.</p>
-	(9) All above devices or circuits or combinations thereof	X	Annually	<p>Verify supervision of circuits by creating an open circuit.</p>
19.	Combination systems	-	-	-

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication 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.
-	(2) CO device/system	X	Annually	Test communication between the device connecting the CO 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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				published instructions.
	Alarm 22. notification appliances	-	-	
				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, <i>Electroacoustics — Sound Level Meters — Part 1: Specifications, Type 2</i> 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).
-	(1) Audible ^o	X	N/A	
				For period testing, verify the operation of the notification appliances
			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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
		-	-	<p>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.</p> <p>For period testing, verify that each appliance flashes.</p>
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	-	-	-	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.
-	(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

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
				adoption of the 2013 edition of <i>NFPA 72</i> . Restore all communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	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.
	(1) Publicly accessible alarm box	X	Semiannually	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	

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
			test methods to verify wireless protection system operation:	
		-	-	-
		-	-	-
		-	-	-
		-	-	-

:	<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>
-	(2) Fuses	X	Annually	Verify the rating and supervision. 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.
-	(3) Interfaced equipment	X	Annually	Illuminate lamps and LEDs. 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.
-	(4) Lamps and LEDs	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <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</i>
-	(5) Primary (main) power supply	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4, <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</i>
-	(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, <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</i>

:	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(9) Control unit reset	X	Annually	files. Delete unnecessary error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents. 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.

-	<u>Component</u>	<u>Initial Acceptance</u>	<u>Periodic Frequency</u>	<u>Method</u>
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

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 A.14.4.3.2, Table 14.4.3.2 Item 9(4).

^fSee A.14.4.3.2, Table 14.4.3.2 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. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

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. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

^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, Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

This is in reference to Table item 17(4)(c) - This PI gives the technical committee the opportunity to re-examine the 15 year actions on spot type non-restorable heat detectors. The option for lab testing no longer appears to be available or at least to the extent needed for this to be an efficient or affordable alternative to replacement. As such, the language referring to testing following 15 years of installation may no longer be useful. If lab testing is still available, however, where and how does the building owner proceed? Should annex language be included in that case to provide guidance?

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Public Input No. 166-NFPA 72-2025 [New Section after 14.4.3.6]

14.4.3.7 Testing of FACU batteries.

Batteries installed in the fire alarm control units and remote power supplies shall be verified for battery capacity based on the approved plans and battery calculations. It shall not be permitted to disconnect the system for 24 hours prior to an acceptance test or reacceptance test to test the battery capacity.

A.14.4.3.7 Disconnecting the primary power for 24 hours prior to the test will require up to 48 hours recharge time or may not recharge batteries falling below 85% of rated voltage, and may do irreparable damage to the batteries causing a need for immediate battery replacement.

Statement of Problem and Substantiation for Public Input

Table 14.4.3.2 does not require any VRLA battery to be load tested for 24 hours. Not all batteries are capable of deep cycling and deep cycling a fire alarm system VRLA battery may cause irreparable damage to the battery. Several fire alarm equipment manufacturers have stated that the chargers in the FACU will not charge batteries once the battery terminal voltage falls below 85% of nameplate voltage (usually 16 volts). UL 864 requires FACU chargers to recharge batteries within 48 hours, but not if battery terminal voltage falls below 85% of its rated nameplate voltage. Discharging a VRLA battery for 24 hours or more will generally result in a voltage at or below this level. Deep cycling batteries to this level will result in a system that essentially has no remaining battery capacity that will not be recharged unless connected to an external charger. A power outage at this point would result in a system failure, leaving the premises without fire alarm protection. For these reasons, it is recommended that a brief load discharge test be conducted at acceptance.

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Public Input No. 44-NFPA 72-2025 [Section No. 14.4.4.3.3 [Excluding any Sub-Sections]]

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

Statement of Problem and Substantiation for Public Input

This clause refers to a “calibration test,” but this is the only section in NFPA 72 that uses this term. The more accurate term, which is used in the Chapter 14 Test Table is “sensitivity test.” Use of common terminology will eliminate confusion about whether calibration test and sensitivity test are referring to the same thing.

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Public Input No. 58-NFPA 72-2025 [New Section after 14.4.4.10]

14.4.4.11

Load testing

In other than one- and two-family dwellings, load testing of batteries shall be tested in accordance with 14.4.4.11.1 through 14.4.4.11.3.

14.4.4.11.1

Load testing shall be checked within 3 years after manufacture date of batteries.

14.4.4.11.2

Load testing shall be checked every year thereafter unless otherwise permitted by compliance with 14.4.4.3.3.

14.4.4.11.3

The load testing of batteries is not required when batteries are replaced with new batteries.

Statement of Problem and Substantiation for Public Input

The current frequency currently required with NFPA 72, table 14.4.3.2 requires batteries to be load tested every three years. The problem is that batteries in the fourth or fifth year could be drastically deteriorated and would not be required to be retested until the sixth year. The proposed change would require batteries to be tested every year to ensure they have the correct capacity needed to remain in service. With the clarity of the 2025 edition of NFPA 72 allowing a fire alarm control unit arranged for the purpose could perform the load test. As many manufacturers do this now, the change to require load testing every year should not be a burden to the industry. Further, NFPA 72 has identified secondary batteries needing to be listed or component recognized to help combat battery issues only goes to indicate that the testing should be raised as well.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 59-NFPA 72-2025 [Section No. 14.4.3.2]</u>	

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Public Input No. 222-NFPA 72-2025 [New Section after 14.4.13]

14.4.14

5 year Inspection and Testing of Fire Alarm Systems

14.4.14.1

- Frequency : Every 5 years under the annual requirements of 14:14.3 and 14:14.4 additional inspection and testing as listed below shall be performed by qualified personnel in accordance with 72:10.5.3.

14.4.14.2*

- All wiring is to be inspected in all areas, including above T-bar ceilings.

Non accessible areas shall not be included.

Fire Alarm wiring that is found not to be installed in accordance with NFPA 70 [70:760.24(A)(B)] and other governing codes shall be reinstalled correctly.

A.14.4.14.2: Wiring is removed from supports for service reasons and not re-installed correctly per { 70 :760.24}

A.14.4.14.2: Wiring installed correctly above T-Bar or Gypsum board ceilings is only checked on rough in and acceptance testing. In the following weeks, month, years, service repairs, building changes and retrofits are done to the building or structure, sometimes during the reworks, the initial installation of the fire alarm wiring is removed.

14.4.2.1

- SLC wiring shall be tested to have the correct performance of class designations in accordance with 72:23.6

14.4.14.3

- Abandoned Fire Alarm wiring shall be tagged for future use or removed. [70 :760.25]

14.4.14.4*

- Accessibility of duct detectors is to be inspected. Duct Detectors that are found to be located above T-Bar ceilings that do not have visible alarm indicators as stated in 72:10.18 or 72:17.4.6., 17.4.6.1 and 17.4.6.2 or test switch installed for location identification, a remote indicator shall be installed.
- Exception: Detectors installed in concealed locations where the specific detector alarm or supervisory signal is indicated at the control unit (and on the drawings with its specific location and function) shall not be required to be provided with a remote alarm indicators as specified in [72:17.4.6.3]

A.14.4.14.4 : Duct detectors should be installed by qualified personnel.

14.4.14.5*

- Battery Testing shall be done under full load of the fire alarm system. Testing to be performed per NFPA 72; current edition; Chapter 14, Table 14.4.3.2, subsection #8: Secondary (standby) power supply.

Secondary (standby) power supply: Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.

A.14.4.14.5: Batteries should be checked with load testers and /or meters during the annual ITM.

14.4.14.6

- All Inspection and testing methods as shown in Tables 14.3.1 and 14.4.3.2 shall be followed during the 5 year ITM.

14.4.14.6.1

- All devices shall be installed, inspected and tested as shown in tables 14.3.1 and 14.4.3.2 during the 5 year ITM.
- Sensitivity testing shall be included in the 5 year testing requirement.

14.4.14.6.2

- If required by the AHJ, 5 year ITM shall include the requirements of NFPA 4: Standard for Integrated Fire Protection and Life Safety System Testing.

14.4.14.6.3

- Documentation of integrated equipment testing shall be as required in 4:7.2
- Documentation of inspection and testing shall be as required in 72:7.6

14.4.14.7.1

- ITM tags shall be installed (placed) at the main control panel or at the documents box indicating the status of the buildings fire alarm system upon completion of the 5 year ITM.
- ITM tags shall be color coded and completed as adopted and approved by the AHJ.
- ITM tags shall be made of durable, weatherproof, colorfast materials.

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Statement of Problem and Substantiation for Public Input

Having this new requirement of fire alarm testing will allow the end user to be assured that the system is still functioning and in installed in accordance with the Manufacturers recommendations and NFPA 72.

Verifying the wiring and all associated wiring requirements, this ensures that the system will operate as intended from the original installation.

By adding the requirements for duct detection locations / verification reduces the problem that Fire Alarm systems have with duct detectors being in accessible for testing

This new section will bring NFPA 4 and NFPA 72 in alignment.

By adding this requirement, when replacing existing systems with new with the use the existing fire alarm wiring, it ensures that the existing wiring is in compliance with NFPA 72 installation and ITM requirements.

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Committee: SIG-TMS



Public Input No. 295-NFPA 72-2025 [New Section after 14.6.2.5]

14.6.2.6 Records of inspection, testing, and maintenance shall be provided to the system owner or owner's representative within 72 hours of the completion of the inspection, testing and maintenance or within a timeframe acceptable to the AHJ.

Statement of Problem and Substantiation for Public Input

There is no required timeframe to provide test results. It is important for the individual or company doing the testing to provide the building owner with the reports in a timely manner. There is no technical reason that the reports cannot be provided within a short timeframe. The required timeframe of 72 hours is selected to provide for a long weekend.

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Public Input No. 7-NFPA 72-2024 [Section No. A.14.2.10]

A.14.2.10

The test plan is intended to clarify exactly what is to be tested and how it is to be tested. Testing of fire alarm and signaling systems is often done in a segmented fashion to accommodate the availability of testing or other personnel or to minimize the interruption of building operations. Where a building owner has contracted the performance of inspection, testing, and maintenance activities to outside entities, the test plan, what will and will not be tested, should be reviewed by those parties. Building operations can be affected by testing of the fire alarm or signaling system itself and by the operation of emergency control functions actuated by the fire alarm or signaling system. The boundary of the fire alarm or signaling system extends up to and includes the emergency control function interface device. The testing requirements prescribed in *NFPA 72* for fire alarm and signaling systems end at the emergency control function interface device. The purpose of the test plan is to document what devices will and will not actually be tested.

The testing of emergency control functions, releasing systems, or interfaced equipment is outside the scope of *NFPA 72*. Requirements for testing other systems are found in other governing laws, codes, or standards. Requirements for integrated testing of combined systems also fall under the authority of other governing laws, codes, standards, or authority having jurisdiction. ~~NFPA 3 provides guidance for~~ NFPA 4 provides requirements for such testing - ~~NFPA 3 recognizes and recognizes~~ the importance of the development of an integrated testing plan.

Further information on testing associated with emergency control functions can be found in Table 14.4.3.2, Item 24 and its related annex material in A.14.4.3.2.

Statement of Problem and Substantiation for Public Input

NFPA 4 should be referenced here with regard to integrated testing, not the requirements for commissioning in NFPA 3. This note goes back to the 2013 edition, which was prior to NFPA 4's existence. However, this language was not changed accordingly when NFPA 4 was adopted.

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This figure first entered NFPA 72 in the 1996 edition, known then as Figure A-7-5.2.2(i). It has not changed in 29 years! It is for a simple 3-story office building, assumed to be a horn and strobe system (no information on tone or signal used). The current version from the 2025 edition contains multiple errors which first occurred in the 1999 edition and have never been corrected. Typographical errors exist on Smoke Detectors line 5&6, with no 2nd floor. Alarm indicators for Zone 2 and 3 are shown to be on the 1st floor when clearly, they should be on Floor 2 and 3. The building has a single elevator and shows all smoke detectors on Level 1, 2, and 3 activate primary recall, except the 1st floor smoke detector in the elevator lobby activates the alternate recall. All of the duct smoke detectors are shown as Fire Alarms, not Supervisory. And nowhere does it show shutdown of HVAC units. It shows closing dampers, but only on waterflow. And other errors.

This matrix example needs to be replaced with a new, updated one like that provided in the new Figure A.7.4.9(a) as well as being moved out of Chapter 14 and into Chapter 7 where documentation belongs. The Logic Diagram example added in the 2025 edition as Figure A.14.6.1.1(a) is now moved, unchanged, to be Figure A.7.4.9(b).

Other public inputs will also update the references to existing A.14.6.1.1 to the new Annex A.7.4.9 language and examples.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 335-NFPA 72-2025 [Section No. A.7.4.9]</u>	Dependent

Submitter Information Verification

Submitter Full Name: Larry Rietz
Organization: Jensen Hughes
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 03 18:17:55 EDT 2025
Committee: SIG-TMS



Public Input No. 42-NFPA 72-2025 [Global Input]

Substitute the term “engineering analysis” for “engineering evaluation” throughout the standard

Statement of Problem and Substantiation for Public Input

Both “engineering evaluation” and “engineering analysis” are used throughout NFPA 72. From the context that the terms are used in, it appears that the intended meaning is the same. Based on the dictionary definitions of the terms, it makes sense to standardize on the term “engineering analysis.” The definition should be extracted from NFPA 130.

Submitter Information Verification

Submitter Full Name: Scott Lang

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Submittal Date: Wed Jan 29 12:29:39 EST 2025

Committee: SIG-FUN