Public Input No. 260-NFPA 72-2019 [Global Input]

Table B.2.3.2.6.2(c) Unit Heat Release Rates for Fuels Burning in Open *Polymethyl methacrylate (acrylic, acrylic glass or plexiglass)

Statement of Problem and Substantiation for Public Input

Table B.2.3.2.6.2(c) Unit Heat Release Rates for Fuels Burning in the Open *Polymethyl methacrylate (Plexiglas™, Lucite™, Acrylic).

*SIG-IDS to remove these trademark products and use non trademark terms.

Submitter Information Verification

Submitter Full Name: Samuel Rokowski
Organization: Reedy Creek Improvement Distri
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 13:00:37 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5192-NFPA 72-2019
Statement: The coefficient α is elsewhere defined and used as the fire growth rate. In multiple locations this same coefficient is referred to as the “fuel fire intensity coefficient”. It has been validated in each instance the coefficient is the same so therefore the changes standardize terminology.

Trade mark product names were removed from the note to Table B.2.3.2.6.2(c).

Public Input No. 261-NFPA 72-2019 [Global Input]

17.7.3.5 Raised Floors and Suspended Ceilings

17.7.3.5.1 **Spaces beneath raised floors and above suspended ceilings shall be treated as separate rooms for smoke detector spacing purposes.**

17.7.3.5.2 **Detectors installed beneath raised floors or above suspended ceilings, or both, including raised floors and suspended ceilings used for environmental air, shall not be bused in lieu of providing detection within the room.**

17.7.3.5.3 **For raised floors, the following shall apply:**

(1) Detectors installed beneath raised floors shall be spaced in accordance with 17.7.3.1, 17.7.3.1.3, and 17.7.3.2.2

(2) Where the area beneath the raised floor is also used for environmental air, detector spacing shall also conform to 17.7.4.1 and 17.7.4.2.

17.7.3.5.4 **For suspended ceilings, the following shall apply:**

(1) Detector spacing above suspended ceilings shall conform to the requirements of 17.7.3 for the ceiling configuration.

(2) Where detectors are installed in ceilings used for environmental air, detector spacing shall also conform to 17.7.4.1, 17.7.4.2, and 17.7.4.4.

Statement of Problem and Substantiation for Public Input

17.7.3.5 contains multiple requirements. Separate per the MOS 1.8.4

Submitter Information Verification

Submitter Full Name: Samuel Rokowski
Organization: Reedy Creek Improvement Distri
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 13:18:33 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5335-NFPA 72-2019
Statement: Section 17.7.3.5 contained multiple requirements which have been separated in accordance with the Manual of Style Section 1.8.4.

Public Input No. 262-NFPA 72-2019 [Global Input]

Remove the terms “Standard for” or “Subject” from in front of all UL standards referenced in NFPA 72.

Statement of Problem and Substantiation for Public Input

The terms are redundant and unnecessary. All references to UL are standards.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 17:01:33 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5134-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style. "ANSI/" is removed from all UL standards to eliminate confusion regarding the publisher of UL standards.

Public Input No. 263-NFPA 72-2019 [Global Input]

Remove ANSI from in front of all UL standards referenced in NFPA 72.

Statement of Problem and Substantiation for Public Input

Many years ago, UL preferred the ANSI/UL reference because there was a transition of traditional UL standards towards an ANSI standards development process.

Now, years later, a large majority of UL Standards are ANSI approved and follow the ANSI development and maintenance process. However, sometimes readers are confused because they don't understand the standards are actually UL standards, not developed by ANSI. There are many other references to standards promulgated by other standards development organizations where they are considered ANSI approved but do not include ANSI in the reference.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 17:02:50 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5134-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term "Standard for". We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style. "ANSI/" is removed from all UL standards to eliminate confusion regarding the publisher of UL standards.

Public Input No. 394-NFPA 72-2019 [Global Input]

Current document title: "NFPA 72 National Fire Alarm and Signaling Code"

Suggested revision: "NFPA 72 National Fire Alarm and Signaling Code, and Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment"

Statement of Problem and Substantiation for Public Input

The content of NFPA 720 was incorporated into the 2019 edition of NFPA 72, but the title of NFPA 72 was not revised to reflect this content change. Revising the title will more accurately reflect the content of NFPA 72, maintain the designation of the CO content as a Standard, and will aid users in finding the relocated CO detection/warning equipment requirements.

Submitter Information Verification

Submitter Full Name: Kris Hauschildt
Organization: Jenkins Foundation
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 16:06:01 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The title, 'National Fire Alarm and Signaling Code,' takes into account carbon monoxide detection and warning equipment. (SIG-FUN)The following committees also reviewed this Public Input:SIG-HOU: Recommends changing the title to 'National Alarm and Signaling Code.'SIG-IDS: Recommends no change to the title.SIG-TMS: Recommends no change to the title.

Public Input No. 433-NFPA 72-2019 [Global Input]

17.6.3.4.2.1 A row of detectors shall be located greater than 4 inches and not more than 36 inches from the peak of the ceiling.

Statement of Problem and Substantiation for Public Input

The Annex material identifies the 4 in. requirement in A.17.6.3.4(a), not the normative text located in 17.6.3.4.2.1. The Annex cannot be the requirement.

Submitter Information Verification

Submitter Full Name: Samuel Rokowski
Organization: Reedy Creek Improvement Distri
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 10:23:19 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: No technical justification was provided to add the requirement to the Code.

Public Input No. 434-NFPA 72-2019 [Global Input]

Please see the attached Table.

Additional Proposed Changes

File Name	Description	Approved
SIG-IDS_Pre-FD_Issues_-_Annex_Table_17.7.3.docx	Annex Table A.17.7.3	

Statement of Problem and Substantiation for Public Input

To use the already created Table for Spot-Type Smoke Detector Spacing and Mounting Location for Various Ceiling Types in the Annex. The Table is already being use in the NFPA 72 Handbook on the first page.

Submitter Information Verification

Submitter Full Name: Samuel Rokowski
Organization: Reedy Creek Improvement Distri
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 10:29:31 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The proposed material is in the NFPA 72 Handbook and does not need to be duplicated in the Code annex.

Public Input No. 494-NFPA 72-2019 [Global Input]

Type your content here ...

Table 14.3.1, item 14, title component "transient suppressors" is called out for visual inspection. Change the title component to "Surge Protective Device (SPD)" and replace all places within the document of NFPA 72.

Statement of Problem and Substantiation for Public Input

UL 1449 3rd edition 3.36 definition:
Surge Protective Device (SPD) A Device composed of at least one non-linear component and intended for limiting surge voltages on equipment by diverting or limiting surge current and is capable of repeating these functions as specified. SPDs were previously known as Transient Voltage Surge Suppressors or secondary surge arrestors

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 09:08:41 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: CI-5187-NFPA 72-2019
Statement: SIG-PRS requests the Correlating Committee to direct SIG-TMS to change the term "transient suppressors" in Item (14) of Table 14.3.1 to "surge protective devices (SPG)."

(STAFF NOTE: See FR-5219 on 14.3.1.)

Public Input No. 578-NFPA 72-2019 [Global Input]

The term Energy Storage Systems is used in 53 places within NFPA 72. Add references to NFPA 855 Energy Storage System requirements by extract and include appropriate NFPA 855 Test Standards to meet the requirements to Chapter 2.

Statement of Problem and Substantiation for Public Input

NFPA 855 is a new standard that needs to be added into NFPA 72. I would suggest a Committee Input and a Task Group be formed to accomplish the integration of standards and requirement extracts into NFPA 72.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:38:03 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: NFPA 855 is a proposed standard and is not yet published. The submitter should provide specific locations where NFPA 855 would be applicable in NFPA 72 once published.

Public Input No. 616-NFPA 72-2019 [Global Input]

(1) *Revise A.24.3.10 to read as follows:*

A.24.3.10 ~~A fire~~ Fire emergency voice/alarm communications systems (EVACS) ~~control unit~~ that ~~is~~ are listed in accordance with ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, ~~or an emergency alarm system control unit~~ can be used for MNS ~~as long as the control unit has also been evaluated to ANSI/UL 2572, *Mass Notification Systems*. The unique requirements in Chapter 24 for mass notification systems are included in ANSI/UL 2572. A control unit is permitted to provide multiple life safety services when evaluated to the respective requirements.~~ A control unit only listed in accordance with ANSI/UL 2572, *Mass Notification Systems*, cannot be used as a fire alarm control unit.

(1) *Add a new reference to Annex I to read as follows:*

I.1.2.14 UL Publications.

...

ANSI/UL 2572, *Mass Notification Systems*, 2nd edition, 2016.

Additional Proposed Changes

File Name	Description	Approved
NFPA_72_TIA_19-1_issued.pdf	NFPA 72 TIA 19-1 Log No. 1377	

Statement of Problem and Substantiation for Public Input

NOTE:This public input originates from Tentative Interim Amendment No.19-1 (Log 1377) issued by the Standards Council on August 14, 2018 and per the NFPA Regs.,needs to be reconsidered by the Technical Committee for the next edition of the Document

Substantiation: The annex section language directly conflicts with the language in the body of the Second draft. Section A.24.3.10 was revised at the Second Draft to eliminate ANSI/UL 2017. This TIA agrees with the deletion of the reference to ANSI/UL 2017 in the Annex as well as eliminate the conflict between the annex text of A.24.3.10 and the normative text of 24.3.10.
Emergency Nature: The NFPA Standard contains an error or an omission that was overlooked during the regular revision process. The NFPA Standard contains a conflict within the NFPA Standards or within another NFPA Standard.
The annex section language directly conflicts with the language in the body of the Second draft. Section 24.3.10 was revised to eliminate ANSI/UL 2017. This TIA will delete the reference to ANSI/UL 2017 in the Annex eliminating the conflict.

Submitter Information Verification

Submitter Full Name: TC ON SIG-ECS
Organization: NFPA
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:00:42 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5208-NFPA 72-2019

Statement: UL 2572 has specific requirements on how mass notification systems need to function. UL 864 does not have these requirements. The industry has matured and many manufacturers have equipment listed to UL 2572 and therefore NFPA 72 needs to remove all other listings other than 2572. In addition, modifications have been made to the annex language as well.

Public Input No. 633-NFPA 72-2019 [Global Input]

A.17.4.7 Some applications that do not require full area protection do require detection to initiate action when specific objects or spaces are threatened by smoke or fire, such as at elevator landings that have ceilings in excess of 15 ft (4.6 m) and for protection of fire alarm control units. In high-ceiling areas, to acheive the desired initiation, such as for elevator recall and protection of fire alarm control units (FACU's), detection should be placed within 60 in. (1.52 m) from the top of the elevator door(s) or FACU. Each specific object or space shall be permitted to be protected by individual detector units.

Statement of Problem and Substantiation for Public Input

The expansion of the text would apply to multiple specific objects that may need detection, multiple elevators and objects exceeding the 60 in. distance.

Submitter Information Verification

Submitter Full Name: Samuel Rokowski
Organization: Reedy Creek Improvement Distri
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:34:02 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5287-NFPA 72-2019
Statement: The Technical Committee adds a sentence to clarify that a single detector can be in close proximity to more than one object.

Public Input No. 650-NFPA 72-2019 [Global Input]

(1) *Revise 2.3.2 to read as follows:*

2.3.2 ASME Publications. American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

~~ASME A17.1/CSA B44–13,~~ ASME A17.1-2016/CSA B44-16, *Safety Code for Elevators and Escalators*, 2016.

(1) *Revise I.1.2.2 to read as follows:*

I.1.2.2 ASME Publications. American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

~~ANSI/ASME A17.1/CSA B44,~~ ASME A17.1-2016/CSA B44-16, *Safety Code for Elevators and Escalators*, 2016.

3. In paragraphs 21.3.6, 21.3.8, 21.3.14, 21.4.1, 21.6.2, A.17.5.3.1, A.21.3, A.21.3.7, A.21.3.10, A.21.3.14.1, A.21.3.14.2,

A.21.3.14.2(3), A.21.6.2.1.1, A.23.3.3.1, and A.24.10, revise the following reference to read as follows:

~~ANSI~~/ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*

Additional Proposed Changes

File Name	Description	Approved
72_TIA_19-2_Log1410.pdf	NFPA 72 TIA 19-2 Log No. 1410	

Statement of Problem and Substantiation for Public Input

NOTE: This public input originates from Tentative Interim Amendment No. 19-2 (Log 1410) issued by the Standards Council on February 28, 2019 and per the NFPA Regs., needs to be reconsidered by the Technical Committee for the next edition of the Document.

Substantiation:

1. There are significant code changes between the 2013 and 2016 Editions of the ASME A17.1/ CSA B44 (A17.1Code). When all NFPA 72 Technical Committees having associated references to the A17.1 Code decided to reference the 2016 edition of the A17.1 Code as the applicable reference standard this required complete compliance with ALL the requirements in the 2016 edition of the A17.1 Code which supersede the requirements in the 2013 Code.
2. Since NFPA 72-2019 includes many requirements for Fire Alarm systems (Building FA systems and Dedicated Function FA systems) interface with Elevator systems it is imperative that the Designers, Installers, Enforcers and any other NFPA 72-2019 users use the accurate and specific A17.1-2016 requirements as the basis for their design, installation, maintenance and enforcement work. If the wrong reference of the A17.1 Code is used, this may cause many issues with the design, installation, maintenance and enforcement of Fire Alarm systems.
3. NFPA 72-2019 includes many significant changes in sections 21.3, 21.5 and 21.6 regarding the interface of Fire Alarm systems with Elevator systems, Fire Service Access Elevators and Occupant Evacuation Operation – If the wrong edition of the A17.1 Code is used (2013 Edition instead of the 2016 Edition) – this will cause significant problems with all aspects of the FA-Elevator interface issue.
4. The SIG-PRO TC based all their work in the NFPA 72-2019 edition on the 2016 Edition of the A17.1 Code. Therefore, it is extremely important for NFPA 72-2019 users to not use any other reference A17.1 Edition other than the 2016 Edition. This will conflict with all the work done by the SIG-PRO TC.

Mr. David McColl – Chair of the A17.1 Emergency Operation Committee states that the Correct Reference in NFPA 72-2019 Sections 2.3.2 and I.1.2.2 should be: ASME A17.1-2016/CSA B44- 16, Safety Code for Elevators and Escalators; and references a screenshot of the current 2016 cover page below.

The rationale for deleting the ANSI reference in ALL the following sections: 21.3.6 , 21.3.8 , 21.3.14, 21.4.1, 21.6.2, A.17.5.3.1, A.21.3, A.21.3.7, A.21.3.10, A.21.3.14.1, A.21.3.14.2,
A.21.3.14.2(3), A.21.6.2.1.1, A.23.3.3.1, A.24.10, is to comply with NFPA Manual of Style and to be consistent with the proposed revisions for sections 2.3.2 and I.1.2.2.

Emergency Nature: The standard contains an error or an omission that was overlooked during the regular revision process. The NFPA Standard contains a conflict within the NFPA Standards or within another NFPA Standard. The proposed TIA intends to correct a circumstance in which the revised NFPA Standard has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process or was without adequate technical (safety) justification of the action.
The Emergency Nature of this TIA is based on the current Sections in NFPA 72-1019: 2.3.2 and I.1.2.2 which are inconsistent between themselves and create immediate confusion for designers, installers, enforcers and other NFPA 72 users who are designing, installing and inspecting Elevators provided with Firefighters Emergency Operation (FEO) and with Occupant Evacuation Operation (OEO). Since NFPA 72-2019 includes specific NEW code Language in Sections 21.3 and 21.6 which is specifically based on the 2016 Edition of ASME A17.1-2016, this inconsistence and confusion must be revised immediately to prevent immediate problems with the design, installation and enforcement of Fire Alarm Systems having interface with Elevator Systems.

Submitter Information Verification

Submitter Full Name: TC on SIG-PRO
Organization: NFPA
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 27 09:26:38 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5134-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style. "ANSI/" is removed from all UL standards to eliminate confusion regarding the publisher of UL standards.

Public Input No. 18-NFPA 72-2018 [Section No. 2.3]

2.3 Other Publications.

2.3.1 ANSI Publications.

American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI A-58.1, *Building Code Requirements for Minimum Design Loads in Buildings and Other Structures*.

ANSI/**ASA** S1.4~~a, Specifications for~~ 4 **Part 3** , ***Electroacoustics - Sound Level Meters - Part 3: Periodic Tests*** , 2014. **(Supersedes ANSI S1.4a)**

ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation* ~~(E2) and Evacuation Signals with Relocation Instructions (ESRI), 1990, reaffirmed~~ **Signal, 2015** .

2.3.2 – ASCE Publications.

American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191.

ASCE/SEI 7, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, 2016. (Supersedes ANSI A58.1)

2.3.3 ASME Publications.

American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ASME A17.1/CSA ~~B44–13~~ B44–1 **6** , *Safety Code for Elevators and Escalators*, 2016.

2.3. ~~3~~ 4 IEEE Publications.

Institute of Electrical and Electronics Engineers, 3 Park Avenue, 17th Floor, New York, NY 10016-5997.

IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, 2010.

IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, ~~2005~~ 20 **1** 5 .

ANSI/IEEE C2, *National Electrical Safety Code*, 2017.

2.3. 4 5 IMSA Publications.

International Municipal Signal Association, 165 East Union Street, Newark, NY 14513-0539.

"IMSA Official Wire and Cable Specifications," 2012.

2.3. ~~5~~ 6 ISO Publications.

International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

ISO 7731, *Danger signals for public and work places — Auditory danger signals*, 2003 ~~(reconfirmed 2015)~~ .

2.3. ~~6~~ 7 Telcordia Publications.

Telcordia Technologies, One Telcordia Drive, Piscataway, NJ 08854.

GR-506-CORE, LATA Switching Systems Generic Requirements: Signaling for Analog Interface, 2011.

GR-909-CORE, Fiber in the Loop Systems Generic Requirements, 2004.

2.3. ~~7~~ 8 TIA Publications.

Telecommunications Industry Association, 1320 North Courthouse Road, Suite 200, Arlington, VA 22201.

TIA-526, *Standard Test Procedures for Fiber Optic Systems***, 1993** .

ANSI/TIA-568**.3** ~~-C.3~~ **D** , *Optical Fiber Cabling Components Standard*, ~~2015~~ 201 **6, addendum 1, 2017** .

ANSI/TIA-569-D, *Telecommunications Pathways and Spaces***, 2015, addendum 1, 2016, addendum 2, 2018** .

2.3. ~~8~~ 9 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 38, *Standard for Manual Signaling Boxes for Fire Alarm Systems,* 2008**, revised 2018** .

ANSI/UL 217, *Standard for Single and Multiple Station Smoke Alarms*, 8th edition, revised 2016.

ANSI/UL 268, *Standard for Smoke Detectors for Fire Alarm Systems*, 7th edition, 2016**, revised 2016** .

ANSI/UL 521, *Standard for Heat Detectors for Fire Protective Signaling Systems*, 7th edition, 1999, revised ~~2016~~ 201 **7** .

ANSI/UL 827, *Standard for Central-Station Alarm Services*, 8th edition, 2014, revised ~~2016~~ 201 **8** .

ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, 10th edition, 2014**, revised 2018** .

ANSI/UL 985, *Standard for Household Fire Warning System Units*, 6th edition, 2015**, revised 2018** .

ANSI/UL 1484, *Standard for Residential Gas Detectors*, 5th edition, 2016**, revised 2017** .

ANSI/UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*, 5th edition, 2016**, revised 2017** .

ANSI/UL 1730, *Standard for Smoke Detector Monitors and Accessories for Individual Living Units of Multifamily Residences and Hotel/Motel Rooms*, 4th edition, 2006, revised ~~2012~~ 201 **7** .

ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired*, 3rd edition, 2002, revised ~~2013~~ 201 **8** .

ANSI/UL 1981, *Central Station Automation Systems*, 3rd edition, 2014, revised 2015.

ANSI/UL 2017, *Standard for General-Purpose Signaling Devices and Systems*, 2nd edition, 2008, revised 2016.

ANSI/UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms,* ~~February 2008~~ **2017** , revised ~~February 2009~~ **2018** .

ANSI/UL 2075, *Standard for Gas and Vapor Detectors and Sensors,* 2nd edition, March 2013**, revised 2017** .

ANSI/UL 2572, *Mass Notification Systems*, 2nd edition, 2016.

ANSI/UL 60950**-1** , *Information Technology Equipment — Safety — Part 1: General Requirements*, 3rd edition, ~~issued December 2005, including Amendment 1 issued December 2009 and Amendment 2 issued May 2013~~ **2007, revised 2014** .

2.3. ~~9~~ 10 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

Statement of Problem and Substantiation for Public Input

Referenced current national consensus standard editions.
Referenced ASCE/SEI 7 which supersedes ANSI A58.1.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 19-NFPA 72-2018 [Chapter I]	

Submitter Information Verification

Submitter Full Name: Aaron Adamczyk
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Oct 30 00:56:43 EDT 2018

Committee: SIG-FUN

Committee Statement

Resolution: FR-5134-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style. "ANSI/" is removed from all UL standards to eliminate confusion regarding the publisher of UL standards.

Public Input No. 604-NFPA 72-2019 [Section No. 2.3.1]

Add standard for Cyber Security.

2.3.1 ANSI Publications.

American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI A-58.1, *Building Code Requirements for Minimum Design Loads in Buildings and Other Structures*.

ANSI S1.4a, *Specifications for Sound Level Meters*, 2014.

ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)*, 1990, reaffirmed 2015.

ANSI/ISA-62443 Series, 2007

Statement of Problem and Substantiation for Public Input

This standard is being referenced in the new Cyber Security Section 24.3.12.11.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 600-NFPA 72-2019 [New Section after 24.3.12.10]	

Submitter Information Verification

Submitter Full Name: Denise Pappas
Organization: Valcom, Inc.
Affiliation: ECS Cyber Security Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:22:32 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5136-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style.

Public Input No. 187-NFPA 72-2019 [Section No. 2.3.2]

2.3.2 ASME Publications.

American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ASME A17.1-~~2016~~ 2019 /CSA B44-~~16~~ 19 , *Safety Code for Elevators and Escalators*, ~~2016~~ 2019 .

Statement of Problem and Substantiation for Public Input

The next 2019 Edition of ASME A17.1 will be published in September 2019. This NEW edition has significant changes in Section 2.27 regarding Phase I Emergency Recall Operation and Occupant Evacuation Operation (OEO). It should be the referenced standard in the next 2022 edition of NFPA 72.

This proposal was discussed with the ASME A17.1 Emergency Operation Committee during their June 2019 meeting in Denver, CO and it was agreed that it is a good proposal.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 20 10:19:43 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5134-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style. "ANSI/" is removed from all UL standards to eliminate confusion regarding the publisher of UL standards.

Public Input No. 228-NFPA 72-2019 [Section No. 2.3.8]

2.3.8 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 38, *Standard for Manual Signaling Boxes for Fire Alarm Systems,* 2008.

ANSI/UL 217, *Standard for Single and Multiple Station Smoke Alarms*, 8th edition, revised 2016.

ANSI/UL 268, *Standard for Smoke Detectors for Fire Alarm Systems*, 7th edition, 2016.

ANSI/UL 521, *Standard for Heat Detectors for Fire Protective Signaling Systems*, 7th edition, 1999, revised 2016.

ANSI/UL 827, *Standard for Central-Station Alarm Services*, 8th edition, 2014, revised 2016.

ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, 10th edition, 2014.

ANSI/UL 985, *Standard for Household Fire Warning System Units*, 6th edition, 2015.

ANSI/UL 1484, *Standard for Residential Gas Detectors*, 5th edition, 2016.

ANSI/UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*, 5th edition, 2016.

ANSI/UL 1730, *Standard for Smoke Detector Monitors and Accessories for Individual Living Units of Multifamily Residences and Hotel/Motel Rooms*, 4th edition, 2006, revised 2012.

ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired*, 3rd edition, 2002, revised 2013.

ANSI/UL 1981, *Central Station Automation Systems*, 3rd edition, 2014, revised 2015.

ANSI/UL 2017, *Standard for General-Purpose Signaling Devices and Systems*, 2nd edition, 2008, revised 2016.

ANSI/UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms,* February 2008, revised February 2009.

ANSI/UL 2075, *Standard for Gas and Vapor Detectors and Sensors,* 2nd edition, March 2013.

UL 2525, Rescue Assistance Two-Way Emergency Communication Systems for Stairwell and Elevator Landing/Lobby Areas of Refuge. 2018

ANSI/UL 2572, *Mass Notification Systems*, 2nd edition, 2016.

ANSI/UL 60950, *Information Technology Equipment — Safety — Part 1: General Requirements*, 3rd edition, issued December 2005, including Amendment 1 issued December 2009 and Amendment 2 issued May 2013.

Statement of Problem and Substantiation for Public Input

UL has created a new Standard for the listing of these systems and needs to be included in chapter 2 and used in chapter 24.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 15:47:18 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5134-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style. "ANSI/" is removed from all UL standards to eliminate confusion regarding the publisher of UL standards.

Public Input No. 264-NFPA 72-2019 [Section No. 2.3.8]

2.3.8 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 38, *Standard for Manual Signaling Boxes for Fire Alarm Systems,* 2008, revised 2018 .

ANSI/UL 217, *Standard for Single and Multiple Station Smoke Alarms*, ~~8th edition,~~ 2015 revised 2016.

ANSI/UL 268, *Standard for Smoke Detectors for Fire Alarm Systems*, ~~7th edition, 2016~~ 2016 .

ANSI/UL 521, *Standard for Heat Detectors for Fire Protective Signaling Systems*, ~~7th edition,~~ 1999, revised ~~2016~~ 2017 .

ANSI/UL 827, *Standard for Central-Station Alarm Services*, ~~8th edition,~~ 2014, revised ~~2016~~ 2019 .

ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, ~~10th edition~~ 2014 , ~~2014~~ revised 2018 .

ANSI/UL 985, *Standard for Household Fire Warning System Units*, ~~6th edition~~ 2015 , ~~2015~~ revised 2018 .

ANSI/UL 1484, *Standard for Residential Gas Detectors*, ~~5th edition~~ 2016 , ~~2016~~ revised 2017 .

ANSI/UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*, 5th edition, 2016.

ANSI/UL 1730, *Standard for Smoke Detector Monitors and Accessories for Individual Living Units of Multifamily Residences and Hotel/Motel Rooms*, ~~4th edition~~ 2006 , ~~2006,~~ revised ~~2012~~ 2017 .

ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired*, ~~3rd edition,~~ 2002, revised ~~2013~~ 2018 .

ANSI/UL 1981, *Central Station Automation Systems*, ~~3rd edition~~ 2014 , ~~2014,~~ revised 2015.

ANSI/UL 2017, *Standard for General-Purpose Signaling Devices and Systems*, ~~2nd edition~~ 2008 , ~~2008,~~ revised ~~2016~~ 2018 .

ANSI/UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms,* ~~February 2008, revised February 2009~~ 2017, revised 2018 .

ANSI/UL 2075, *Standard for Gas and Vapor Detectors and Sensors*, ~~2nd edition, March 2013~~ 2013, revised 2017 .

ANSI/UL 2572, *Mass Notification Systems*, ~~2nd edition~~ 2016 , ~~2016~~ revised 20128 .

ANSI/UL 60950-1 , *Information Technology Equipment — Safety — Part 1: General Requirements*, ~~3rd edition, issued December 2005, including Amendment 1 issued December 2009 and Amendment 2 issued May 2013~~ 2019 .

Statement of Problem and Substantiation for Public Input

Update the publishing dates for each of the UL standards listed to reflect the most up to date edition.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 267-NFPA 72-2019 [Section No. I.1.2.14]	
Public Input No. 268-NFPA 72-2019 [Section No. I.2.4]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:

State:
Zip:
Submittal Date: Wed Jun 12 17:05:02 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5134-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style. "ANSI/" is removed from all UL standards to eliminate confusion regarding the publisher of UL standards.

Public Input No. 605-NFPA 72-2019 [Section No. 2.3.8]

Add Cyber Security Standard

2.3.8 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 38, *Standard for Manual Signaling Boxes for Fire Alarm Systems,* 2008.

ANSI/UL 217, *Standard for Single and Multiple Station Smoke Alarms*, 8th edition, revised 2016.

ANSI/UL 268, *Standard for Smoke Detectors for Fire Alarm Systems*, 7th edition, 2016.

ANSI/UL 521, *Standard for Heat Detectors for Fire Protective Signaling Systems*, 7th edition, 1999, revised 2016.

ANSI/UL 827, *Standard for Central-Station Alarm Services*, 8th edition, 2014, revised 2016.

ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, 10th edition, 2014.

ANSI/UL 985, *Standard for Household Fire Warning System Units*, 6th edition, 2015.

ANSI/UL 1484, *Standard for Residential Gas Detectors*, 5th edition, 2016.

ANSI/UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*, 5th edition, 2016.

ANSI/UL 1730, *Standard for Smoke Detector Monitors and Accessories for Individual Living Units of Multifamily Residences and Hotel/Motel Rooms*, 4th edition, 2006, revised 2012.

ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired*, 3rd edition, 2002, revised 2013.

ANSI/UL 1981, *Central Station Automation Systems*, 3rd edition, 2014, revised 2015.

ANSI/UL 2017, *Standard for General-Purpose Signaling Devices and Systems*, 2nd edition, 2008, revised 2016.

ANSI/UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms,* February 2008, revised February 2009.

ANSI/UL 2075, *Standard for Gas and Vapor Detectors and Sensors,* 2nd edition, March 2013.

ANSI/UL 2572, *Mass Notification Systems*, 2nd edition, 2016.

ANSI/UL 60950, *Information Technology Equipment — Safety — Part 1: General Requirements*, 3rd edition, issued December 2005, including Amendment 1 issued December 2009 and Amendment 2 issued May 2013.

ANSI/UL 2900 Series, July 5, 2017

Statement of Problem and Substantiation for Public Input

This standard is being referenced in the new Cyber Security Section 24.3.12.11.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 600-NFPA 72-2019 [New Section after 24.3.12.10]	

Submitter Information Verification

Submitter Full Name: Denise Pappas
Organization: Valcom, Inc.
Affiliation: ECS Cyber Security Task Group
Street Address:
City:

State:
Zip:
Submittal Date: Wed Jun 26 15:25:37 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5136-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style.

Public Input No. 606-NFPA 72-2019 [New Section after 2.3.9]

Add New Publication Section

2.3.9 US Government Publications. U.S. Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001

NIST Framework for Improving Critical Infrastructure Cybersecurity Version 1.1, 2018

Statement of Problem and Substantiation for Public Input

This standard is being referenced in the new Cyber Security Section 24.3.12.11.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 600-NFPA 72-2019 [New Section after 24.3.12.10]	

Submitter Information Verification

Submitter Full Name: Denise Pappas
Organization: Valcom, Inc.
Affiliation: ECS Cyber Security Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:27:59 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5136-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style.

Public Input No. 161-NFPA 72-2019 [New Section after 3.3]

Add new defintions for Inspection, Test, and Maintenance extracted from NFPA 25.

x.x.xx Inspection. A visual examination of a system or portion

thereof to verify that it appears to be in operating condition

and is free of physical damage. [820, 2016]

x.x.xx Test. The operation of a device to verify that it is functioning

correctly, or the measurement of a system characteristic

to determine if it meets requirements. [25, 2020]

x.x.xx* Maintenance. Work performed to keep equipment operable. [25,2020]

A.x.x.xx Maintenance. As used in this standard, the term

maintenance does not include repair activities. Such activities

are expressly identified by the term repair. [25,2020]

Statement of Problem and Substantiation for Public Input

As with NFPA 25, the terms inspection, test, and maintenance should be defined in NFPA 72. The proposed revision to the definition of maintenance is consistent with the NFPA extract policy.

It is noted that the definition of Inspection in NFPA is extracted from NFPA 820.

For the definition of Maintenance, the definition was editorially revised to say "Work performed to keep equipment operable" since the NFPA 25 definition contained language connecting the definition to water-based fire protection systems.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 13:51:06 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The existing definition of maintenance adequately addresses the disciplines of inspection, testing, and service. The definitions of inspection and test are not necessary because the expectations of these activities are defined in Tables 14.3.1 and 14.4.3.2.

Public Input No. 495-NFPA 72-2019 [New Section after 3.3]

TITLE OF NEW CONTENT

Type your content here ... SURGE PROTECTION DEVICE (SPD)

Surge Protective Device (SPD) A device composed of at least one non-linear component and intended for limiting surge voltages on equipment by diverting or limiting surge current and is capable of repeating these functions as specified. SDPs were previously known as Transient Voltage Surge Suppressors or secondary surge arrestors.

Statement of Problem and Substantiation for Public Input

UL 1449 3rd edition 3.36 definition:
Surge Protective Device (SPD) A Device composed of at least one non-linear component and intended for limiting surge voltages on equipment by diverting or limiting surge current and is capable of repeating these functions as specified. SPDs were previously known as Transient Voltage Surge Suppressors or secondary surge arrestors.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 09:19:45 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5184-NFPA 72-2019
Statement: The terminology was standardized in the previous edition and a definition has been added to support the text.

Public Input No. 396-NFPA 72-2019 [New Section after 3.3.4]

TITLE OF NEW CONTENT A 3.3.4 Accessible Spaces

Type your content here .. Devices or related equipment may be concealed behind movable doors, access hatches, or ceiling tiles designed to be readily openable to allow access to the concealed equipment.

Statement of Problem and Substantiation for Public Input

Explanatory material containing examples removed from the body of the code to comply with the Manual of Style

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 395-NFPA 72-2019 [Section No. 3.3.4]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 17:39:10 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The language proposed for the annex remains under the definition.

Public Input No. 395-NFPA 72-2019 [Section No. 3.3.4]

3.3.4 Accessible Spaces (as applied to detection coverage in Chapter 17).

Spaces or concealed areas of construction that can be entered via ~~openable panels, doors hatches, or other~~ readily movable construction elements ~~(e . g., ceiling tiles).~~ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure modified to remove examples to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 396-NFPA 72-2019 [New Section after 3.3.4]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 17:21:50 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5237-NFPA 72-2019
Statement: The Technical Committee modifies the sentence structure to remove examples to comply with the Manual of Style.

Public Input No. 128-NFPA 72-2019 [Section No. 3.3.5]

3.3.5 Acknowledge.

~~To~~ An action performed by a person to confirm that a message or signal has been received~~, such as by the pressing of a button or the selection of a software command~~ . (SIG-SSS)

Statement of Problem and Substantiation for Public Input

Manual of style. Removes an incomplete list of examples from a definition. Makes definition apply only to acknowledgement by a person, not by another system or by software. While SSS "owns" this def., the term is also important to PRO, PRS, ECS and maybe HOU. the CC should correlate.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 129-NFPA 72-2019 [New Section after A.3.2.5]	
Public Input No. 129-NFPA 72-2019 [New Section after A.3.2.5]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 23 15:05:21 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5191-NFPA 72-2019
Statement: This revision is made to comply with the Manual of Style. The Technical Committee removes an incomplete list of examples from a definition. The text edit makes the definition apply only to acknowledgement by a person, not by another system or by software.

Public Input No. 397-NFPA 72-2019 [Section No. 3.3.8]

3.3.8 Addressable Device.

A fire alarm system component ~~with discrete identification that can have its status individually identified or that is used to individually control other functions.~~ , with an input or output function, that be discretely identified by a numeric address. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure modified to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 17:48:51 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5238-NFPA 72-2019
Statement: The Technical Committee modifies the sentence structure to comply with the Manual of Style.

Public Input No. 399-NFPA 72-2019 [Section No. 3.3.12]

3.3.12 Alarm Box.

3.3.12.1 Auxiliary Alarm Box.

An alarm box that can only be operated from one or more remote initiating devices or an auxiliary alarm system used to send an alarm to the communications center. (SIG-PRS)

3.3.12.2 Combination Fire Alarm and Guard's Tour Box.

A manually operated box ~~for separately~~ capable of transmitting a fire alarm signal ~~and~~ or a ~~distinctive~~ separate guard patrol tour supervisory signal. (SIG-IDS)

3.3.12.3* Manual Fire Alarm Box.

A manually operated device used to initiate a fire alarm signal. (SIG-IDS)

3.3.12.4 Master Alarm Box.

A publicly accessible alarm box that can also be operated by one or more remote initiating devices or an auxiliary alarm system used to send an alarm to the communications center. (SIG-PRS)

3.3.12.5 Publicly Accessible Alarm Box.

An enclosure, accessible to the public, housing a manually operated transmitter used to send an alarm to the communications center. (SIG-PRS)

Statement of Problem and Substantiation for Public Input

Sentence structure modified to comply with the Manual of Style

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 17:59:14 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5239-NFPA 72-2019
Statement: The definition was revised to improve readability.

Public Input No. 164-NFPA 72-2019 [New Section after 3.3.23]

Add a definition for: Authorized Personnel.

Trained persons who have been instructed in the operation of the equipment and designated by the owner to use the equipment.

Statement of Problem and Substantiation for Public Input

This term appears in the Code in many places but it is not currently defined in the Code in Chapter 3. There are some explanations in the non-mandatory annexes but unless this term is defined in Chapter 3, it may create enforcement inconsistencies regarding who might be an authorized person ? and authorized by whom? The definition should clearly state that authorized personnel are trained (instructed in the operation of the equipment) and are designated by the owner. It should be a similar definition as defined in other ANSI publications such as ASME A17.1

This is the definition from the ASME A17.1 Elevator and Escalators Safety Code
authorized personnel: persons who have been instructed in the operation of the equipment and designated by the owner to use the equipment.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 165-NFPA 72-2019 [New Section after 3.3.94]	
Public Input No. 319-NFPA 72-2019 [New Section after 24.3.6.5]	
Public Input No. 323-NFPA 72-2019 [Section No. 24.4.5.2]	
Public Input No. 342-NFPA 72-2019 [Section No. 24.5.2.1]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 19:20:14 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5063-NFPA 72-2019
Statement: The term authorized personnel is currently defined in the NFPA glossary of terms. The Technical Committee used this definition for consistency and removed the reference to stationary storage batteries from the glossary of terms definition.

Public Input No. 335-NFPA 72-2019 [New Section after 3.3.31]

3.3.XXX* Backbone.

A backbone is the core part of a network that acts as a common infrastructure to which the branch parts are connected.

A.3.3.XXX In a Class A network, all endpoints (i.e. alarm devices or panels) connect to a redundant backbone that has multiple paths. No panel or alarm device is directly connected to another. Class A must have a redundant backbone so that the loss of a single path (cable, fiber, or wireless segment) will not cause loss of communication between any two endpoints (i.e. alarm devices or panels.) A backbone can interconnect diverse networks in the same building, in different buildings, in a campus environment, or over wide areas.

Statement of Problem and Substantiation for Public Input

Chapter 12 Annex, A.12.3.6(1) uses the word "backbone" and a definition would be helpful.

Submitter Information Verification

Submitter Full Name: Daniel Horon
Organization: Cadgraphics, Incorporated
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 12:16:03 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5002-NFPA 72-2019
Statement: The Technical Committee added a new definition for backbone, which is used in the annex for Class N networks.

Public Input No. 116-NFPA 72-2019 [New Section after 3.3.33]

Camera-Type Detector.

See 3.3.70, Detector.

Statement of Problem and Substantiation for Public Input

the definition of a camera-type detector is introduced.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 114-NFPA 72-2019 [Section No. 3.3.70.9]	

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:37:35 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 401-NFPA 72-2019 [New Section after 3.3.38]

TITLE OF NEW CONTENT A 3.3.38 Ceiling

Type your content here ... Areas with a suspended ceiling have two ceilings, one visible from the floor and one above the suspended ceiling.

Statement of Problem and Substantiation for Public Input

Add explanatory material that was removed from the body of the code as a new annex reference.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 400-NFPA 72-2019 [Section No. 3.3.38]	New annex material
Public Input No. 400-NFPA 72-2019 [Section No. 3.3.38]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 18:16:51 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5337-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 400-NFPA 72-2019 [Section No. 3.3.38]

3.3.38 Ceiling.

The upper surface of a space, regardless of height. ~~Areas with a suspended ceiling have two ceilings, one visible from the floor and one above the suspended ceiling.~~ (SIG-IDS)

3.3.38.1 Level Ceilings.

Ceilings that have a slope of less than or equal to 1 in 8. (SIG-IDS)

3.3.38.2 Sloping Ceiling.

A ceiling that has a slope of more than 1 in 8. (SIG-IDS)

3.3.38.3* Sloping Peaked-Type Ceiling.

A ceiling in which the ceiling slopes in two directions from the highest point. ~~Curved or domed ceilings can be considered peaked with the slope figured as the slope of the chord from highest to lowest point.~~ _ (SIG-IDS)

3.3.38.4* Sloping Shed-Type Ceiling.

A ceiling in which the high point is at one side with the slope extending toward the opposite side. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure modified to remove examples to comply with Manual of Style. Removed examples added in annex material.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 401-NFPA 72-2019 [New Section after 3.3.38]	Add Annex material.
Public Input No. 401-NFPA 72-2019 [New Section after 3.3.38]	
Public Input No. 403-NFPA 72-2019 [Section No. A.3.3.38.3]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 18:08:54 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5337-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 404-NFPA 72-2019 [Section No. 3.3.40.2]

3.3.40.2 Girder.

A support for beams or joists that runs at right angles to the beams or joists ~~. If the top of the girder is within 4 in. (100 mm) of the ceiling, the girder is a factor in determining the number of detectors and is to be considered a beam. If~~ and when the top of the girder is more than 4 in. (100 mm) from the ceiling, the girder is not a factor in detector location. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Modify the sentence structure to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 405-NFPA 72-2019 [New Section after A.3.3.38.4]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 18:46:29 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The proposed deletion removes necessary text.

Public Input No. 406-NFPA 72-2019 [Section No. 3.3.40.3]

3.3.40.3* Smooth Ceiling.

A ceiling surface uninterrupted by continuous projections ~~, such as solid joists, beams, or ducts,~~ extending more than 4 in. (100 mm) below the ceiling surface. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Remove examples of projections from the definition to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 18:58:36 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The text proposed for deletion supports the definition.

Public Input No. 561-NFPA 72-2019 [New Section after 3.3.47]

TITLE OF NEW CONTENT

One-Way Radio Channel: A communications channel on which alarm boxes only transmit signals and are incapable of receiving responses; the communications center only receives signals and is incapable of sending responses (SIG-PRS).

Two-Way Radio Channel: A communications channel on which alarm boxes and the communication center both transmit and receive signals (SIG-PRS).

Statement of Problem and Substantiation for Public Input

The terms: One-Way and Two-Way Radio Channels are used differently in various places in NFPA 72. Definitions of these terms will help to standardize their usage. It is important to correctly define these terms since the proper operation of radio alarm signals depends on a prediction of the amount of air time that is used to communicate. Misuse of the term One-Way in a system that actually is Two-Way underestimates the amount of air time used and could lead to interference between boxes.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 546-NFPA 72-2019 [Section No. 27.4.3.5]	This section defines terms used in the other section.

Submitter Information Verification

Submitter Full Name: Gregory Lapin
Organization: King-Fisher Company, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:16:34 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5183-NFPA 72-2019
Statement: Radio Communications is a term now used in the document and is defined here.

Public Input No. 240-NFPA 72-2019 [New Section after 3.3.62]

Constantly Attended

An owner or operator-facility that is attended 24 hours a day.

Statement of Problem and Substantiation for Public Input

The term "constantly attended" is not being used the same and is being defined differently outside of NFPA. The term is used in 72 and should be defined. This is an attempt to get language in 72 that provides guidance on what 72 means by constantly attended.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 16:11:23 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5004-NFPA 72-2019
Statement: The Technical Committee adds a new definition for “constantly attended,” as it is used in Chapters 14, 21, 23, 24, 29, and Annex A. The term "constantly attended" is not being used the same and is being defined differently outside of NFPA.

Public Input No. 613-NFPA 72-2019 [New Section after 3.3.63]

3.3.64 Cybersecurity. The protection of systems from theft or damage of data, or damage to hardware or software, as well as from unauthorize command or control or access to any information of any services the systems provide.

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	definition related to proposed use in chapters 7, 14, 10, 21, 23, 24, 26, & 27

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:55:54 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5069-NFPA 72-2019
Statement: A new definition for "cyber security" has been added and uses the definition provided by the Department of Homeland Security to maintain consistency.

Public Input No. 466-NFPA 72-2019 [Section No. 3.3.63]

3.3.63 Control Unit.

A system component that monitors inputs and controls outputs through various types of circuits. (SIG-PRO)

3.3.63.1* Autonomous Control Unit (ACU).

The primary control unit for an in-building mass notification system. (SIG-ECS)

3.3.63.2 Combination System Control Unit (CSCU)

The control unit for a system that includes fire and non-fire detection and notification.

3.3.63.2 Emergency Communications Control Unit (ECCU).

A system capable of sending mass notification messages to individual buildings, zones of buildings, individual outdoor loudspeaker arrays, or zones of outdoor loudspeaker arrays; or a building, multiple buildings, outside areas, or a combination of these. (SIG-ECS)

3.3.63.3 Fire Alarm Control Unit (FACU).

See 3.3.108, Fire Alarm Control Unit (FACU).

3.3.63.4 Wireless Control Unit.

A component that transmits/receives and processes wireless signals. (SIG-PRO)

Statement of Problem and Substantiation for Public Input

While the term "combination control unit" is used in 23.8.4.9.4, it is nowhere defined. In addition, Chapter 29 has used "Control Unit" to refer to a Fire Alarm Control Unit that also operates a carbon monoxide or security function. Per the definitions in this section, that is an imprecise and confusion term. For clarity, proposals will be submitted to change the language in Chapter 29 to "Combination System Control Unit."

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 468-NFPA 72-2019 [Section No. 29.10.6]	
Public Input No. 472-NFPA 72-2019 [Section No. 23.8.4.9.4]	

Submitter Information Verification

Submitter Full Name: Wendy Gifford
Organization: Consultant
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 16:53:01 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A definition of a term not used in the Code is not necessary. See action on PI-468.

Public Input No. 407-NFPA 72-2019 [Section No. 3.3.70]

3.3.70 Detector.

~~A~~ An initiatinng device suitable for connection to ~~a~~ an IDC SLC circuit that has a sensor that responds to a physical stimulus ~~such as gas, heat, or smoke~~ associated with the presence of fire or combustable gases . (SIG-IDS)

3.3.70.1 Air Sampling–Type Detector.

A detector that consists of a piping or tubing distribution network that runs from the detector to the area(s) to be protected. An aspiration fan in the detector housing draws air from the protected area back to the detector through airsampling ports, piping, or tubing. At the detector, the air is analyzed for fire products. (SIG-IDS)

3.3.70.2 Automatic Fire Detector.

A device designed to detect the presence of a fire signature and to initiate action. For the purpose of this Code, automatic fire detectors are classified as follows: Automatic Fire Extinguishing or Suppression System Operation Detector, Fire–Gas Detector, Heat Detector, Other Fire Detectors, Radiant Energy–Sensing Fire Detector, and Smoke Detector. (SIG-IDS)

3.3.70.3 Automatic Fire Extinguishing or Suppression System Operation Detector.

A device that automatically detects the operation of a fire extinguishing or suppression system by means appropriate to the system employed. (SIG-IDS)

3.3.70.4* Combination Detector.

A device that either responds to more than one of the fire phenomena or employs more than one operating principle to sense one of these phenomena. Typical examples are a combination of a heat detector with a smoke detector or a combination rate-of-rise and fixed-temperature heat detector. This device has listings for each sensing method employed. (SIG-IDS)

3.3.70.5 Electrical Conductivity Heat Detector.

A line-type or spot-type sensing element in which resistance varies as a function of temperature. (SIG-IDS)

3.3.70.6 Fire–Gas Detector.

A device that detects gases produced by a fire. (SIG-IDS)

3.3.70.7* Fixed-Temperature Detector.

A device that responds when its operating element becomes heated to a predetermined level. (SIG-IDS)

3.3.70.8* Flame Detector.

A radiant energy–sensing fire detector that detects the radiant energy emitted by a flame. *(Refer to A.17.8.2.)* (SIG-IDS)

3.3.70.9 Gas Detector.

A device that detects the presence of a specified gas concentration. Gas detectors can be either spot-type or line-type detectors. (SIG-IDS)

3.3.70.10 Heat Detector.

A fire detector that detects either abnormally high temperature or rate-of-temperature rise, or both. (SIG-IDS)

3.3.70.11 Line-Type Detector.

A device in which detection is continuous along a path. Typical examples are rate-of-rise pneumatic tubing detectors, projected beam smoke detectors, and heat-sensitive cable. (SIG-IDS)

3.3.70.12* Multi-Criteria Detector.

A device that contains multiple sensors that separately respond to physical stimulus such as heat, smoke, or fire gases, or employs more than one sensor to sense the same stimulus. This sensor is capable of generating only one alarm signal from the sensors employed in the design either independently or in combination. The sensor output signal is mathematically evaluated to determine when an alarm signal is warranted. The evaluation can be performed either at the detector or at the control unit. This detector has a single listing that establishes the primary function of the detector. (SIG-IDS)

3.3.70.13* Multi-Sensor Detector.

A device that contains multiple sensors that separately respond to physical stimulus such as heat, smoke, or fire gases, or employs more than one sensor to sense the same stimulus. A device capable of generating multiple alarm signals from any one of the sensors employed in the design, independently or in combination. The sensor output signals are mathematically evaluated to determine when an alarm signal is warranted. The evaluation can be performed either at the detector or at the control unit. This device has listings for each sensing method employed. (SIG-IDS)

3.3.70.14 Other Fire Detectors.

Devices that detect a phenomenon other than heat, smoke, flame, or gases produced by a fire. (SIG-IDS)

3.3.70.15 Pneumatic Rate-of-Rise Tubing Heat Detector.

A line-type detector comprising small-diameter tubing, usually copper, that is installed on the ceiling or high on the walls throughout the protected area. The tubing is terminated in a detector unit containing diaphragms and associated contacts set to actuate at a predetermined pressure. The system is sealed except for calibrated vents that compensate for normal changes in temperature. (SIG-IDS)

3.3.70.16 Projected Beam–Type Detector.

A type of photoelectric light obscuration smoke detector wherein the beam spans the protected area. (SIG-IDS)

3.3.70.17 Radiant Energy–Sensing Fire Detector.

A device that detects radiant energy, such as ultraviolet, visible, or infrared, that is emitted as a product of combustion reaction and obeys the laws of optics. (SIG-IDS)

3.3.70.18* Rate Compensation Detector.

A device that responds when the temperature of the air surrounding the device reaches a predetermined level, regardless of the rate-of-temperature rise. (SIG-IDS)

3.3.70.19* Rate-of-Rise Detector.

A device that responds when the temperature rises at a rate exceeding a predetermined value. (SIG-IDS)

3.3.70.20 Smoke Detector.

A device that detects visible or invisible particles of combustion. (SIG-IDS)

3.3.70.21 Spark/Ember Detector.

A radiant energy–sensing fire detector that is designed to detect sparks or embers, or both. These devices are normally intended to operate in dark environments and in the infrared part of the spectrum. (SIG-IDS)

3.3.70.22 Spot-Type Detector.

A device in which the detecting element is concentrated at a particular location. Typical examples are bimetallic detectors, fusible alloy detectors, certain pneumatic rate-of-rise detectors, certain smoke detectors, and thermoelectric detectors. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Modified the sentence structure to remove examples to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 408-NFPA 72-2019 [New Section after A.3.3.69]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:

Zip:
Submittal Date: Sun Jun 23 19:17:49 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The text proposed for deletion supports the definition.

Public Input No. 409-NFPA 72-2019 [Section No. 3.3.70.1]

3.3.70.1 Air Sampling–Type Detector.

A detector that consists of a piping or tubing distribution network ~~that runs from the detector to the area(s) to be protected. An aspiration fan in the detector housing~~ and an aspiration fan that draws air from the protected area back to the detector through ~~airsampling~~ air sampling ports, ~~piping, or tubing. At the detector, the~~ where the air is analyzed for fire products. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

The sentence structure is modified to comply with the Manual of Style

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:28:41 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The proposed revision does not align with UL 268.

Public Input No. 97-NFPA 72-2019 [Section No. 3.3.70.1]

3.3.70.1 Air Sampling–Type Detector.

A detector that ~~consists of a piping or tubing distribution~~ draws air and particulate from the protected area into a sampling network that runs ~~from~~ to the detector ~~to the area(s) to be protected~~ . An aspiration fan in the detector housing draws air from the protected area back to the detector through ~~airsampling~~ air sampling ports, piping, or tubing. At the detector, the air is analyzed for fire products. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

This change will bring the NFPA definition of Air Sampling-type Detector in agreement with UL 268. The detector does not use a “distribution” network, but a “sampling” network.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 05 13:50:08 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5283-NFPA 72-2019
Statement: This change will correlate the NFPA 72 definition of Air Sampling-Type Detector with UL 268. The detector does not use a “distribution” network, but a “sampling” network.

Public Input No. 410-NFPA 72-2019 [Section No. 3.3.70.2]

3.3.70.2 Automatic Fire Detector.

A device designed to detect the presence of a fire signature and to initiate action. ~~For the purpose of this Code, automatic fire detectors are classified as follows: Automatic Fire Extinguishing or Suppression System Operation Detector, Fire–Gas Detector, Heat Detector, Other Fire Detectors, Radiant Energy–Sensing Fire Detector, and Smoke Detector.~~ _ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

List of examples of automatic fire detectors removed to comply with the Manual of Style. Added to Annex material.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 411-NFPA 72-2019 [New Section after A.3.3.69]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:35:05 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5246-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 412-NFPA 72-2019 [Section No. 3.3.70.4]

3.3.70.4* Combination Detector.

A device that either responds to more than one of the fire phenomena or employs more than one operating principle to sense one of these phenomena. ~~Typical examples are a combination of a heat detector with a smoke detector or a combination rate-of-rise and fixed-temperature heat detector. This device has listings for each sensing method employed.~~ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Definition was modified to remove examples of combination detectors to comply with the Manual of Style. Examples moved to Annex material.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 413-NFPA 72-2019 [Section No. A.3.3.70.4]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:45:24 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5338-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 121-NFPA 72-2019 [New Section after 3.3.70.9]

Gas & Fire Detector.

A device that detects gases and fire.

Statement of Problem and Substantiation for Public Input

A section is introduced for the combined gas and fire detector, as this is different from the Fire-Gas detector which detects gas from the combustion of fire.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 122-NFPA 72-2019 [New Section after 3.3.121]	

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:50:55 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 114-NFPA 72-2019 [Section No. 3.3.70.9]

3.3.70.9 Gas Detector.

A device that detects the presence of a specified gas concentration. Gas detectors can be either spot-type ~~or~~ , line-type , or camera-type detectors. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Gas detection can also now be vision-based, using spectral imaging sensors. This class of gas detectors can detect gas in the camera field of view, therefore, the definition of gas detection is proposed to be updated to reflect this class of gas detection sensors.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 115-NFPA 72-2019 [New Section after 3.3.70.11]	
Public Input No. 116-NFPA 72-2019 [New Section after 3.3.33]	

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:32:53 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5231-NFPA 72-2019
Statement: The Technical Committee modifies the definition by removing examples of gas detectors to comply with the Manual of Style.

Public Input No. 415-NFPA 72-2019 [Section No. 3.3.70.9]

3.3.70.9 Gas Detector.

A device that detects the presence of a specified gas concentration. ~~Gas detectors can be either spot-type or line-type detectors.~~ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Definition modified by removing examples of gas detectors to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 416-NFPA 72-2019 [New Section after A.3.3.70.8]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:54:13 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5231-NFPA 72-2019
Statement: The Technical Committee modifies the definition by removing examples of gas detectors to comply with the Manual of Style.

Public Input No. 115-NFPA 72-2019 [New Section after 3.3.70.11]

Camera-Type Detector.

A device in which detection is continuous in time over the visibility region of the camera.

Statement of Problem and Substantiation for Public Input

Gas detection can also now be vision-based, using spectral imaging sensors. This class of gas detectors can detect gas in the camera field of view, therefore, the definition of gas detection is proposed to be updated to reflect this class of gas detection sensors.

The definition of a camera-type detector is introduced.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 114-NFPA 72-2019 [Section No. 3.3.70.9]	

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:34:55 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 419-NFPA 72-2019 [Section No. 3.3.70.11]

3.3.70.11 Line-Type Detector.

A device in which detection is continuous along a path. ~~Typical examples are rate-of-rise pneumatic tubing detectors, projected beam smoke detectors, and heat-sensitive cable.~~ _ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Examples removed to Annex to comply with the Manual of Style

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 420-NFPA 72-2019 [New Section after A.3.3.70.8]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 08:08:11 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5251-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 422-NFPA 72-2019 [Section No. 3.3.70.12]

3.3.70.12* Multi-Criteria Detector.

A device that contains multiple sensors that separately respond to physical stimulus ~~such as heat~~ , ~~smoke,~~ or ~~fire gases, or~~ employs more than one sensor to sense the same stimulus ~~. This sensor~~ and is capable of generating only one alarm signal from the sensors employed in the design either independently or in combination. ~~The sensor output signal is mathematically evaluated to determine when an alarm signal is warranted. The evaluation can be performed either at the detector or at the control unit. This detector has a single listing that establishes the primary function of the detector.~~ _ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure has been revised to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 08:15:45 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The text proposed for deletion supports the definition.

Public Input No. 424-NFPA 72-2019 [Section No. 3.3.70.13]

3.3.70.13* Multi-Sensor Detector.

A device that contains multiple sensors that separately respond to physical stimulus ~~such as heat, smoke,~~ or ~~fire gases, or~~ employs more than one sensor to sense the same stimulus ~~. A device~~ and is capable of generating multiple alarm signals from any one of the sensors employed in the design, independently or in combination. ~~The sensor output signals are mathematically evaluated to determine when an alarm signal is warranted. The evaluation can be performed either at the detector or at the control unit. This device has listings for each sensing method employed.~~ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure is modified to comply with the Manual of Style. The deleted material is covered in the Annex and not needed in the body of the code.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 08:24:00 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The text proposed for deletion supports the definition.

Public Input No. 426-NFPA 72-2019 [Section No. 3.3.70.15]

3.3.70.15 Pneumatic Rate-of-Rise Tubing Heat Detector.

A line-type detector comprising small-diameter tubing, ~~usually copper, that is installed on the ceiling or high on the walls throughout the protected area. The tubing is terminated in~~ a ~~detector unit~~ containing diaphragms and associated contacts set to actuate at a predetermined pressure ~~. The system is sealed except for calibrated vents that compensate for normal changes in temperature.~~ created as air expands from being heated during a fire phenomena. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure modified to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 08:30:56 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The text proposed for deletion supports the definition.

Public Input No. 117-NFPA 72-2019 [New Section after 3.3.70.17]

3.3.70.18 Spectral-Sensing Gas Detector. A type of sensor system that detects radiant energy, such as ultraviolet, visible or infrared in the visibility region of the sensor.

3.3.70.18.1 Multispectral Sensing Gas Detector. A type of gas detection system which detects the concentration of multiple gases in the visibility region of the device based on the absorption spectrum of the gases being monitored. The sensor senses multiple, non-overlapping bands of the spectrum of radiation.

3.3.70.18.2 Hyperspectral Sensing Gas Detector. A type of gas detection system which detects the concentration of multiple gases in the visibility region of the device based on the absorption spectrum of the gases being monitored. The sensor senses multiple, overlapping bands of the spectrum of radiation.

Statement of Problem and Substantiation for Public Input

The definition of a spectral-sensing detector is introduced.

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:39:05 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 441-NFPA 72-2019 [Section No. 3.3.70.17]

3.3.70.17 Radiant Energy–Sensing Fire Detector.

A device that detects radiant energy ~~, such as ultraviolet, visible, or infrared,~~ that is emitted as a product of combustion reaction~~ and obeys the laws of optics~~ . (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence revised to remove examples to comply with the Manual of Style. Deleted material added to the Annex.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 442-NFPA 72-2019 [New Section after A.3.3.70.18]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 12:52:37 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The text proposed for deletion supports the definition.

Public Input No. 93-NFPA 72-2019 [New Section after 3.3.70.19]

Single criteria detector

A device that contains a single sensor that responds to a physical stimulus such as heat, smoke, or fire gases. This detector has a single listing that establishes the primary function of the detector.

Statement of Problem and Substantiation for Public Input

NFPA 72 currently does not have a definition for single criteria detectors. There is a need for a definition because single and multi-criteria detectors have different requirements for testing and maintenance in Chapter 14.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 05 11:12:49 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 443-NFPA 72-2019 [Section No. 3.3.70.21]

3.3.70.21 Spark/Ember Detector.

A radiant energy–sensing fire detector that is designed to detect sparks and/ or embers~~, or both~~ . ~~These devices are normally intended to operate in dark environments and in the infrared part of the spectrum.~~ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure revised to comply with the Manual of Style. Material removed added to Annex.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 444-NFPA 72-2019 [New Section after A.3.3.70.19]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 13:06:50 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5264-NFPA 72-2019

Statement: The Technical Committee modifies the sentence structure to remove examples to comply with the Manual of Style.

Text removed from the body of the Code by the Technical Committee is added as annex material to comply with the Manual of Style. Additional edits are made to broaden the product definition

Public Input No. 445-NFPA 72-2019 [Section No. 3.3.70.22]

3.3.70.22 Spot-Type Detector.

A device in which the detecting element is concentrated at a particular location. ~~Typical examples are bimetallic detectors, fusible alloy detectors, certain pneumatic rate-of-rise detectors, certain smoke detectors, and thermoelectric detectors.~~ (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure revised to comply with the Manual of Style. Material removed from body of the code added to the Annex.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 446-NFPA 72-2019 [New Section after A.3.3.70.19]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 13:18:42 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5265-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 607-NFPA 72-2019 [New Section after 3.3.86]

Electrically Operated Sprinkler

A sprinkler that is equipped with an integral means of activation using electricity [25, 2020]

Statement of Problem and Substantiation for Public Input

A new type of sprinkler is available on the market and new requirements are proposed to be included in NFPA 72 related to these devices and systems. This definition is needed to guide the user of the standard, and is consistent with the definition currently in NFPA 25, and that has been proposed for the next edition of NFPA13.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 601-NFPA 72-2019 [New Section after 14.4.4.5.5]	Definition to support system ITM frequencies proposal.

Submitter Information Verification

Submitter Full Name: Zachary Magnone
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:33:11 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The Technical Committee requests the Correlating Committee to form a Task Group to address the requirements for electronic sprinkler systems throughout the Code to be addressed at the Second Draft stage.

Public Input No. 535-NFPA 72-2019 [Section No. 3.3.92]

3.3.92* Emergency Communications System — Emergency Command Center.

The room(s) or area(s) staffed during any emergency event by assigned emergency management staff. The room or area contains system communications and control ~~equipment~~ units serving one or more buildings where responsible authorities receive information from premises sources or systems or from (higher level) regional or national sources or systems and then disseminate appropriate information to individuals, a building, multiple buildings, outside campus areas, or a combination of these in accordance with the emergency response plan established for the premises. The room or area contains the controls and indicators from which the ECS systems located in the room or area can be manually controlled as required by the emergency response plan and the emergency management coordinator. (SIG-ECS)

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group 72 SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 09:34:13 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 165-NFPA 72-2019 [New Section after 3.3.94]

Emergency Personnel

persons who have been trained in the operation of emergency firefighting or medical equipment and in the emergency evacuation or relocation of building occupants.

Statement of Problem and Substantiation for Public Input

The current Code includes references to "Emergency Personnel" in many sections.
Annex 24.10 indicates: "firefighters or other first respondents or emergency personnel" which means that Emergency Personnel could be other persons than firefighters or first respondents, such as medical personnel, etc.
Other ANSI publications such as ASME A17.1 include definitions for "Emergency Personnel" and the most important feature in the definition is the required training for those persons.
if we look at all the places in NFPA 72 indicating the term "Emergency Personnel" the proposed NEW definition will clarify who those persons might be. It is also important to distinguish between Emergency and Authorized personnel.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 164-NFPA 72-2019 [New Section after 3.3.23]	NEW Definitions existing in the A17.1 Code but not in NFPA 72
Public Input No. 168-NFPA 72-2019 [New Section after 18.4.2.1]	
Public Input No. 319-NFPA 72-2019 [New Section after 24.3.6.5]	
Public Input No. 323-NFPA 72-2019 [Section No. 24.4.5.2]	
Public Input No. 342-NFPA 72-2019 [Section No. 24.5.2.1]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 19:39:28 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5076-NFPA 72-2019
Statement: The term "emergency personnel" is used in the Code and has been defined to clarify its intended use.

Public Input No. 386-NFPA 72-2019 [New Section after 3.3.99.2]

3.3.99.2.1 Commercial Uninterruptable Power Supply (UPS). A self-enclosed electrochemical energy storage device providing a primary power input, integral charging capabilities, and a common output supporting both primary and secondary power switching without interruption.

Statement of Problem and Substantiation for Public Input

Supports the term "Commerical UPS" as a specific type of Electrochemical energy storage "device", used in another PI.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 383-NFPA 72-2019 [New Section after 10.6.8.4]	Related to the term added in PI 383

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 19:13:12 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The proposed definition is for a term "commercial uninterruptible power supply (UPS)" which is not used in this document, and is redundant to the text of A.3.3.99.

Public Input No. 112-NFPA 72-2019 [New Section after 3.3.106]

Visibility Region

The region within the sensor field of view in which line-of-sight visibility (ref section 3.3.151 on page 29) is satisfied.

Statement of Problem and Substantiation for Public Input

The current definition of field of view is based on the solid cone of the detector, which is different from the definition of field of view commonly used for camera type devices in other communities such as computer vision and robotics. The main difference is that for camera type optical devices, the field of view is not simply a solid cone, but a geometry constrained by line-of-sight visibility. That is, the field of view region for a camera must only consist of areas that are not obstructed. In order to close the gap in definition use for different communities, we introduce the definition of line-of-sight visibility, and also propose modifications to existing definitions of field of view (section 3.3.106.).

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Affiliation: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:23:40 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 447-NFPA 72-2019 [Section No. 3.3.106]

3.3.106 Field of View.

The ~~solid~~ virtual cone that extends out from the detector within which the effective sensitivity of the detector is at least 50 percent of its on-axis, listed, or approved sensitivity. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

The use of the word solid imply s something being projected into the space when the space is only being monitored from changes in the environmental conditions. Virtual is a better word that does not convey energy being emitted.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Asociation
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 13:28:55 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5266-NFPA 72-2019
Statement: The use of the word solid implies something being projected into the space when the space is only being monitored from changes in the environmental conditions. Virtual is a better word that does not convey energy being emitted.

Public Input No. 43-NFPA 72-2019 [Section No. 3.3.108 [Excluding any Sub-Sections]]

A ~~component of the~~ fire alarm system ~~, provided with primary and secondary power sources, which receives signals from initiating devices or other fire alarm control units, and processes these signals to determine part or all of the required fire alarm system output function(s). (SIG-PRO)~~ component that monitors inputs and controls outputs through various types of circuits.

Statement of Problem and Substantiation for Public Input

The revised definition mirrors and correlates with the definition of Control Unit. The existing definition improperly includes requirements (not allowed in a definition) for primary and secondary power. The inclusion of primary and secondary power as a "qualifier" of a FACU is incorrect because Chapter 10 does NOT require secondary power. See 10.6.3.1 and specifically 10.6.3.2 that requires secondary but not if using 10.6.4 (ESS) that permits the ESS to be the sole source of primary power.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Thu Feb 28 09:14:26 EST 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5006-NFPA 72-2019
Statement: The Technical Committee revises the text to remove the requirement for a primary and secondary source of supply from 3.3.108. Paragraph 10.6.3.2 indicates "Unless configured in compliance with 10.6.4, at least two independent and reliable power supplies shall be provided, one primary and one secondary."

Public Input No. 651-NFPA 72-2019 [Section No. 3.3.111.4.2]

3.3.111.4.2 Dedicated Function ~~Fire Alarm~~ Supervision & Control System.

A protected premises fire alarm system installed specifically to perform emergency control function(s) where a building fire alarm system is not required. (SIG-PRO)

Additional Proposed Changes

File Name	Description	Approved
72_HELD_PC_50_SIG-PRO.pdf	72_HELD Public Comment No. 50 (SIG-PRO)	

Statement of Problem and Substantiation for Public Input

NOTE: This Public Input appeared as “Rejected but Held” in Public Comment No. 50 of the (A2018) Second Draft Report for NFPA 72 and per the Regs. at 4.4.8.3.1.

There appears to be confusion around the Dedicated Function Fire Alarm System’s specific role (dedicated function[s]), and the implied expansion of that role into a required fire alarm system when “too many” dedicated functions are performed by a single system. While NFPA 72 (& Handbook) is clear that dedicated function fire alarm systems are “non-required” fire alarm systems, AHJs and service contractors alike feel as if this type of system automatically transforms into a required fire alarm system if there is more than one dedicated function performed by the control unit. To eliminate this confusion, I propose that the Dedicate Function Fire Alarm System be renamed as the Dedicated Function Control & Supervision System.

Submitter Information Verification

Submitter Full Name: TC on SIG-PRO
Organization: NFPA
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 27 14:15:44 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee does not accept the change because “Dedicated Function Fire Alarm System” is used in Sections 23.3.3.2, 23.3.3.2.1, 23.3.3.2.2, 23.8.2.2 and A.23.3.3.2 and the submitter did not ask to change those sections. The definition clearly indicates that a Dedicated Function Fire Alarm System is not required. Additionally, "supervision and control" could incorrectly imply that notification appliances are not included in the dedicated system.

Public Input No. 455-NFPA 72-2019 [Section No. 3.3.118]

3.3.118 Flame.

A body or stream of gaseous material involved in the combustion process and emitting radiant energy at specific wavelength bands, determined by the combustion chemistry of the fuel~~. In most cases, some portion of the emitted radiant energy is~~ , and which may or may not be visible to the human eye. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence was re-worded to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:26:26 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5267-NFPA 72-2019
Statement: The last sentence was deleted to comply with the Manual of Style.

Public Input No. 122-NFPA 72-2019 [New Section after 3.3.121]

Gas & Fire Detector.

See 3.3.70, Detector.

Statement of Problem and Substantiation for Public Input

A section is introduced for the combined gas and fire detector, as this is different from the Fire-Gas detector which detects gas from the combustion of fire.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 121-NFPA 72-2019 [New Section after 3.3.70.9]	

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:52:16 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The term does not appear in the Code.

Public Input No. 120-NFPA 72-2019 [New Section after 3.3.135]

Hyperspectral-Sensing Gas Detector.

See 3.3.70, Detector.

Statement of Problem and Substantiation for Public Input

Added sections to section 3.3 General Definitions. (on page 21) to reflect the added definition in sections 3.3.70 Detector. in comment number 4 of the supporting material sent to NFPA

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:48:53 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 456-NFPA 72-2019 [Section No. 3.3.141 [Excluding any Sub-Sections]]

A system component that originates transmission of a change-of-state condition~~, such as in a smoke detector, manual fire alarm box, or supervisory switch.~~ . (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Examples removed from the body of the code to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:32:36 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5268-NFPA 72-2019
Statement: Examples are removed to comply with the Manual of Style.

Public Input No. 457-NFPA 72-2019 [Section No. 3.3.141.2]

3.3.141.2 Automatic Extinguishing System Supervisory Device.

A device that responds to abnormal conditions that could affect the proper operation of an automatic sprinkler system or other fire extinguishing system(s) ~~or suppression system(s), including, but not limited to, control valves, pressure levels, liquid agent levels and temperatures, pump power and running, engine temperature and overspeed, and room temperature~~ . (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence modified by removing examples to comply with the Manual of Style. List of examples added to new Annex material.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 458-NFPA 72-2019 [New Section after A.3.3.139]	

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:36:13 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5269-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 460-NFPA 72-2019 [Section No. 3.3.141.5]

3.3.141.5 Supervisory Signal Initiating Device.

An initiating device ~~such as a valve supervisory switch, water level indicator, or low air pressure switch on a dry pipe sprinkler system~~ in which the change of state signals an off-normal condition ~~and its restoration to normal of a fire protection or life safety system; or a need for~~ that requires action in connection with guard tours, ~~fire suppression systems~~ or ~~equipment, or~~ maintenance ~~features~~ of related systems. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure changed to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:48:35 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5336-NFPA 72-2019
Statement: Examples are removed to comply with the Manual of Style.

Public Input No. 111-NFPA 72-2019 [New Section after 3.3.150]

Line-of-sight Visibility.

A region is said to satisfy line-of-sight visibility when any line connecting a point in this region to the sensor is not obstructed by an obstacle.

Statement of Problem and Substantiation for Public Input

The current definition of field of view is based on the solid cone of the detector, which is different from the definition of field of view commonly used for camera type devices in other communities such as computer vision and robotics. The main difference is that for camera type optical devices, the field of view is not simply a solid cone, but a geometry constrained by line-of-sight visibility. That is, the field of view region for a camera must only consist of areas that are not obstructed. In order to close the gap in definition use for different communities, we introduce the definition of line-of-sight visibility, and also propose modifications to existing definitions of field of view (section 3.3.106.).

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Affiliation: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 14:41:28 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 101-NFPA 72-2019 [New Section after 3.3.167]

3.3.168* Minimum Hearing Distance

The closest distance that an occupant's ear can be to an audible appliance.

Statement of Problem and Substantiation for Public Input

Minimum hearing distance is not defined. This has been a topic of discussion and something that staff is questioned about. The 2019 handbook added text discussing this concept. See related PI for annex text.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 102-NFPA 72-2019 [New Section after A.3.3.165]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 08 10:49:51 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5001-NFPA 72-2019
Statement: Minimum hearing distance is not defined. This has been a topic of discussion and something that NFPA Staff is questioned about. The 2019 handbook added text discussing this concept.

Public Input No. 124-NFPA 72-2019 [New Section after 3.3.172]

3.3.173 Multivariate Detection System.

A multivariate detection system is a system designed for the purpose of detection, where the object to be detected is specified. The system consists of inputs from at least two independent sensors, where the sensor signals can be fused into a unified feature space algorithmically for detection. Examples of sensory signals used for a multivariate detection system may include (multi- or hyper-) spectral signals, video signals, and audio signals.

3.3.174 Multivariate Flame Detection System.

A multivariate detection system designed to detect flames.

Statement of Problem and Substantiation for Public Input

In order to incorporate a broader class of gas and fire detectors using spectral-sensing gas detection, additional content is added after section 17.8.5. Video Image Flame Detection. In addition, definition sections are added to expand the class of flame detection systems.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 125-NFPA 72-2019 [New Section after 17.8.5]	

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:56:57 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 119-NFPA 72-2019 [New Section after 3.3.173]

Multispectral-Sensing Gas Detector.

See 3.3.70, Detector.

Statement of Problem and Substantiation for Public Input

Added sections to section 3.3 General Definitions. (on page 21) to reflect the added definition in sections 3.3.70 Detector. in comment number 4 of the supporting material sent to NFPA.

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:44:15 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 438-NFPA 72-2019 [New Section after 3.3.194]

Out of Service

A significant portion of the fire alarm system is not in

operation, such as an entire initiating device, signaling line,

or notification appliance circuit.

Statement of Problem and Substantiation for Public Input

"Out of service" is defined in NFPA 101, but should also be addressed in 72 where the term out of service is discussed. Out of Service has implications such as evacuation, fire watch, etc. A clear definition is needed to ensure occupants remain safe.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 439-NFPA 72-2019 [New Section after A.3.3.188]	

Submitter Information Verification

Submitter Full Name: Joshua Brackett
Organization: Baptist Health
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 12:15:34 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The term “Out of Service” is self-explanatory, definitions cannot contain requirements. The body of this document contains requirements regarding equipment that is out of service, and it would be inappropriate to contradict those requirements in a definition.

Public Input No. 469-NFPA 72-2019 [Section No. 3.3.197]

3.3.197 Path (Pathways).

Any circuit, conductor, ~~optic~~ optical fiber, radio carrier, or other means connecting two or more locations. (SIG-PRO)

Statement of Problem and Substantiation for Public Input

Standardize the term "fiber-optic" as an adjective or "optical fiber" as a noun based on Merriam-Webster.com. Merriam-Webster, 2019. Web. 25 June 2019

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 17:09:05 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5007-NFPA 72-2019
Statement: The Technical Committee revises the text to change the word “optic” to “optical” for correct use of grammar.

SIG-PRO recommends that the Correlating Committee review the code for consistent usage throughout.

Public Input No. 470-NFPA 72-2019 [Section No. 3.3.198]

3.3.198 Pathway Survivability.

The ability of any conductor, ~~optic~~ optical fiber, radio carrier, or other means for transmitting system information to remain operational during fire conditions. (SIG-ECS)

Statement of Problem and Substantiation for Public Input

Standardize the term "fiber-optic" as an adjective or "optical fiber" as a noun based on Merriam-Webster.com. Merriam-Webster, 2019. Web. 25 June 2019

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 17:10:12 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5189-NFPA 72-2019
Statement: The Technical Committee standardize the term "fiber-optic" as an adjective or "optical fiber" as a noun based on Merriam-Webster.com. Merriam-Webster, 2019. Web. 25 June 2019

Public Input No. 490-NFPA 72-2019 [New Section after 3.3.200.5]

3.3.200.6 Trained Response Personnel

Individuals who have become proficient in performing a skill reliably and safely through instruction and practice/field experience acceptable to the AHJ to carry out the duties to which they have been assigned, including the receipt, handling, assignment, investigation, and documentation of critical assignments and duties which may have a definite effect on the life safety of building occupants.

Statement of Problem and Substantiation for Public Input

A related PI changes the term “trained personnel” to “qualified personnel” in 23.8.1.2.1 and a new description for ‘trained response personnel’ is provided as a new personnel 10.5.7. Thus, a definition of this term is offered to be added in Chapter 3 in order to be consistent with other personnel definitions. This language, for the first time, provides adequate definitions of this term.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 487-NFPA 72-2019 [Section No. 23.8.1.2]	
Public Input No. 488-NFPA 72-2019 [New Section after 10.5.6]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 23:14:27 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The term is not used in the Code.

Public Input No. 510-NFPA 72-2019 [Section No. 3.3.221.1.2]

~~**3.3.221.1.2** – Shunt-Type Auxiliary Alarm System.~~

~~An auxiliary system electrically connected to the public emergency alarm reporting system extending a public emergency alarm reporting circuit to interconnect initiating devices within a protected premises, which, when operated, opens the public emergency alarm reporting circuit shunted around the trip coil of the master box or auxiliary box. The master box or auxiliary box is thereupon energized to start transmission without any assistance from a local source of power. (SIG-PRS)~~

Statement of Problem and Substantiation for Public Input

This PI is related to several submitted to Chapter 27 to eliminate the use of shunt type auxiliary alarm systems. Shunt type auxiliary systems are no longer used. All reference to shunt type systems should be removed from Chapter 27. The definitions should be removed only if the Chapter 27 TC approves the removal of the shunt type system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 505-NFPA 72-2019 [Section No. 27.6.3.2.2.1]	
Public Input No. 512-NFPA 72-2019 [Section No. 3.3.262]	

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 12:56:25 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5181-NFPA 72-2019
Statement: The Technical Committee deletes the term as it is no longer used in the document. See FR 5166 on 27.6.3.2.2.

Public Input No. 634-NFPA 72-2019 [New Section after 3.3.240]

New Definition -- Recommendation

New Definition -- Recommendation

Recommendation – A suggested Fire Alarm System correction, improvement, or enhancement made by Inspection, Service, or Testing Personnel made in writing not required by this or any other code/standard at the specific point in time when the recommendation is made. Recommendations shall not be considered required system deficiency or impairment repairs, but may become ones in the future . (SIG-TMS)

New Section after 14.2.2.2.4

Addition of "Recommendation"

During required testing, service, or maintenance of Fire Alarm Systems Inspection, Service, or Testing Personnel may make note of opportunities to correct, improve, or enhance existing system performance. Such observations shall be communicated to the system owner in writing. The System Owner shall not be required to authorize implementation of the recommendation unless the recommendation becomes an impairment or deficiency.

New Annex A Material – A.#.#.# Recommendation -- A recommendation should not be considered a required system deficiency or impairment repair, but may become one in the future. Examples might include -- manufacturer suggested device replacements, Executive Software updates, corroded electrical box/fitting /raceway replacement, descriptive label corrections or other similar items not directly impacting a systems ability to complete its intended function at the point in time when the recommendations was made.

Statement of Problem and Substantiation for Public Input

Resubmitting 2019 Public Input. Passed by one vote in NFPA 72 2019 TMS TC 1 Salt Lake City, Lost by one vote in NFPA 72 2019 TMS TC2 Charlotte. Support existed for floor vote, not pursued. Several instances over the past two years where formalized definition of recommendation would have been of benefit (example, "when is a descriptive label deficient versus inaccurate but acceptable"). Informal poll of Regional AFAA offers more support for (90%) than against. Where one trends on the issue favors the interests represented, but it is unreasonable to expect installer/servicer/maintainers to communicate critical non impairment/deficiency concerns without a formalized definition and submission vehicle for the system owner/representative to consider the recommendation in context. Provides remedy for the circle of blame.

Submitter Information Verification

Submitter Full Name: E. J. Kleintop
Organization: Johnson Controls/Tyco/SimplexG
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:40:48 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5236-NFPA 72-2019
Statement: A definition of observation is added to support the new text in 14.2.2.3, which addresses instances where the service technician notes issues that do not rise to the level of an impairment or deficiency.

Public Input No. 526-NFPA 72-2019 [New Section after 3.3.242]

3.3.324* Remote Access

A fire alarm system that is connected to a non-fire network directly or indirectly and is not used for supervising station alarm systems reporting.

A.3.3.324 The definition is intended to apply to a protected premise system having the capabilities prescribed in pagagraph 23.8.2.11.

Statement of Problem and Substantiation for Public Input

Provides a definition for the capabilities proposed in the new paragraph 23.8.2.11.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 525-NFPA 72-2019 [New Section after 23.8.2.10]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 03:31:30 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5112-NFPA 72-2019
Statement: Requirements for remote access were added in paragraph 23.8.2.11. Therefore, a definition is provided.

Public Input No. 644-NFPA 72-2019 [Section No. 3.3.253]

3.3.253 Risk Analysis.

A process to ~~characterize the likelihood, vulnerability, and magnitude of incidents~~ characterize incidents associated with natural, technological, and manmade disasters and other emergencies that ~~address~~ identifies scenarios of concern ~~,~~ based on their ~~probability,~~ probability occurrence and ~~their potential consequences~~ the potential consequences if the scenario does occur . (SIG-ECS)

Statement of Problem and Substantiation for Public Input

The definition of risk analysis needs clarification regarding the purpose of a risk analysis. A clear purpose will assist users in selecting a method of analysis that will provide the information requested by the definition. Also note that the term "vulnerability" is deleted because it is an error of usage to say that incidents are vulnerable.

Submitter Information Verification

Submitter Full Name: Norman Groner
Organization: John Jay College Of Criminal Justice
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 18:13:40 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The definition of risk analysis is being expanded beyond the original scope of Chapter 24 and the Technical Committee is recommending a CC Task Group be appointed to review this issue.

Public Input No. 20-NFPA 72-2018 [Section No. 3.3.258]

3.3.258* Separate Sleeping Area.

The area of a dwelling unit where the bedrooms or sleeping rooms are located and where the bedrooms or sleeping rooms are not separated by other use areas, such as kitchens or living rooms (but not bathrooms) . (SIG-HOU)

Statement of Problem and Substantiation for Public Input

The existing definition is for a Sleeping Area, not for a Separate Sleeping Area. The intent of having the word SEPARATE was lost when the committee edited the definition to be a single sentence. The change was made in the transition from 2002 to 2007 when the SIG-HOU TC changed the definition to an extract from NFPA 720. Moving the qualifier of what defines SEPARATE to the annex loses the enforceablity. This change reinstates the enforceability for adding smoke alarms for separate sleeping areas. The existing annex text can remain unchanged.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Thu Nov 01 11:48:09 EDT 2018
Committee: SIG-HOU

Committee Statement

Resolution: FR-5115-NFPA 72-2019
Statement: Separate sleeping area is a term not used within the Code. Sleeping area is the term used in Chapter 29.

Public Input No. 512-NFPA 72-2019 [Section No. 3.3.262]

~~**3.3.262** – Shunt-Type Auxiliary Alarm System.~~

~~See 3.3.221 , Public Emergency Alarm Reporting System.~~

Statement of Problem and Substantiation for Public Input

Shunt type auxiliary systems are no longer used. All reference to shunt type systems should be removed from Chapter 27. This definition should be removed only if the Chapter 27 TC approves the deletion of the shunt type auxiliary alarm system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 510-NFPA 72-2019 [Section No. 3.3.221.1.2]	

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 13:00:01 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5182-NFPA 72-2019
Statement: The Technical Committee deletes the term as it is no longer used in the document. See FR 5166 on 27.6.3.2.2.

Public Input No. 538-NFPA 72-2019 [Section No. 3.3.270]

3.3.270 Single-Station Alarm Device.

An assembly that incorporates the detector ~~, the control equipment,~~ and the alarm-sounding device in one unit operated from a power supply either in the unit or obtained at the point of installation. (SIG-HOU)

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not applicable and should be deleted.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 10:03:00 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5116-NFPA 72-2019
Statement: The defined term is not used in the body of the Code.

Public Input No. 579-NFPA 72-2019 [Section No. 3.3.276]

3.3.276 Smoke Detection.

3.3.276.1 Cloud Chamber Smoke Detection.

The principle of using an air sample drawn from the protected area into a high-humidity chamber combined with a lowering of chamber pressure to create an environment in which the resultant moisture in the air condenses on any smoke particles present, forming a cloud. The cloud density is measured by a photoelectric principle. The density signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

3.3.276.2 * Ionization Smoke Detection.

The principle of using a small amount of radioactive material to ionize the air between two differentially charged electrodes to sense the presence of smoke particles. Smoke particles entering the ionization volume decrease the conductance of the air by reducing ion mobility. The reduced conductance signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

3.3.276.3 * Photoelectric Light Obscuration Smoke Detection.

The principle of using a light source and a photosensitive sensor onto which the principal portion of the source emissions is focused. When smoke particles enter the light path, some of the light is scattered and some is absorbed, thereby reducing the light reaching the receiving sensor. The light reduction signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

3.3.276.4 * Photoelectric Light-Scattering Smoke Detection.

The principle of using a light source and a photosensitive sensor arranged so that the rays from the light source do not normally fall onto the photosensitive sensor. When smoke particles enter the light path, some of the light is scattered by reflection and refraction onto the sensor. The light signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

3.3.276.5 * Video Image Smoke Detection (VISD).

The principle of using automatic analysis of real-time video images to detect the presence of smoke. (SIG-IDS)

3.3.276.X* ***Multi-Sensor or Multi-Criteria Smoke Detection.*** The principal of using multiple sensors and/or multiple-criteria technologies that separately respond to physical stimulus such as heat, smoke, or fire gases, or employs more than one sensor to sense the same stimulus. The sensor output signals use a mathematically evaluated criteria (algorithm) to determine when an alarm signal is warranted. The use of multiple sensor technology and evaluation criteria helps reduce nuisance alarms from cooking.

A.3.3.276.X* Multi-Sensor or Multi-Criteria Smoke Detection. Multi-Sensor or Multi-Criteria technology smoke detection incorporates at least two distinct sensors that are independently monitored by electronic circuitry. The signal from each sensor is mathematically evaluated together with the signals from the other sensor(s) to determine when a smoke alarm signal is warranted. This detection technology utilizes multiple sensors along with a mathematical algorithm (specific criteria) to provide an alarm signal based on a flaming polyurethane foam test and a smoldering polyurethane foam test which is conducted in accordance with UL 217/268 along with the capability to also recognize common nuisance smoke from normal cooking where the mathematical algorithm (criteria) would not send an alarm signal.

Statement of Problem and Substantiation for Public Input

The definition for “Multi-Sensor or Multi-Criteria Smoke Detection” under Smoke Detection (Section 3.3.276) correlates with the current definitions in 3.3.70.12 and 3.3.70.13. This provides a comparative explanation that coordinates with the definitions for: Cloud Chamber Smoke Detection, Ionization Smoke Detection, Photoelectric Light Obscuration Smoke Detection and Photoelectric Light-Scattering Smoke Detection.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello

Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:40:41 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: Multi-criteria detectors are better defined as fire detectors than smoke detectors due to their operating principle including detection technologies other than just smoke detection.

Public Input No. 476-NFPA 72-2019 [Section No. 3.3.276.1]

3.3.276.1 Cloud Chamber Smoke Detection.

~~The principle of using~~ A detector that draws an air sample ~~drawn from the protected area~~ into a high-humidity chamber ~~combined with~~ where a lowering of chamber pressure ~~to create~~ creates an environment in which the resultant moisture in the air condenses on any smoke particles present, forming a cloud~~. The cloud density~~ , which is measured by a photoelectric principle ~~. The~~ and the resulting density signal is processed and used to convey an alarm condition when, it meets preset criteria. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure was modified to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:02:02 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5280-NFPA 72-2019
Statement: The Technical Committee modifies the sentence structure to comply with the Manual of Style and edits for clarity.

Public Input No. 480-NFPA 72-2019 [Section No. 3.3.276.2]

3.3.276.2* Ionization Smoke Detection.

The principle of using a small amount of radioactive material to ionize the air between two differentially charged electrodes to sense the presence of smoke particles~~. Smoke particles entering the ionization volume~~ , when present, decrease the conductance of the air by reducing ion mobility~~. The reduced conductance signal is processed and used to convey~~ , which will produce an alarm condition, when it meets preset criteria. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Modified sentence structure to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:07:46 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5281-NFPA 72-2019
Statement: The Technical Committee modifies the sentence structure to comply with the Manual of Style and edits for clarity.

Public Input No. 482-NFPA 72-2019 [Section No. 3.3.276.3]

3.3.276.3* Photoelectric Light Obscuration Smoke Detection.

The principle of using a light source ~~and a photosensitive sensor onto which the principal portion of the source emissions is focused. When~~ to project a light beam onto a photosensitive sensor and when smoke particles enter the light path, some of the light is scattered and some is absorbed, thereby reducing the light reaching the receiving sensor ~~. The~~ and the light reduction signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Sentence structure was modified to reduce the number of sentences to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:15:29 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The proposed change adds unnecessary complexity

Public Input No. 483-NFPA 72-2019 [Section No. 3.3.276.4]

3.3.276.4* Photoelectric Light-Scattering Smoke Detection.

The principle of using a light source and a photosensitive sensor arranged so that the rays from the light source do not normally fall onto the photosensitive sensor~~. When~~ , but when smoke particles enter the light path, some of the light is scattered by reflection and refraction onto the sensor ~~. The~~ and the resulting light signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Modified sentence structure to comply with the Manual of Style.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:23:51 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The proposed change adds unnecessary complexity.

Public Input No. 118-NFPA 72-2019 [New Section after 3.3.284]

3.3.285 Spectral-Sensing Gas Detector.

See 3.3.70, Detector.

Statement of Problem and Substantiation for Public Input

Added sections to section 3.3 General Definitions. (on page 21) to reflect the added definition in sections 3.3.70 Detector. in comment number 4 of the supporting material.

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:42:44 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 388-NFPA 72-2019 [New Section after 3.3.315]

3.3.316 Uninterruptable Power Supply (UPS). See 3.3.99.2.1 Commercial Uninterruptable Power Supply (UPS).

Statement of Problem and Substantiation for Public Input

Reintroducing the term UPS in support of other proposed changes, in a place where most people will be able to more easily find it, rather then exclusively under Energy Storage Systems

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 383-NFPA 72-2019 [New Section after 10.6.8.4]	Supports reintroduction of the term Commerical UPS in PI 383.

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 19:29:10 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The Technical Committee does not support adding redundant definitions. Uninterruptible Power Supplies are a form of a Stored-Energy Emergency Power Supply System,

Public Input No. 113-NFPA 72-2019 [New Section after 3.3.317]

3.3.318 Visibility Region.

See 3.3.106, Field of View.

Statement of Problem and Substantiation for Public Input

The current definition of field of view is based on the solid cone of the detector, which is different from the definition of field of view commonly used for camera type devices in other communities such as computer vision and robotics. The main difference is that for camera type optical devices, the field of view is not simply a solid cone, but a geometry constrained by line-of-sight visibility. That is, the field of view region for a camera must only consist of areas that are not obstructed. In order to close the gap in definition use for different communities, we introduce the definition of line-of-sight visibility, and also propose modifications to existing definitions of field of view (section 3.3.106.).

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Affiliation: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:26:42 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee does not add the term as it does not appear in the Code.

Public Input No. 485-NFPA 72-2019 [Section No. 3.3.321]

3.3.321* Wavelength.

~~The~~ Wavelength is the distance between the peaks of a ~~sinusoidal wave. All radiant energy can be described as a wave having a wavelength. Wavelength serves as the unit of measure for distinguishing between different parts of the spectrum. Wavelengths are~~ sinel wave and is measured in microns (μm), nanometers (nm), or angstroms (Å); it is inversley proportional to frequency, the shorter the wavelenght the higher the frequency . (SIG-IDS)

Statement of Problem and Substantiation for Public Input

Modified the definition to reflect the technical definition from the dictionary.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:39:43 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5272-NFPA 72-2019
Statement: The definition is deleted since it is a recognized scientific definition.

Public Input No. 539-NFPA 72-2019 [Section No. 7.2.1]

7.2.1*

Where documentation is required by the authority having jurisdiction, the following list shall represent the minimum documentation required for new systems and additions or alterations to existing systems:

(1) * Written narrative providing intent and system description

(2) Riser diagram

(3) Floor plan layout showing locations of all devices, control ~~equipment~~ units , and supervising station and shared communications equipment with each sheet showing the following:

(4) Point of compass (north arrow)

(5) A graphic representation of the scale used

(6) Room use identification

(7) Building features that will affect the placement of initiating devices and notification appliances

(8) Sequence of operation in either an input/output matrix or narrative form

(9) Equipment technical data sheets

(10) Manufacturers' published instructions, including operation and maintenance instructions

(11) Battery capacity and safety margin calculations (where batteries are provided)

(12) Voltage drop calculations for notification appliance circuits

(13) Mounting height elevation for wall-mounted devices and appliances

(14) Where occupant notification is required, minimum sound pressure levels that must be produced by the audible notification appliances in applicable covered areas

(15) Locations of alarm notification appliances, including candela ratings for visual alarm notification appliances

(16) * Pathway diagrams between the control unit and shared communications equipment within the protected premises

(17) Completed record of completion in accordance with 7.5.6 and 7.8.2

(18) For software-based systems, a copy of site-specific software, including specific instructions on how to obtain the means of system and software access (password)

(19) Record (as-built) drawings

(20) Records, record retention, and record maintenance in accordance with Section 7.7

(21) Completed record of inspection and testing in accordance with 7.6.6 and 7.8.2

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:

Zip:

Submittal Date: Wed Jun 26 10:10:35 EDT 2019

Committee: SIG-FUN

Committee Statement

Resolution: FR-5131-NFPA 72-2019

Statement: A definition for the term “control equipment”, which is currently defined within the text of 7.4.7, is added for clarity.

Public Input No. 618-NFPA 72-2019 [Section No. 7.2.1]

7.2.1*

Where documentation is required by the authority having jurisdiction, the following list shall represent the minimum documentation required for new systems and additions or alterations to existing systems:

(1) * Written narrative providing intent and system description

(2) Riser diagram

(3) Floor plan layout showing locations of all devices, control equipment, and supervising station and shared communications equipment with each sheet showing the following:

(4) Point of compass (north arrow)

(5) A graphic representation of the scale used

(6) Room use identification

(7) Building features that will affect the placement of initiating devices and notification appliances

(8) Sequence of operation in either an input/output matrix or narrative form

(9) Equipment technical data sheets

(10) Manufacturers' published instructions, including operation and maintenance instructions

(11) Battery capacity and safety margin calculations (where batteries are provided)

(12) Voltage drop calculations for notification appliance circuits

(13) Mounting height elevation for wall-mounted devices and appliances

(14) Where occupant notification is required, minimum sound pressure levels that must be produced by the audible notification appliances in applicable covered areas

(15) Locations of alarm notification appliances, including candela ratings for visual alarm notification appliances

(16)† Pathway diagrams between the control unit and shared communications equipment within the protected premises

(17) Completed record of completion in accordance with 7.5.6 and 7.8.2

(18) For software-based systems, a copy of site-specific software, including specific instructions on how to obtain the means of system and software access (password)

(19) Record (as-built) drawings

(20) Records, record retention, and record maintenance in accordance with Section 7.7

(21) Completed record of inspection and testing in accordance with 7.6.6 and 7.8.2

(22) Cybersecurity certificate(s)

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	Part of a broader public input intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:01:19 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5124-NFPA 72-2019
Statement: Section 7.2.1 has been revised removing unnecessary references to 7.8.2, and adds a reference to cyber security documentation at the bottom of the list.

Public Input No. 84-NFPA 72-2019 [Section No. 7.2.1]

7.2.1*

Where documentation is required by the authority having jurisdiction, the following list shall represent the minimum documentation required for new systems and additions or alterations to existing systems:

(1) * Written narrative providing intent and system description

(2) Riser diagram

(3) Floor plan layout showing locations of all devices, control equipment, and supervising station and shared communications equipment with each sheet showing the following:

(4) Point of compass (north arrow)

(5) A graphic representation of the scale used

(6) Room use identification

(7) Building features that will affect the placement of initiating devices and notification appliances

(8) Sequence of operation in either an input/output matrix or narrative form

(9) Equipment technical data sheets

(10) Manufacturers' published instructions, including operation and maintenance instructions

(11) Battery capacity and safety margin calculations (where batteries are provided)

(12) Voltage drop calculations for notification appliance circuits

(13) Mounting height elevation for wall-mounted devices and appliances

(14) Where occupant notification is required, minimum sound pressure levels that must be produced by the audible notification appliances in applicable covered areas

(15) Locations of alarm notification appliances, including candela ratings for visual alarm notification appliances

(16) Pathway diagrams between the control unit and shared communications equipment within the protected premises

(17) Completed record of completion in accordance with 7.5.6 and 7.8.2

(18) For software-based systems, a copy of site-specific software, including specific instructions on how to obtain the means of system and software access (password)

(19) Record (as-built) drawings

(20) Records, record retention, and record maintenance in accordance with Section 7.7

(21) Completed record of inspection and testing in accordance with 7.6.6 ~~and 7 .8.2~~

Statement of Problem and Substantiation for Public Input

With the proposed relocation of the Inspection and Testing form to the Annex and removing reference to these forms from Section 7.8.2, this line item has been revised to reference only Section 7.6.6, which in turn, would direct the reader to the Annex section where those forms have been relocated. Line item 3 was underlined by TerraView in error. This only affects line item 21.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]	
Public Input No. 90-NFPA 72-2019 [Section No. 7.8.2]	
Public Input No. 90-NFPA 72-2019 [Section No. 7.8.2]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 01 10:38:20 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5124-NFPA 72-2019
Statement: Section 7.2.1 has been revised removing unnecessary references to 7.8.2, and adds a reference to cyber security documentation at the bottom of the list.

Public Input No. 57-NFPA 72-2019 [Section No. 7.3.3.1]

7.3.3.1

When ~~a~~design~~ ~~ a design professional is preparing design documents that will incorporate new or modifications to a fire alarm or emergency communication system covered by this Code, preliminary bid documents shall be prepared in accordance with Section 7.3.

Statement of Problem and Substantiation for Public Input

Editorial correction

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 12:09:22 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5078-NFPA 72-2019
Statement: The Technical Committee corrects an editorial issue.

Public Input No. 56-NFPA 72-2019 [New Section after 7.3.3.5]

TITLE OF NEW CONTENT

7.3.3.6 Design documents shall clearly communicate the pathway class designations in accordance with Section 12.3 for all types of circuits specified.

7.3.3.7 Design documents shall clearly communicate the pathway survivability level designations in accordance with Section 12.4 for all types of circuits requiring survivability.

Statement of Problem and Substantiation for Public Input

Circuit Pathway Class is already required to be detailed to the AHJ, but the requirements of Chapter 7 are unclear as to this being required by the design engineer. In many cases, the Pathway Class can have a huge bearing on the design of the system and the requirements for individual types of circuits. This includes where redundant paths will and will not be allowed and how this affects performance alternatives that may be considered by the system designer or vendor. These details are critical for review and approval of the system.

Circuit Pathway Survivability us already required to be detailed to the AHJ, but the requirements of Chapter 7 are unclear as to this being required by the design engineer. These details are critical for review and approval of the system. This is particularly important for pathway survivability, where the survivability can be provided by the cable, cable system, or building construction. Chapter 23 and 24 require engineering justification for the pathway survivability level that must be used, and Chapter 7 should include requirements to require this designation to be clear on the design documents.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 12:06:22 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5079-NFPA 72-2019
Statement: This revision clarifies that pathway class designation and survivability levels are part of the design documentation requirements.

Public Input No. 58-NFPA 72-2019 [New Section after 7.3.5.4]

7.3.5.5 CO Detectors

CO detection design documentation shall be provided in accordance with Section 17.12.

Statement of Problem and Substantiation for Public Input

Similar to other detection devices, carbon monoxide detector documentation should be provided.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 12:10:51 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5284-NFPA 72-2019
Statement: Similar to other detection devices, carbon monoxide detector documentation should be provided.

Public Input No. 192-NFPA 72-2019 [Section No. 7.4.4]

7.4.4

Shop drawings shall include the following information:

(1) Name of protected premises, owner, and occupant (where applicable)

(2) Name and contact information of the system designer

(3) Name and contact information of the system installer or contractor

(4) Name and contact information of the service or maintenance company

(5) Location of protected premises

(6) Name, location and contact information of the approved supervising station when provided

(7) Device legend and symbols in accordance with NFPA 170, or other symbols acceptable to the authority having jurisdiction

(8) Date of issue and any revision dates

Statement of Problem and Substantiation for Public Input

It is important to include the name and contact information of the system designer responsible for the design of the fire alarm or emergency communication system which is defined in Section 3.3.200.3. It is important for Plan Examiners or inspectors to be able to communicate with the system designer during the shop drawings review phase and therefore, including the system designer's contact information is very important.
It is also important to include the name, location and contact information of the approved supervising station if provided to be used by the the fire jurisdiction or enforcing authority during the system acceptance inspection and any other system testing or maintenance.
It is also important to include the name and contact information of the approved service or maintenance company to ensure that there is required person/company to perform system service/maintenance.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 26 23:09:59 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The Technical Committee notes the proposed revisions are either redundant to existing requirements, or go beyond the information required to perform a review of fire alarm shop drawings.

Public Input No. 193-NFPA 72-2019 [Section No. 7.4.5]

7.4.5

Floor plan drawings shall be drawn to an indicated scale and shall include the following information, where applicable for the particular system:

(1) Floor or level identification

(2) Point of compass (indication of North)

(3) Graphic scale

(4) All walls and doors

(5) All partitions extending to within 15 percent of the ceiling height (where applicable and when known)

(6) Room and area descriptions

(7) System devices/component locations

(8) Locations of fire alarm and/or emergency commuinication system primary power disconnecting means

(9) Locations of monitor/control interfaces to other systems

(10) System riser locations

(11) Type and number of system components/devices on each circuit, on each floor or level

(12) Type and quantity of conductors and conduit (if used) for each circuit

(13) Identification of any ceiling over 10 ft (3.0 m) in height where automatic fire detection is being proposed

(14) Details of ceiling geometries, including beams and solid joists, where automatic fire detection is being proposed

(15) Where known, acoustic properties of spaces

Statement of Problem and Substantiation for Public Input

This section should not be limited to only fire alarm control unit. All other power disconnecting means for ECS (non-FA) control units should also be identified

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 26 23:27:28 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5085-NFPA 72-2019
Statement: This revision clarifies that pathway class designations and survivability levels are to be included on floor plan drawings. The modifier “where applicable for the particular system” is appropriate.

Public Input No. 53-NFPA 72-2019 [Section No. 7.4.5]

7.4.5

Floor plan drawings shall be drawn to an indicated scale and shall include the following information~~, where applicable for the particular system~~ :

(1) Floor or level identification

(2) Point of compass (indication of North)

(3) Graphic scale

(4) All walls and doors

(5) All partitions extending to within 15 percent of the ceiling height (where applicable and when known)

(6) Room and area descriptions

(7) System devices/component locations

(8) Locations of fire alarm primary power disconnecting means

(9) Locations of monitor/control interfaces to other systems

(10) System riser locations

(11) Type and number of system components/devices on each circuit, on each floor or level

(12) Type and quantity of conductors and conduit (if used) for each circuit

(13) Identification of any ceiling over 10 ft (3.0 m) in height where automatic fire detection is being proposed

(14) Details of ceiling geometries, including beams and solid joists, where automatic fire detection is being proposed

(15) Where known, acoustic properties of spaces

(16) Pathway class designations in accordance with Section 12.3 for all types of circuits used, including the location of any end-of-line supervisory or power devices that may be required by the pathway class.

(17) Pathway survivability level designations in accordance with Section 12.4 for all types of circuits.

Statement of Problem and Substantiation for Public Input

NFPA 72 already requires circuit Pathway Class and Pathway Survivability to be detailed to the AHJ, but the requirements of Chapter 7 do not include this requirement to be noted on the shop drawings. Both Classifications should be detailed on the shop drawings for review and approval by the AHJ. The details are critical for review and approval of the system. The "where applicable to the particular system" is redundant language to other language in Chapter 7 and may be in conflict with the "minimum requirements" of the Chapter.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 11:56:43 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5085-NFPA 72-2019

Statement: This revision clarifies that pathway class designations and survivability levels are to be included on floor plan drawings. The modifier “where applicable for the particular system” is appropriate.

Public Input No. 54-NFPA 72-2019 [Section No. 7.4.6]

7.4.6

System riser diagrams shall be coordinated with the floor plans and shall include the following information, where applicable to the particular system :

(1) General arrangement of the system in building cross-section

(2) Number of risers

(3) Type and number of circuits in each riser

(4) Type and number of system components/devices on each circuit, on each floor or level

(5) Number of conductors for each circuit

(6) Pathway class designation in accordance with Section 12.3 for all types of circuits used, including the provision of any end-of-line supervisory or power devices that may be required by the pathway class.

(7) Pathway survivability level designations in accordance with Section 12.4 for all types of circuits.

Statement of Problem and Substantiation for Public Input

NFPA 72 already requires circuit Pathway Class and Pathway Survivability to be detailed to the AHJ, but the requirements of Chapter 7 do not include this as a requirement to be noted on the riser diagram. Both classifications should be detailed on the riser diagram for review and approval by the AHJ. These details are critical for review and approval of the system.

The “where applicable to the particular system” is redundant language to other language in Chapter 7.

NOTE FOR DISCUSSION: IN ANOTHER PI WE HAVE PROPOSED TO DELETE THE "WHERE APPLICABLE" LANGUAGE AND NOW WE ARE PROPOSING TO ADD IT. IS THAT WHAT WE REALLY WANT?

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 55-NFPA 72-2019 [New Section after A.7.4.2]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 12:01:11 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5080-NFPA 72-2019

Statement: This revision clarifies that pathway class designations and survivability levels are to be included on riser diagrams.

Additionally, the text clarifies that the riser diagram should show the location of required pathway survivability.



Public Input No. 194-NFPA 72-2019 [Section No. 7.4.7]

7.4.7

Control unit diagrams shall be provided for all control equipment (i.e., equipment listed as either a control unit or control unit accessory), power supplies, battery chargers, and annunciators and shall include the following information:

(1) Identification of the control equipment depicted

(2) Location(s) of control equipment

(3) All field wiring terminals and terminal identifications

(4) All circuits connected to field wiring terminals and circuit identifications

(5) All indicators and manual controls

(6) Location(s) of power disconnecting means for each control unit

(7) Field connections to supervising station signaling equipment, releasing equipment, or emergency safety control interfaces, where provided

Statement of Problem and Substantiation for Public Input

Each control unit other than FACU should be also identified with the location of its associated power disconnecting means such as specifically required for fire alarm control units.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 26 23:37:00 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The proposed language is already in the Code.

Public Input No. 110-NFPA 72-2019 [New Section after 7.4.10]

7.4.11

Pathway diagrams between the control unit and shared communications equipment within the protected premises required in 7.2 (12) shall be shown on the shop drawings.

Statement of Problem and Substantiation for Public Input

Having the required pathway diagram(s) on the drawing will better ensure compliance with the standard. This will also get the diagram onto the record drawings.

Submitter Information Verification

Submitter Full Name: Chase Browning
Organization: Medford Fire Rescue
Street Address:
City:
State:
Zip:
Submittal Date: Wed Apr 10 11:05:23 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The proposed language covers material that is not necessarily formatted for shop drawings, reference A.7.2.1(12).

Public Input No. 448-NFPA 72-2019 [Section No. 7.5.3]

7.5.3

All systems including new systems and additions or alterations to existing systems shall include the following documentation, which shall be delivered to the owner or the owner's representative upon final acceptance of the system:

(1) * An owner's manual and manufacturer's published instructions covering all system equipment

(2) Record (as-built) drawings in accordance with 7.5.5

(3) A completed record of completion form in accordance with 7.5.6

(4) For software-based systems, record copy of the site-specific software in accordance with 7.5.7

(SIG-FUN)

(5) For software-based systems, documentation stating the name of the cybersecurity standard(s) and level to which the system has been designed in accordance with 10.5.3(new)

Statement of Problem and Substantiation for Public Input

The cybersecurity design level is important in determining the robustness of the system in various environments.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 14:26:40 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5126-NFPA 72-2019
Statement: Cyber security documentation must be provided to the owner.

Public Input No. 449-NFPA 72-2019 [Section No. 7.5.3]

7.5.3

All systems including new systems and additions or alterations to existing systems shall include the following documentation, which shall be delivered to the owner or the owner's representative upon final acceptance of the system:

(1) * An owner's manual and manufacturer's published instructions covering all system equipment

(2) Record (as-built) drawings in accordance with 7.5.5

(3) A completed record of completion form in accordance with 7.5.6

(4) For software-based systems, record copy of the site-specific software in accordance with 7.5.7

(SIG-FUN)

(6) For software-based systems, documentation containing instructions regarding the installation and maintenance of cybersecurity related system elements in accordance with 10.5.4(new)

Statement of Problem and Substantiation for Public Input

Cybersecurity features can be readily compromised by improper installation and maintenance practices.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 14:31:34 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5126-NFPA 72-2019
Statement: Cyber security documentation must be provided to the owner.

Public Input No. 491-NFPA 72-2019 [Section No. 7.5.7]

7.5.7 Site-Specific Software. (SIG-TMS)

7.5.7.1

For software-based systems, a copy of the site-specific software shall be provided to the system owner or owner's designated representative.

7.5.7.1.1 ~~–~~

~~The~~

~~*~~

~~-~~

For all software that connects and is part of the building life safety network components, the software security access means shall be either provided or the means of obtaining the software security access shall be provided to the owner or the owner's designated representative.

A.7.5.7.1.1

The intent is for the building owner to be able to obtain the software security access to their equipment and not be placed in a position that other qualified vendors could not be utilized. The software would be the fire alarm control unit, DACTs wireless transmitters, MNS components, etc.

7.5.7.1.2

The site-specific software documentation shall include both the user passcode and either the system programming password or specific instructions on how to obtain the programming password from the system manufacturer.

7.5.7.1.2 ~~–~~ 3

The passwords provided shall enable currently certified qualified programming personnel to access, edit, modify, and add to the existing system site-specific software.

7.5.7.2

A copy of the site-specific software shall be stored on-site in nonvolatile, nonerasable, nonrewritable memory.

Statement of Problem and Substantiation for Public Input

The intent is for the building owner to be able to obtain the software security access to their equipment and not be placed in a position that other qualified vendors could not be utilized.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 23:22:29 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5244-NFPA 72-2019
Statement: The building owner should be able to obtain the software security access to their equipment and not be placed in a position that other qualified vendors could not be utilized.

Public Input No. 360-NFPA 72-2019 [New Section after 7.5.7.1.2]

A7.5.7.2

An example of a device for the site-specfic software shall be stored on site shall be on a USB or CD that is nonvolatile, non-erasable and non-rewritable memory.

Statement of Problem and Substantiation for Public Input

an example of the type of device that shall be used provides clarity.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 10:32:08 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5244-NFPA 72-2019
Statement: The building owner should be able to obtain the software security access to their equipment and not be placed in a position that other qualified vendors could not be utilized.

Public Input No. 59-NFPA 72-2019 [Section No. 7.5.7.2]

7.5.7.2

A copy of the site-specific software shall be stored on-site in nonvolatile ~~, nonerasable, nonrewritable~~ memory.

Statement of Problem and Substantiation for Public Input

The current text would only allow a CD and as such is not enforceable.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 12:17:19 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5244-NFPA 72-2019
Statement: The building owner should be able to obtain the software security access to their equipment and not be placed in a position that other qualified vendors could not be utilized.

Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]

7.6.6* Record of Inspection and Testing.

The record of all inspections, testing, and maintenance as required by 14.6.2.4 shall be documented ~~using either the record of inspection and testing forms, Figure 7 . 8.2(g) through Figure 7.8.2(l) , or an alternative record that includes all the applicable information shown in Figure 7.8.2(g) through Figure 7.8.2(l) .~~

Statement of Problem and Substantiation for Public Input

The annex clearly states that the intent of the Inspection and Testing forms has always been to serve as a guide, not a mandate, for how ITM activities should be documented. Even so, jurisdictions still require that these forms be used due to their presence in the body of the Code. This has posed a problem for many service contractors as many of the fields in the forms may not be applicable, creating the onerous task of having to populate "N/A" in all fields that do not apply to the tested system and creates a report that is cluttered with non-applicable data for the end-user to have to review. These forms should be in the annex where it can still be referred to as a guide, if needed, and and thus provide better guidance to the service contractor and to enforcers that these forms can still be used if preferred but are not mandatory.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 91-NFPA 72-2019 [Section No. A.7.8.2(2)]	
Public Input No. 92-NFPA 72-2019 [New Section after A.7.7.1.2]	
Public Input No. 90-NFPA 72-2019 [Section No. 7.8.2]	
Public Input No. 84-NFPA 72-2019 [Section No. 7.2.1]	
Public Input No. 85-NFPA 72-2019 [Section No. 14.6.2.4]	
Public Input No. 90-NFPA 72-2019 [Section No. 7.8.2]	
Public Input No. 91-NFPA 72-2019 [Section No. A.7.8.2(2)]	
Public Input No. 92-NFPA 72-2019 [New Section after A.7.7.1.2]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 01 09:27:38 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The referenced forms contain a statement that permits the forms to be modified as needed.

Public Input No. 619-NFPA 72-2019 [New Section after 7.8.2]

TITLE OF NEW CONTENT

Add 7.8.3 Dry Valve Testing Schematic

Furnish and isntall on a wall adjacent to dry pipe valve and trim a drawing under tranparent plastic of all devices, vavle tags and test procedures for all valves including assigned vavle tags with identifying marks using either numbers or letters with test proedures to be used for initial accepatance and ongoing testing as required in Chapter 14....

Statement of Problem and Substantiation for Public Input

Often the individual testing for pressure variations required in Chapter 17 of the dry valve trim does not understand the process. Sometimes the incorrect vale is opened and causes the dry valve to open. The result is a flooded main and requires extensive labor to restore the system to normal operation. Having the test procedure in place and visible to individuals testing the system.

Submitter Information Verification

Submitter Full Name: James Mundy
Organization: Asset Protection Associates, L
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:04:24 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: This requirement does not belong on NFPA 72, it would be better placed in NFPA 13, NFPA 25, or NFPA 4.

Public Input No. 143-NFPA 72-2019 [Section No. 7.8.2]

7.8.2 Forms for Documentation.

Forms for documentation shall be as follows:

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

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

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

Figure 7.8.2(a) System Record of Completion. (SIG-FUN)

SYSTEM RECORD OF COMPLETION

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

Attach additional sheets, data, or calculations as necessary to provide a complete record.

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

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

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

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

4.1 Control Unit

Manufacturer: _____ Model number: _____

4.2 Software and Firmware

Firmware revision number: _____

4.3 Alarm Verification

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

© 2018 National Fire Protection Association

SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

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

5.1.2 Secondary Power

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

5.2 Control Unit

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

6. CIRCUITS AND PATHWAYS

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

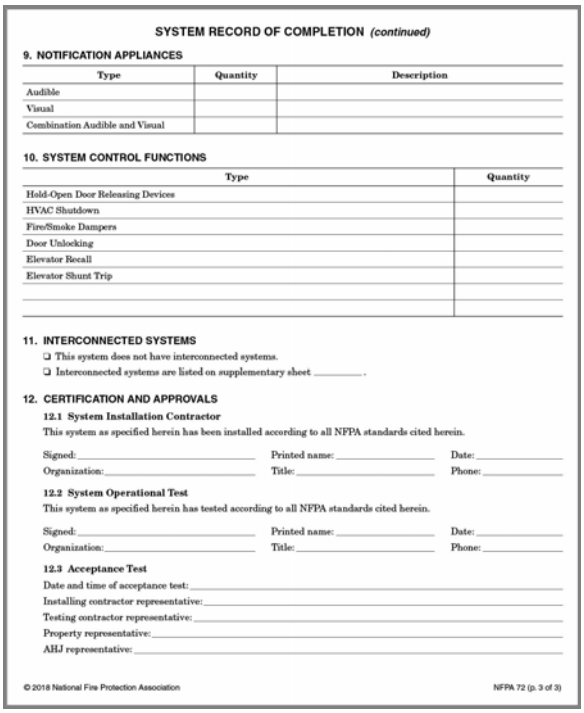
7. REMOTE ANNUNCIATORS

Type	Location

8. INITIATING DEVICES

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

© 2018 National Fire Protection Association



SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description
Audible		
Visual		
Combination Audible and Visual		

10. SYSTEM CONTROL FUNCTIONS

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

11. INTERCONNECTED SYSTEMS

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

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

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

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

12.2 System Operational Test

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

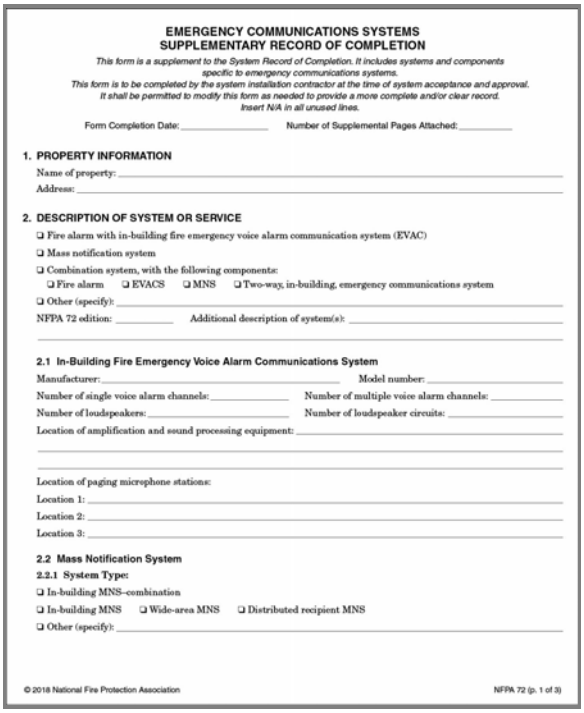
Signed: _____ Printed name: _____ Date: _____
Organization: _____ Title: _____ Phone: _____

12.3 Acceptance Test

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

2.1 In-Building Fire Emergency Voice Alarm Communications System

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

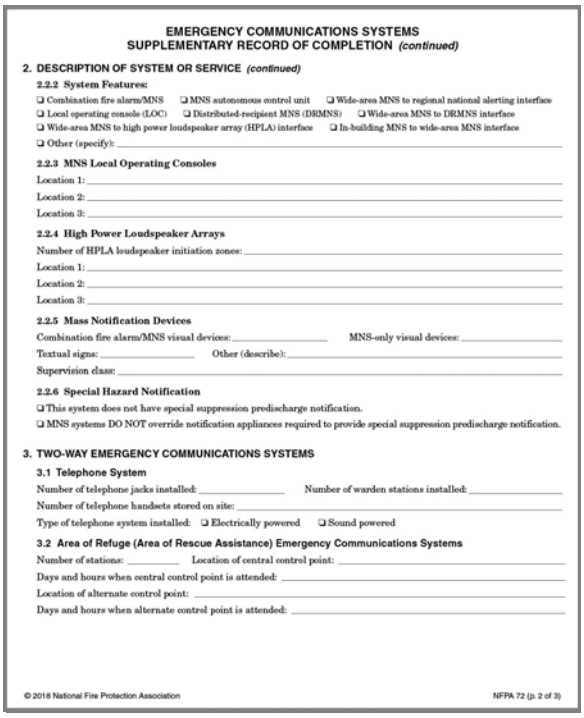
Location of paging microphone stations:
Location 1: _____
Location 2: _____
Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

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

2.2.4 High Power Loudspeaker Arrays

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

2.2.5 Mass Notification Devices

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

2.2.6 Special Hazard Notification

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

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

3.1 Telephone System

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)

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

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

3.3 Elevator Emergency Communications Systems

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

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

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

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.1.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.1.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.1.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

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

2.2.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

© 2018 National Fire Protection Association

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.2.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.2.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.2.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.3.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.3.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

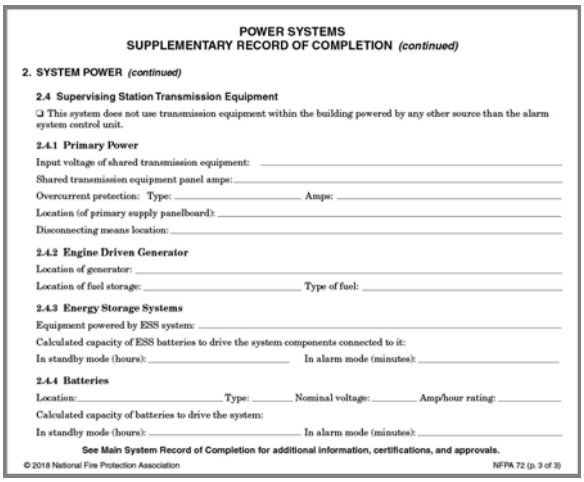
2.3.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

© 2018 National Fire Protection Association



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

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

2.4.1 Primary Power

Input voltage of shared transmission equipment: _____

Shared transmission equipment panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.4.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.4.3 Energy Storage Systems

Equipment powered by ESS system: _____

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

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

2.4.4 Batteries

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

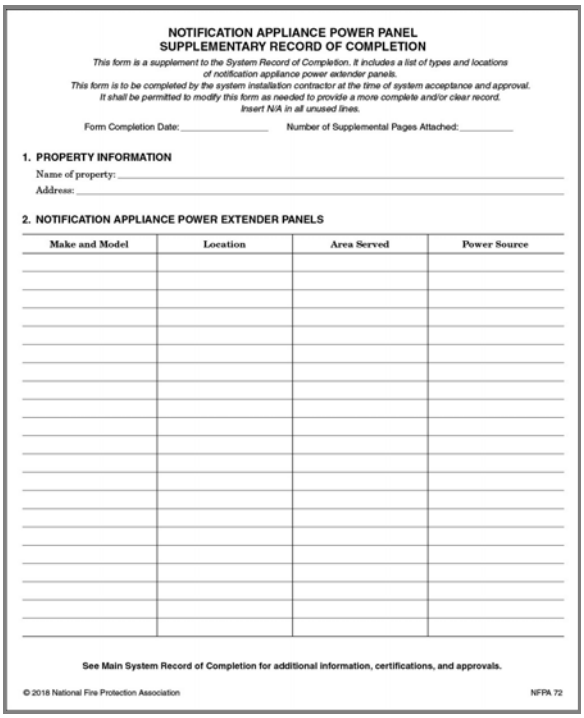
Calculated capacity of batteries to drive the system:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

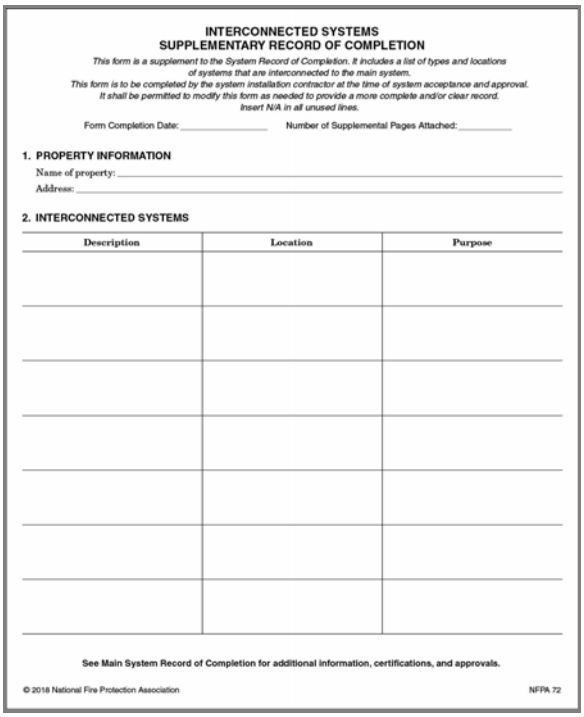
2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source

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

© 2018 National Fire Protection Association NFPA 72

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



INTERCONNECTED SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

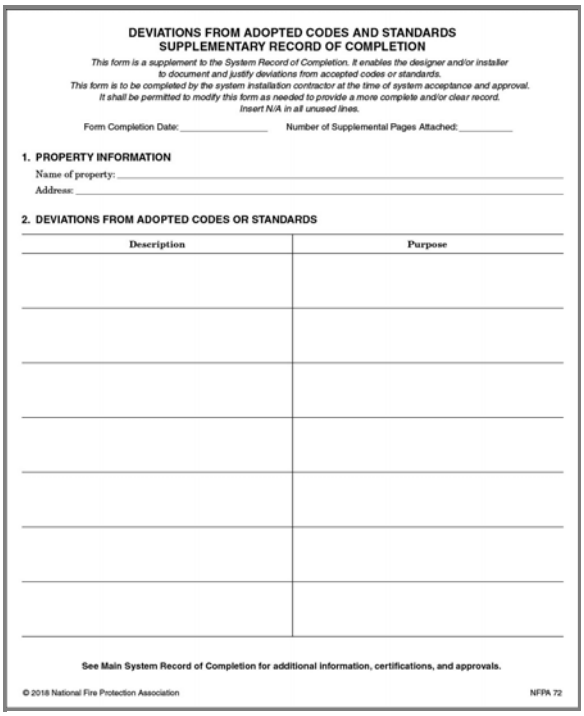
2. INTERCONNECTED SYSTEMS

Description	Location	Purpose

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

© 2018 National Fire Protection Association NFPA 72

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



DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose

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

© 2018 National Fire Protection Association NFPA 72

Figure 7.8.2(g) System Record of Inspection and Testing. (SIG-TMS)

SYSTEM RECORD OF INSPECTION AND TESTING

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

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

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

1. PROPERTY INFORMATION

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

2. TESTING AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

4.1 Control Unit

Manufacturer:_____ Model number:_____

4.2 Software Firmware

Firmware revision number:_____

4.3 System Power

4.3.1 Primary (Main) Power

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

© 2018 National Fire Protection Association

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

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

4.3.2 Secondary Power

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

5. NOTIFICATIONS MADE PRIOR TO TESTING

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

6. TESTING RESULTS

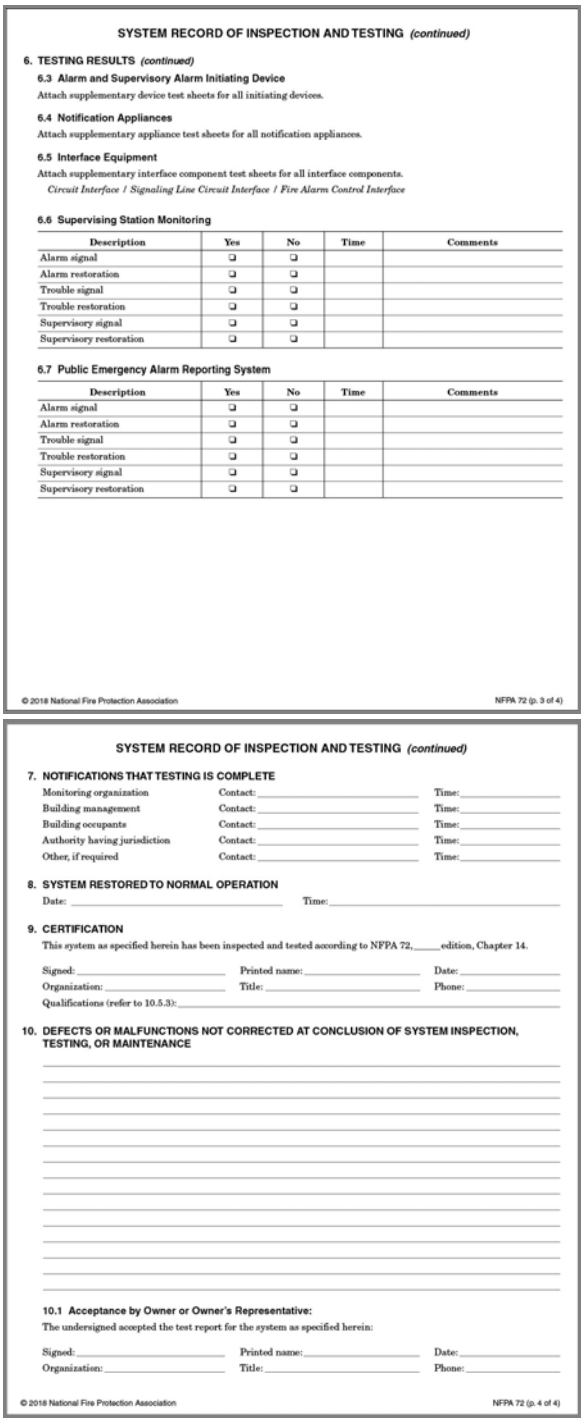
6.1 Control Unit and Related Equipment

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

6.2 Secondary Power

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

© 2018 National Fire Protection Association



SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

6. TESTING RESULTS *(continued)*

6.3 Alarm and Supervisory Alarm Initiating Device

Attach supplementary device test sheets for all initiating devices.

6.4 Notification Appliances

Attach supplementary appliance test sheets for all notification appliances.

6.5 Interface Equipment

Attach supplementary interface component test sheets for all interface components.

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

6.6 Supervising Station Monitoring

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

6.7 Public Emergency Alarm Reporting System

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 4)

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

7. NOTIFICATIONS THAT TESTING IS COMPLETE

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

8. SYSTEM RESTORED TO NORMAL OPERATION

Date:_____ Time:_____

9. CERTIFICATION

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

Signed:_____ Printed name:_____ Date:_____
Organization:_____ Title:_____ Phone:_____
Qualifications (refer to 10.5.3):_____

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

10.1 Acceptance by Owner or Owner's Representative:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 4 of 4)

Figure 7.8.2(h) Notification Appliance Supplementary Record of Inspection and Testing. (SIG-TMS)



NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

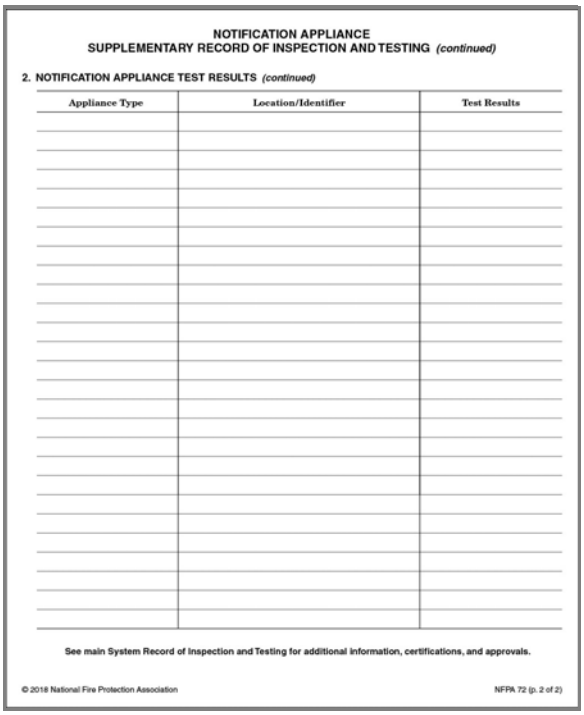
Name of property: _____

Address: _____

2. NOTIFICATION APPLIANCE TEST RESULTS

Appliance Type	Location/Identifier	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

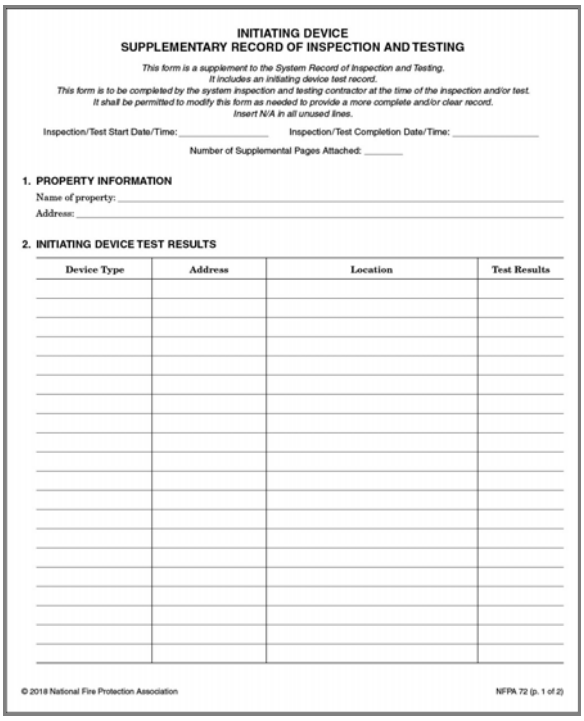
2. NOTIFICATION APPLIANCE TEST RESULTS *(continued)*

Appliance Type	Location/Identifier	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(i) Initiating Device Supplementary Record of Inspection and Testing. (SIG-TMS)



INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

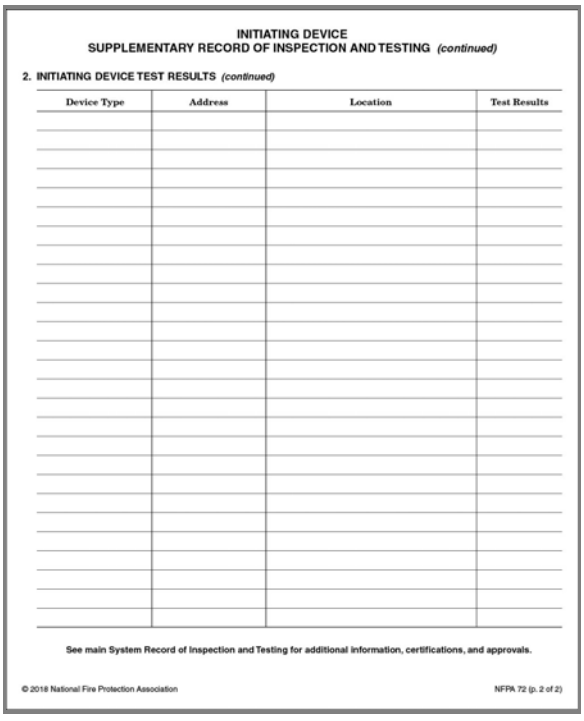
Name of property: _____

Address: _____

2. INITIATING DEVICE TEST RESULTS

Device Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

2. INITIATING DEVICE TEST RESULTS *(continued)*

Device Type	Address	Location	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(j) Mass Notification System Supplementary Record of Inspection and Testing. (SIG-TMS)



MASS NOTIFICATION SYSTEM
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. MASS NOTIFICATION SYSTEM

2.1 System Type

❑ In-building MNS—combination

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

❑ Other (specify): _____

2.2 System Features

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

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

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

❑ Other (specify): _____

3. IN-BUILDING MASS NOTIFICATION SYSTEM

3.1 Primary Power

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

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

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

3.3 Energy Storage Systems ❑ This system does not have an ESS.

Equipment powered by an ESS system: _____

Location of ESS system: _____

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

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

3.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

❑ Batteries are marked with date of manufacture.

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

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

4. MASS NOTIFICATION EQUIPMENT TEST RESULTS

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(k) Emergency Communications Systems Supplementary Record of Inspection and Testing. (SIG-TMS)

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

❑ Mass notification system

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

❑ Other (specify): _____

Additional description of system(s): _____

_____

2.1 In-Building Fire Emergency Voice Alarm Communication System

Manufacturer: _____ Model number: _____

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

Number of loudspeakers: _____ Number of loudspeaker circuits: _____

Location of amplification and sound processing equipment: _____

_____

_____

Location of paging microphone stations:

Location 1: _____

Location 2: _____

Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

❑ In-building MNS—combination

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

❑ Other (specify): _____

© 2018 National Fire Protection Association

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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

Location 1: _____

Location 2: _____

Location 3: _____

2.2.4 High-Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones: _____

Location 1: _____

Location 2: _____

Location 3: _____

2.2.5 Mass Notification Devices

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

Textual signs: _____ Other (describe): _____

Supervision class: _____

2.2.6 Special Hazard Notification

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

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

3. TWO-WAY EMERGENCY COMMUNICATION SYSTEMS

3.1 Telephone System

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

Number of telephone handsets stored on site: _____

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

© 2018 National Fire Protection Association

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

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

3.3 Elevator Emergency Communications Systems

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

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communication System

Describe: _____

4. TESTING RESULTS

4.1 Control Unit and Related Equipment

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

4.2 Secondary Power

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

© 2018 National Fire Protection Association

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

4. TESTING RESULTS *(continued)*

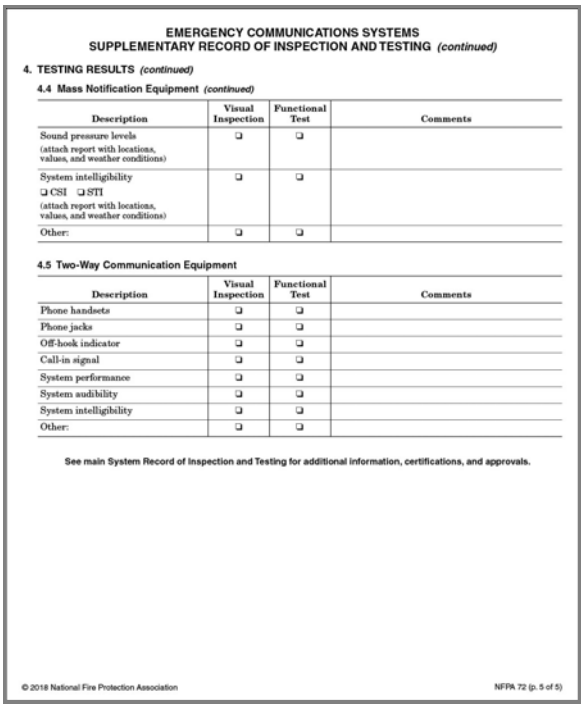
4.3 Emergency Communications Equipment

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

4.4 Mass Notification Equipment

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

© 2018 National Fire Protection Association



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

4. TESTING RESULTS *(continued)*

4.4 Mass Notification Equipment *(continued)*

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

4.5 Two-Way Communication Equipment

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 5 of 5)

Figure 7.8.2(l) Interface Component Supplementary Record of Inspection and Testing. (SIG-TMS)



INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

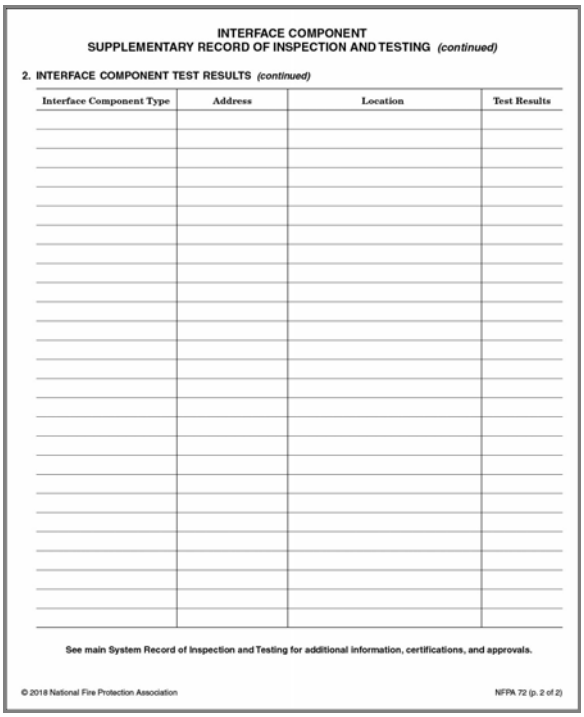
Name of property: _____

Address: _____

2. INTERFACE COMPONENT TEST RESULTS

Interface Component Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

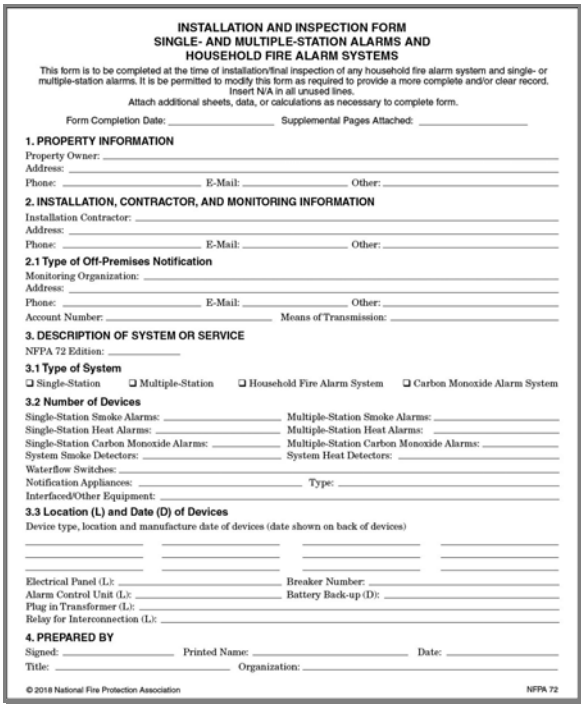
2. INTERFACE COMPONENT TEST RESULTS *(continued)*

Interface Component Type	Address	Location	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

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



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

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

Form Completion Date: _____ Supplemental Pages Attached: _____

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

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

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

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

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

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

3.3 Location (L) and Date (D) of Devices
Device type, location and manufacture date of devices (date shown on back of devices)

Electrical Panel (L): _____ Breaker Number: _____
Alarm Control Unit (L): _____ Battery Back-up (D): _____
Plug in Transformer (L): _____
Relay for Interconnection (L): _____

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

© 2018 National Fire Protection Association NFPA 72

Statement of Problem and Substantiation for Public Input

Revision conforms to MOS

Submitter Information Verification

Submitter Full Name: Manuelita David
Organization: JENSEN HUGHES
Street Address:

City:
State:
Zip:
Submittal Date: Mon May 06 11:28:46 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5123-NFPA 72-2019
Statement: Substituting "shall be permitted to be" for "can" complies with the Manual of Style.

Public Input No. 364-NFPA 72-2019 [Section No. 7.8.2]

7.8.2 Forms for Documentation.

Forms for documentation shall be as follows:

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

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

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

Figure 7.8.2(j) Remove the word "system" in section 3.3 (Equipment pwered by an ESS system) and sentence (Location of ESS system). the word "system" is redundant.

Figure 7.8.2(k) Replace the word "communication" with communications" in sentence 2 (two places) 2.1 and section title 3.4.

Figure 7.8.2(m) Add (SIG-HOU) following the Figure 7.8.2(m) title.

Figure 7.8.2(a) System Record of Completion. (SIG-FUN)



SYSTEM RECORD OF COMPLETION

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

Form Completion Date:_____ Supplemental Pages Attached:_____

1. PROPERTY INFORMATION

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

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

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

4.1 Control Unit

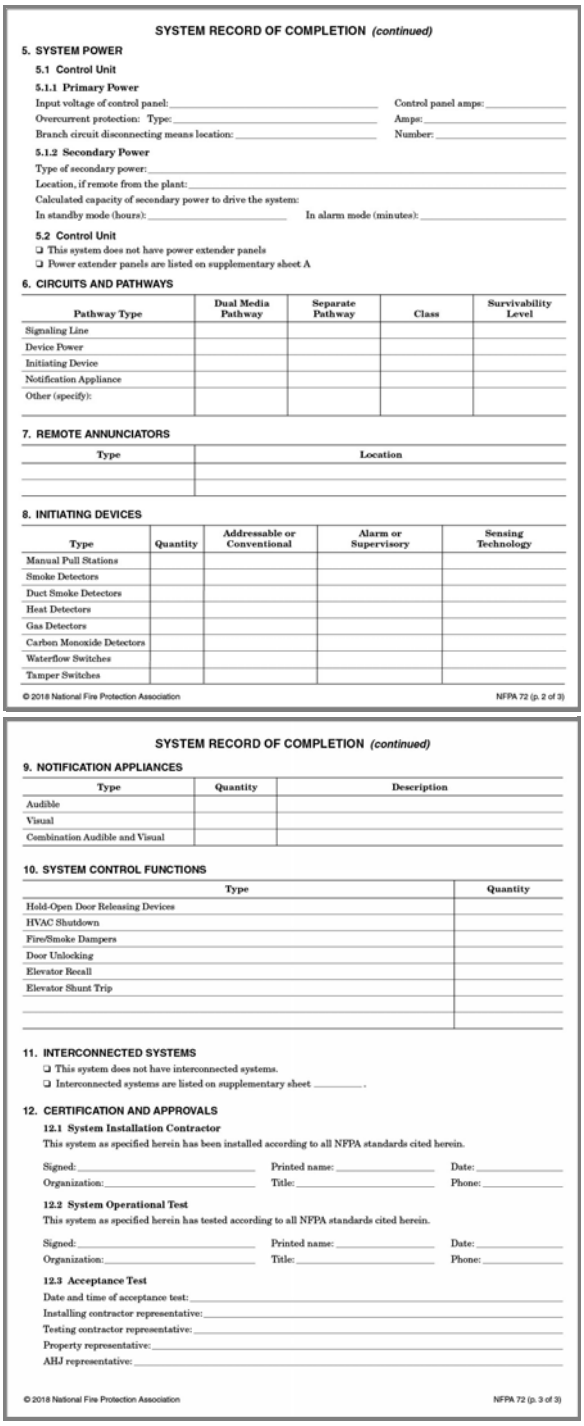
Manufacturer:_____ Model number:_____

4.2 Software and Firmware

Firmware revision number:_____

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Branch circuit disconnecting means location: _____ Number: _____

5.1.2 Secondary Power

Type of secondary power: _____

Location, if remote from the plant: _____

Calculated capacity of secondary power to drive the system:

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

5.2 Control Unit

❑ This system does not have power extender panels

❑ Power extender panels are listed on supplementary sheet A

6. CIRCUITS AND PATHWAYS

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

7. REMOTE ANNUNCIATORS

Type	Location

8. INITIATING DEVICES

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)

SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description
Audible		
Visual		
Combination Audible and Visual		

10. SYSTEM CONTROL FUNCTIONS

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

11. INTERCONNECTED SYSTEMS

❑ This system does not have interconnected systems.

❑ Interconnected systems are listed on supplementary sheet _____.

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

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

Signed: _____ Printed name: _____ Date: _____

Organization: _____ Title: _____ Phone: _____

12.2 System Operational Test

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

Signed: _____ Printed name: _____ Date: _____

Organization: _____ Title: _____ Phone: _____

12.3 Acceptance Test

Date and time of acceptance test: _____

Installing contractor representative: _____

Testing contractor representative: _____

Property representative: _____

AHJ representative: _____

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

2.1 In-Building Fire Emergency Voice Alarm Communications System

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

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

2.2 Mass Notification System

2.2.1 System Type:

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

© 2018 National Fire Protection Association

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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

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

2.2.4 High Power Loudspeaker Arrays

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

2.2.5 Mass Notification Devices

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

2.2.6 Special Hazard Notification

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

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

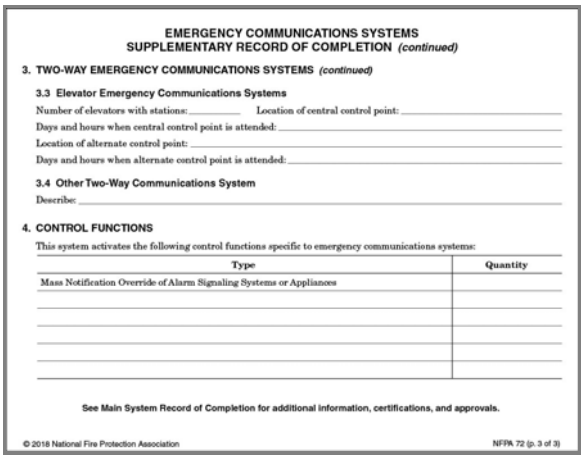
3.1 Telephone System

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

© 2018 National Fire Protection Association



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

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

3.3 Elevator Emergency Communications Systems

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

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

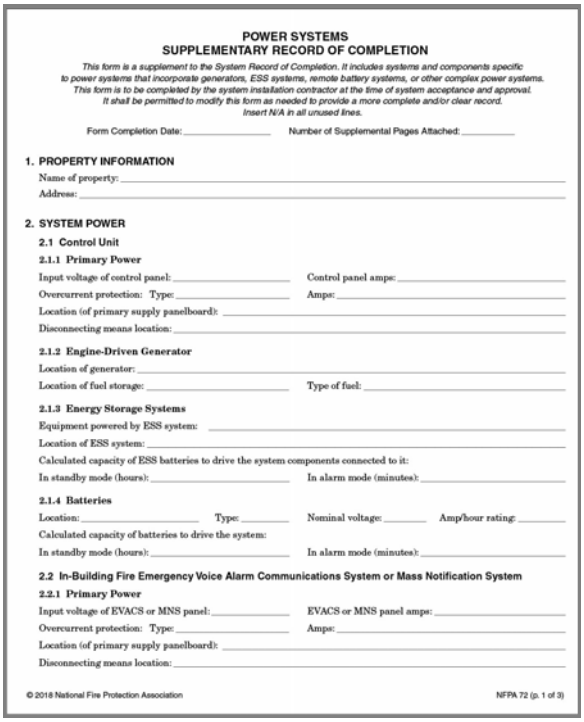
This system activates the following control functions specific to emergency communications systems:

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.1.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.1.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.1.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

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

2.2.1 Primary Power

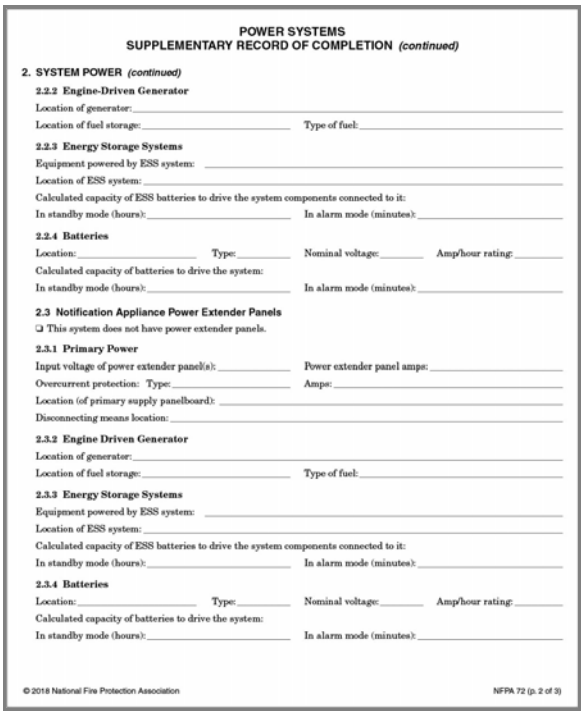
Input voltage of EVACS or MNS panel: _____ EVACS or MNS panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.2.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.2.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.2.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.3.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.3.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.3.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

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

2.4.1 Primary Power

Input voltage of shared transmission equipment: _____

Shared transmission equipment panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.4.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.4.3 Energy Storage Systems

Equipment powered by ESS system: _____

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

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

2.4.4 Batteries

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

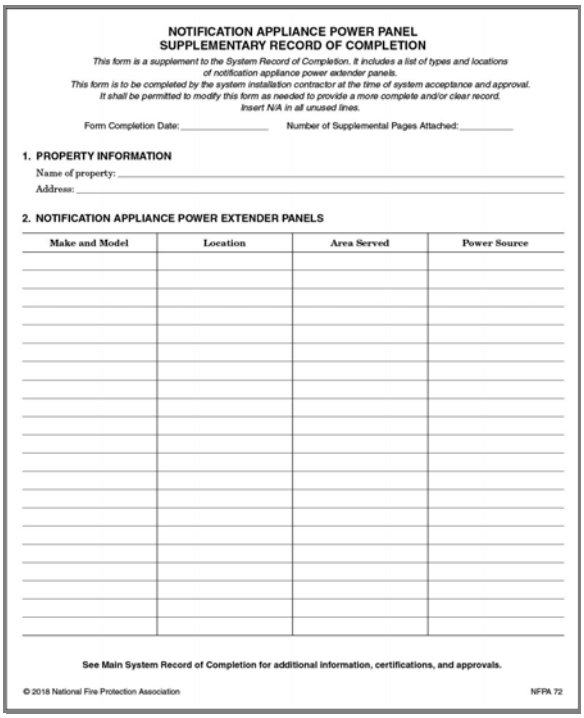
Calculated capacity of batteries to drive the system:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

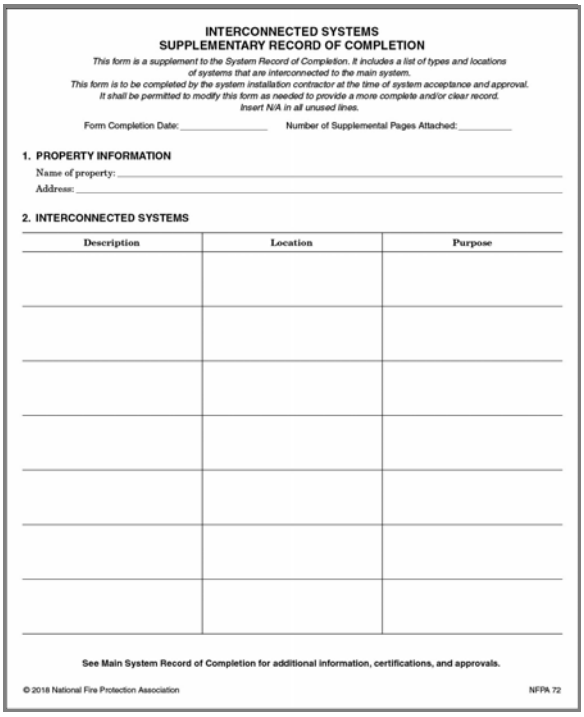
2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source

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

© 2018 National Fire Protection Association NFPA 72

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



INTERCONNECTED SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. INTERCONNECTED SYSTEMS

Description	Location	Purpose

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

© 2018 National Fire Protection Association NFPA 72

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

DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose

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

© 2018 National Fire Protection Association NFPA 72

Figure 7.8.2(g) System Record of Inspection and Testing. (SIG-TMS)

SYSTEM RECORD OF INSPECTION AND TESTING

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

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____
Supplemental Form(s) Attached: _____ (yes/no)

1. PROPERTY INFORMATION

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

2. TESTING AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

4.1 Control Unit

Manufacturer: _____ Model number: _____

4.2 Software Firmware

Firmware revision number: _____

4.3 System Power

4.3.1 Primary (Main) Power

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 4)

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

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

4.3.2 Secondary Power

Type: _____ Location: _____

Battery type (if applicable): _____

Calculated capacity of batteries to drive the system:

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

5. NOTIFICATIONS MADE PRIOR TO TESTING

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

6. TESTING RESULTS

6.1 Control Unit and Related Equipment

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

6.2 Secondary Power

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

© 2018 National Fire Protection Association

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

6. TESTING RESULTS *(continued)*

6.3 Alarm and Supervisory Alarm Initiating Device

Attach supplementary device test sheets for all initiating devices.

6.4 Notification Appliances

Attach supplementary appliance test sheets for all notification appliances.

6.5 Interface Equipment

Attach supplementary interface component test sheets for all interface components.

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

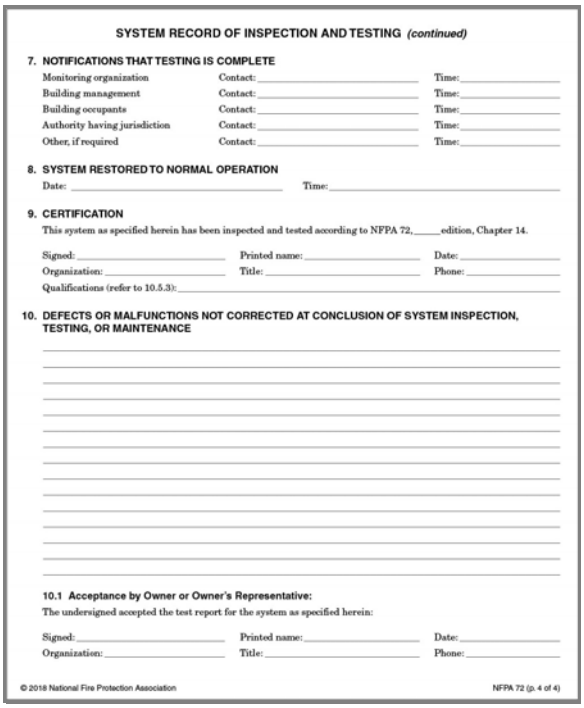
6.6 Supervising Station Monitoring

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

6.7 Public Emergency Alarm Reporting System

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

© 2018 National Fire Protection Association



SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

7. NOTIFICATIONS THAT TESTING IS COMPLETE

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

8. SYSTEM RESTORED TO NORMAL OPERATION

Date: Time:

9. CERTIFICATION

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

Signed: Printed name: Date:
Organization: Title: Phone:
Qualifications (refer to 10.5.3):

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

10.1 Acceptance by Owner or Owner's Representative:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 4 of 4)

Figure 7.8.2(h) Notification Appliance Supplementary Record of Inspection and Testing. (SIG-TMS)



NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached:

1. PROPERTY INFORMATION

Name of property:
Address:

2. NOTIFICATION APPLIANCE TEST RESULTS

Appliance Type	Location/Identifier	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

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

2. NOTIFICATION APPLIANCE TEST RESULTS *(continued)*

Appliance Type	Location/Identifier	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(i) Initiating Device Supplementary Record of Inspection and Testing. (SIG-TMS)

INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. INITIATING DEVICE TEST RESULTS

Device Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

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

2. INITIATING DEVICE TEST RESULTS *(continued)*

Device Type	Address	Location	Test Results

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

4. MASS NOTIFICATION EQUIPMENT TEST RESULTS

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(k) Emergency Communications Systems Supplementary Record of Inspection and Testing. (SIG-TMS)

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property:_____

Address:_____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

❑ Mass notification system

❑ Combination system, with the following components:

❑ Fire alarm ❑ EVACS ❑ MNS ❑ Two-way, in-building, emergency communication system

❑ Other (specify):_____

Additional description of system(s):_____

2.1 In-Building Fire Emergency Voice Alarm Communication System

Manufacturer:_____ Model number:_____

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

Number of loudspeakers:_____ Number of loudspeaker circuits:_____

Location of amplification and sound processing equipment:_____

Location of paging microphone stations:

Location 1:_____

Location 2:_____

Location 3:_____

2.2 Mass Notification System

2.2.1 System Type:

❑ In-building MNS—combination

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

❑ Other (specify):_____

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 5)

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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

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

2.2.4 High-Power Loudspeaker Arrays

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

2.2.5 Mass Notification Devices

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

2.2.6 Special Hazard Notification

❑ This system does not have special suppression pre-discharge notification
❑ MNS systems DO NOT override notification appliances required to provide special suppression pre-discharge notification

3. TWO-WAY EMERGENCY COMMUNICATION SYSTEMS

3.1 Telephone System

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

© 2018 National Fire Protection Association

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

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

3.3 Elevator Emergency Communications Systems

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

3.4 Other Two-Way Communication System

Describe: _____

4. TESTING RESULTS

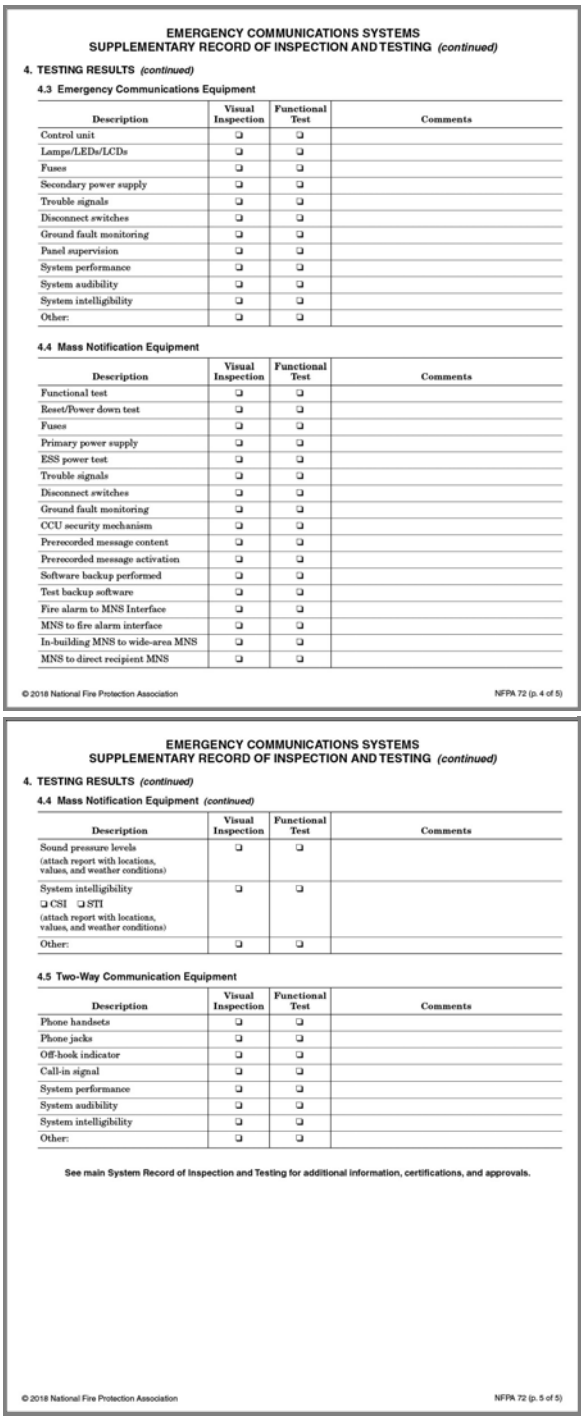
4.1 Control Unit and Related Equipment

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

4.2 Secondary Power

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

© 2018 National Fire Protection Association



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

4. TESTING RESULTS *(continued)*

4.3 Emergency Communications Equipment

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

4.4 Mass Notification Equipment

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

© 2018 National Fire Protection Association NFPA 72 (p. 4 of 5)

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

4. TESTING RESULTS *(continued)*

4.4 Mass Notification Equipment *(continued)*

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

4.5 Two-Way Communication Equipment

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 5 of 5)

Figure 7.8.2(I) Interface Component Supplementary Record of Inspection and Testing. (SIG-TMS)



INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

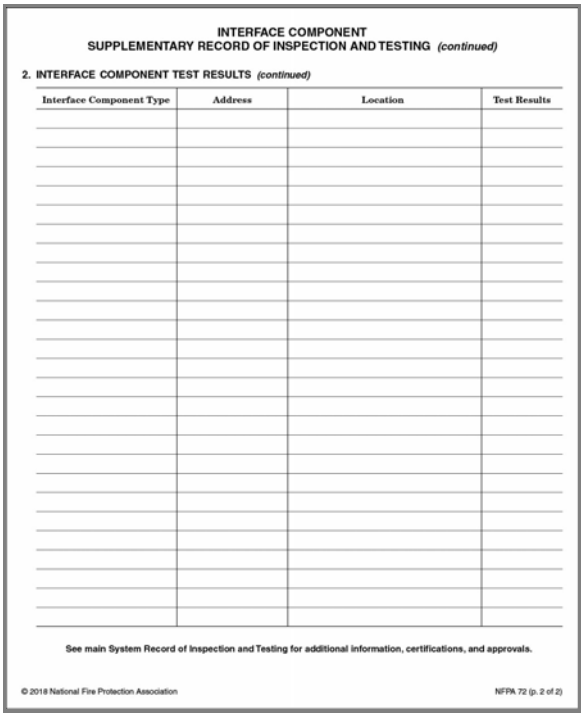
Name of property: _____

Address: _____

2. INTERFACE COMPONENT TEST RESULTS

Interface Component Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

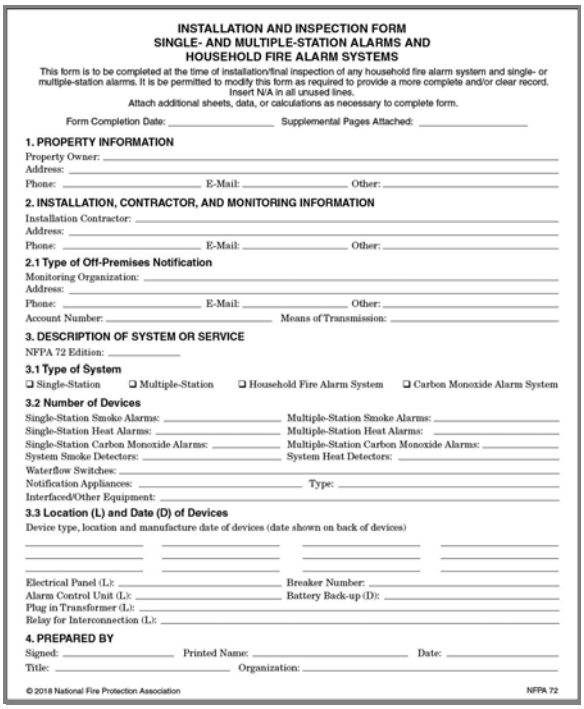
2. INTERFACE COMPONENT TEST RESULTS *(continued)*

Interface Component Type	Address	Location	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

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



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

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

Attach additional sheets, data, or calculations as necessary to complete form.

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Property Owner: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2. INSTALLATION, CONTRACTOR, AND MONITORING INFORMATION

Installation Contractor: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2.1 Type of Off-Premises Notification

Monitoring Organization: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____
Account Number: _____ Means of Transmission: _____

3. DESCRIPTION OF SYSTEM OR SERVICE

NFPA 72 Edition: _____

3.1 Type of System

❑ Single-Station ❑ Multiple-Station ❑ Household Fire Alarm System ❑ Carbon Monoxide Alarm System

3.2 Number of Devices

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

3.3 Location (L) and Date (D) of Devices

Device type, location and manufacture date of devices (date shown on back of devices)

_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____

Electrical Panel (L): _____ Breaker Number: _____
Alarm Control Unit (L): _____ Battery Back-up (D): _____
Plug in Transformer (L): _____
Relay for Interconnection (L): _____

4. PREPARED BY

Signed: _____ Printed Name: _____ Date: _____
Title: _____ Organization: _____

© 2018 National Fire Protection Association NFPA 72

Statement of Problem and Substantiation for Public Input

Figure 7.8.2(j) the word "system" is redundant.

Figure 7.8.2(k) “Communication system” should be “communications system” in several places.

Figure 7.8.2(m) This Figure 7.8.2(m) is part of SIG-HOU.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 11:24:11 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5133-NFPA 72-2019
Statement: The Technical Committee edits the text for clarity.

Public Input No. 432-NFPA 72-2019 [Section No. 7.8.2]

7.8.2 Forms for Documentation.

Figure 7.8.2(a) in Section 6 Dual Media Pathway, remove "Media" from this form.

Forms for documentation shall be as follows:

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

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

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

Figure 7.8.2(a) System Record of Completion. (SIG-FUN)

SYSTEM RECORD OF COMPLETION

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

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

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

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

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

4.1 Control Unit

Manufacturer: _____ Model number: _____

4.2 Software and Firmware

Firmware revision number: _____

4.3 Alarm Verification

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)

SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

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

5.1.2 Secondary Power

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

5.2 Control Unit

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

6. CIRCUITS AND PATHWAYS

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

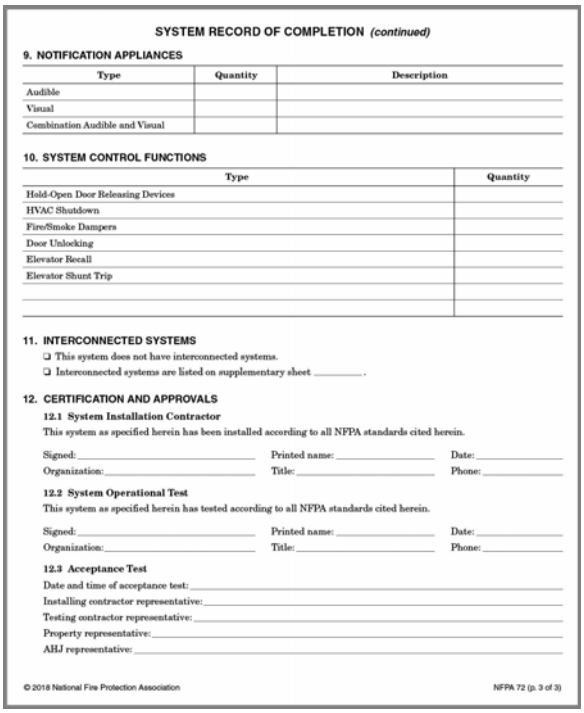
7. REMOTE ANNUNCIATORS

Type	Location

8. INITIATING DEVICES

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)



SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description
Audible		
Visual		
Combination Audible and Visual		

10. SYSTEM CONTROL FUNCTIONS

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

11. INTERCONNECTED SYSTEMS

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

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

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

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

12.2 System Operational Test

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

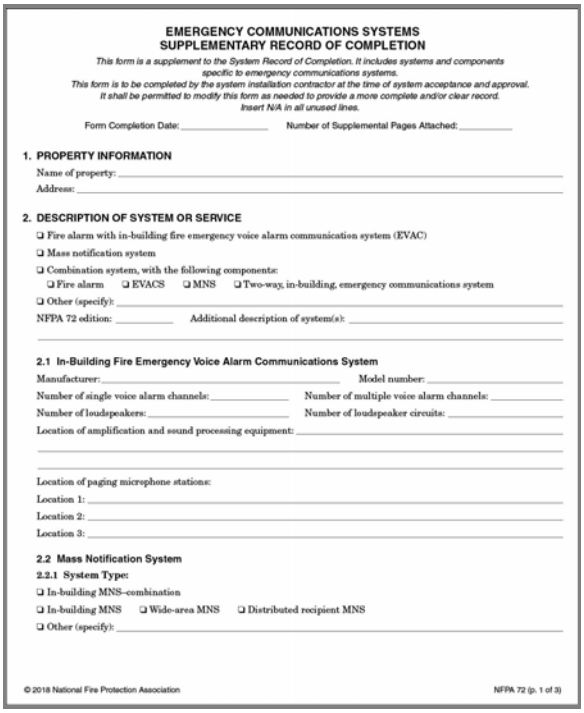
Signed: _____ Printed name: _____ Date: _____
Organization: _____ Title: _____ Phone: _____

12.3 Acceptance Test

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

2.1 In-Building Fire Emergency Voice Alarm Communications System

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

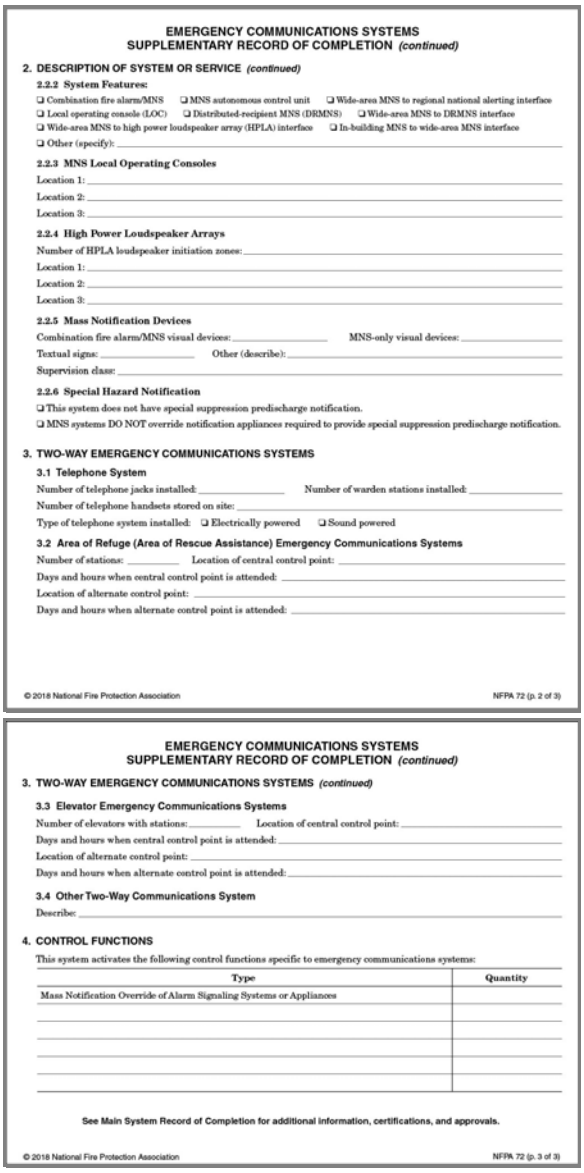
Location of paging microphone stations:
Location 1: _____
Location 2: _____
Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

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

2.2.4 High Power Loudspeaker Arrays

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

2.2.5 Mass Notification Devices

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

2.2.6 Special Hazard Notification

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

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

3.1 Telephone System

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)

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

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

3.3 Elevator Emergency Communications Systems

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

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

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

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.1.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.1.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.1.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

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

2.2.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

© 2018 National Fire Protection Association

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.2.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.2.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.2.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.3.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.3.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

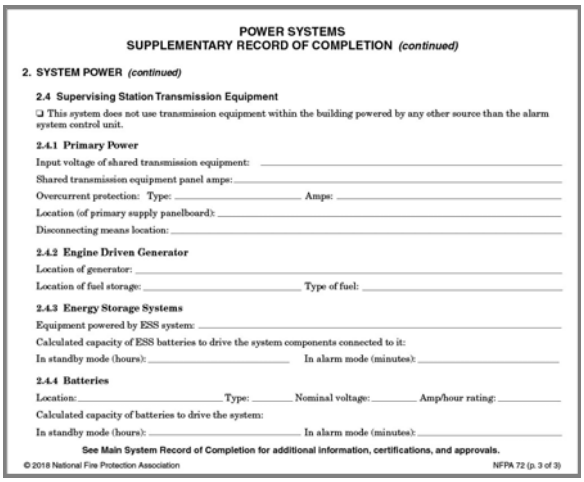
2.3.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

© 2018 National Fire Protection Association



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

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

2.4.1 Primary Power

Input voltage of shared transmission equipment: _____

Shared transmission equipment panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.4.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.4.3 Energy Storage Systems

Equipment powered by ESS system: _____

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

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

2.4.4 Batteries

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

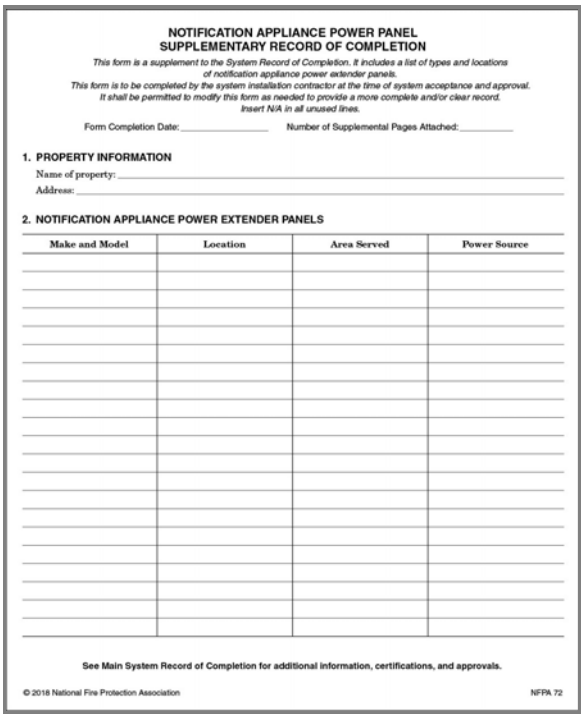
Calculated capacity of batteries to drive the system:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

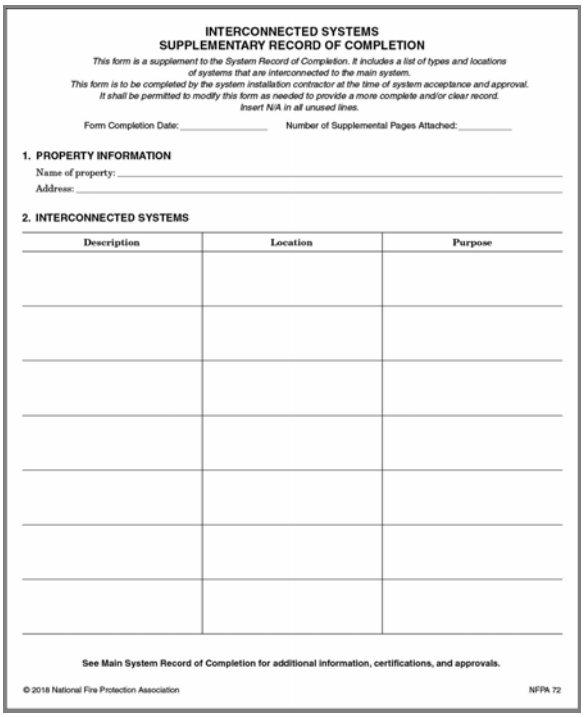
2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source

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

© 2018 National Fire Protection Association NFPA 72

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



INTERCONNECTED SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

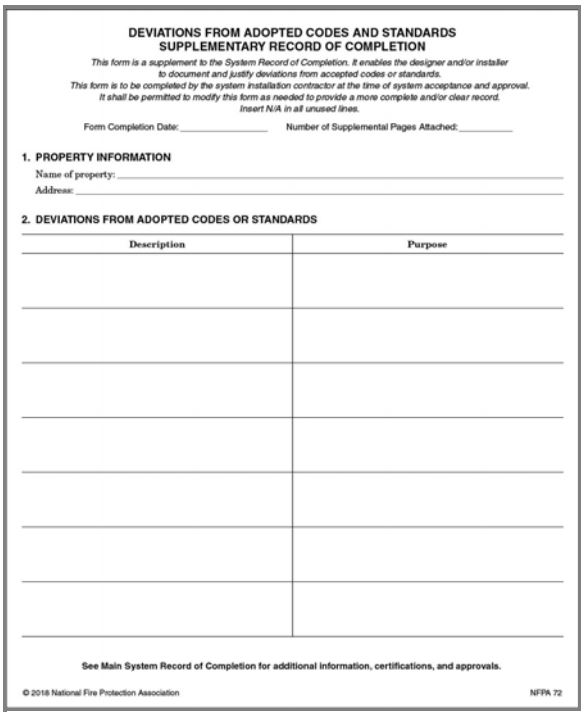
2. INTERCONNECTED SYSTEMS

Description	Location	Purpose

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

© 2018 National Fire Protection Association NFPA 72

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



DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose

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

© 2018 National Fire Protection Association NFPA 72

Figure 7.8.2(g) System Record of Inspection and Testing. (SIG-TMS)

SYSTEM RECORD OF INSPECTION AND TESTING

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

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

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

1. PROPERTY INFORMATION

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

2. TESTING AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

4.1 Control Unit

Manufacturer:_____ Model number:_____

4.2 Software Firmware

Firmware revision number:_____

4.3 System Power

4.3.1 Primary (Main) Power

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

© 2018 National Fire Protection Association

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

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

4.3.2 Secondary Power

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

5. NOTIFICATIONS MADE PRIOR TO TESTING

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

6. TESTING RESULTS

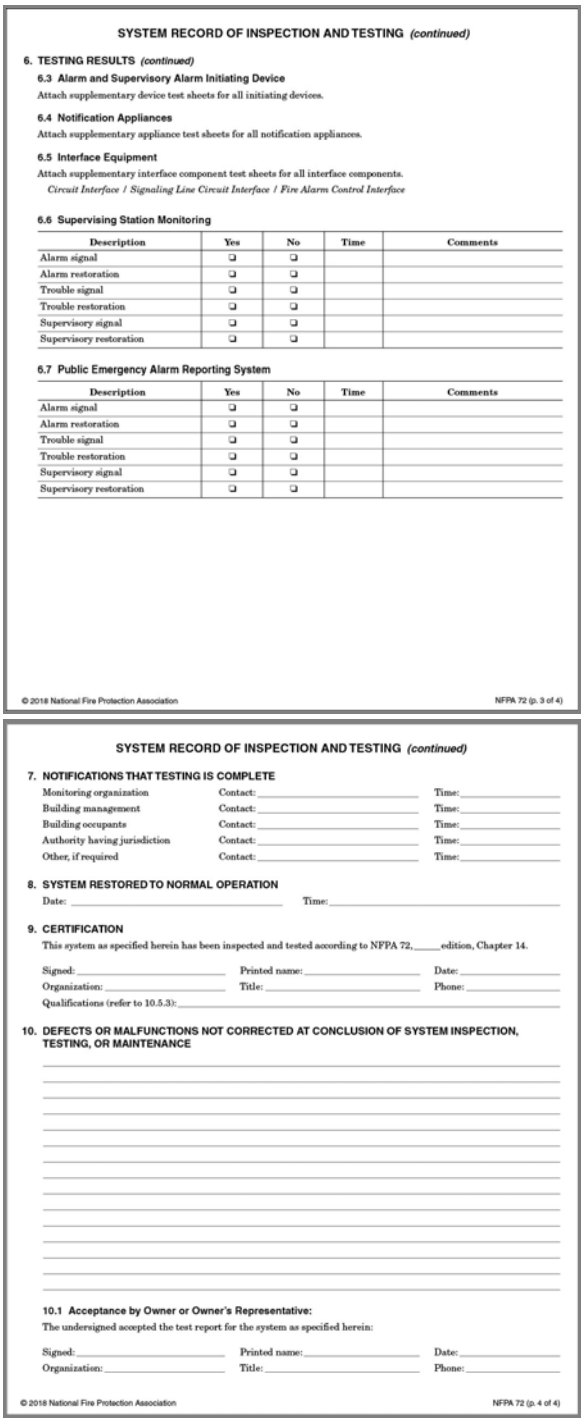
6.1 Control Unit and Related Equipment

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

6.2 Secondary Power

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

© 2018 National Fire Protection Association



SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

6. TESTING RESULTS *(continued)*

6.3 Alarm and Supervisory Alarm Initiating Device

Attach supplementary device test sheets for all initiating devices.

6.4 Notification Appliances

Attach supplementary appliance test sheets for all notification appliances.

6.5 Interface Equipment

Attach supplementary interface component test sheets for all interface components.

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

6.6 Supervising Station Monitoring

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

6.7 Public Emergency Alarm Reporting System

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 4)

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

7. NOTIFICATIONS THAT TESTING IS COMPLETE

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

8. SYSTEM RESTORED TO NORMAL OPERATION

Date:_____ Time:_____

9. CERTIFICATION

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

Signed:_____ Printed name:_____ Date:_____
Organization:_____ Title:_____ Phone:_____
Qualifications (refer to 10.5.3):_____

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

10.1 Acceptance by Owner or Owner's Representative:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 4 of 4)

Figure 7.8.2(h) Notification Appliance Supplementary Record of Inspection and Testing. (SIG-TMS)



NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. NOTIFICATION APPLIANCE TEST RESULTS

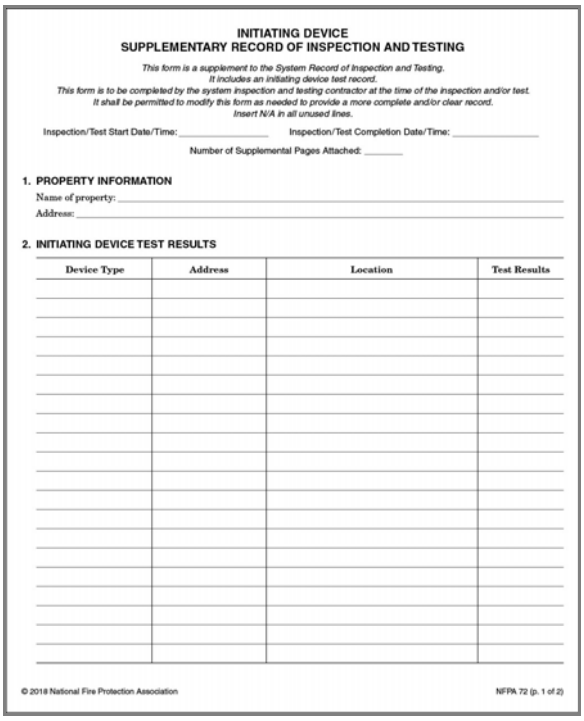
Appliance Type	Location/Identifier	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

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

2. NOTIFICATION APPLIANCE TEST RESULTS *(continued)*

Appliance Type	Location/Identifier	Test Results



INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

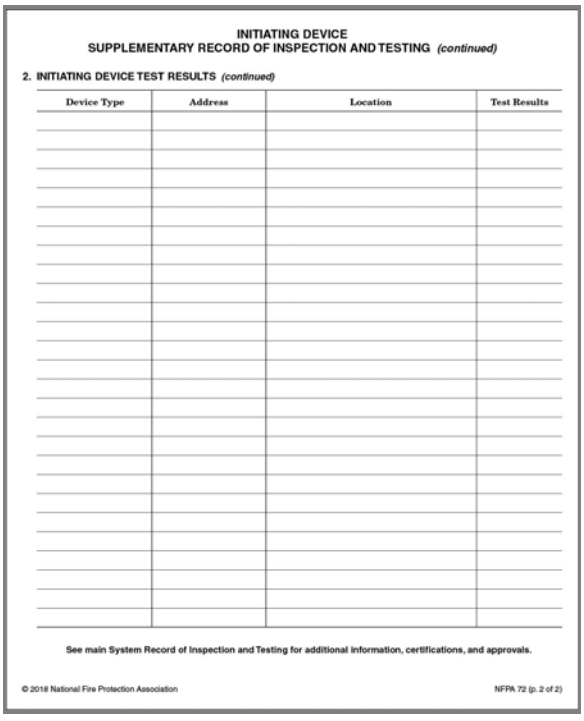
Name of property: _____

Address: _____

2. INITIATING DEVICE TEST RESULTS

Device Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

2. INITIATING DEVICE TEST RESULTS *(continued)*

Device Type	Address	Location	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(j) Mass Notification System Supplementary Record of Inspection and Testing. (SIG-TMS)



MASS NOTIFICATION SYSTEM
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. MASS NOTIFICATION SYSTEM

2.1 System Type

❑ In-building MNS—combination

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

❑ Other (specify): _____

2.2 System Features

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

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

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

❑ Other (specify): _____

3. IN-BUILDING MASS NOTIFICATION SYSTEM

3.1 Primary Power

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

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

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

3.3 Energy Storage Systems ❑ This system does not have an ESS.

Equipment powered by an ESS system: _____

Location of ESS system: _____

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

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

3.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

❑ Batteries are marked with date of manufacture.

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

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

4. MASS NOTIFICATION EQUIPMENT TEST RESULTS

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(k) Emergency Communications Systems Supplementary Record of Inspection and Testing. (SIG-TMS)

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property:_____

Address:_____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

❑ Mass notification system

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

❑ Other (specify):_____

Additional description of system(s):_____

_____

2.1 In-Building Fire Emergency Voice Alarm Communication System

Manufacturer:_____ Model number:_____

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

Number of loudspeakers:_____ Number of loudspeaker circuits:_____

Location of amplification and sound processing equipment:_____

_____

_____

Location of paging microphone stations:

Location 1:_____

Location 2:_____

Location 3:_____

2.2 Mass Notification System

2.2.1 System Type:

❑ In-building MNS—combination

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

❑ Other (specify):_____

© 2018 National Fire Protection Association

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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

Location 1:_____

Location 2:_____

Location 3:_____

2.2.4 High-Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones:_____

Location 1:_____

Location 2:_____

Location 3:_____

2.2.5 Mass Notification Devices

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

Textual signs:_____ Other (describe):_____

Supervision class:_____

2.2.6 Special Hazard Notification

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

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

3. TWO-WAY EMERGENCY COMMUNICATION SYSTEMS

3.1 Telephone System

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

Number of telephone handsets stored on site:_____

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

Days and hours when central control point is attended:_____

Location of alternate control point:_____

Days and hours when alternate control point is attended:_____

© 2018 National Fire Protection Association

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

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

3.3 Elevator Emergency Communications Systems

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

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communication System

Describe: _____

4. TESTING RESULTS

4.1 Control Unit and Related Equipment

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

4.2 Secondary Power

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

© 2018 National Fire Protection Association

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

4. TESTING RESULTS *(continued)*

4.3 Emergency Communications Equipment

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

4.4 Mass Notification Equipment

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

© 2018 National Fire Protection Association

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

4. TESTING RESULTS *(continued)*

4.4 Mass Notification Equipment *(continued)*

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

4.5 Two-Way Communication Equipment

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 5 of 5)

Figure 7.8.2(l) Interface Component Supplementary Record of Inspection and Testing. (SIG-TMS)

INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

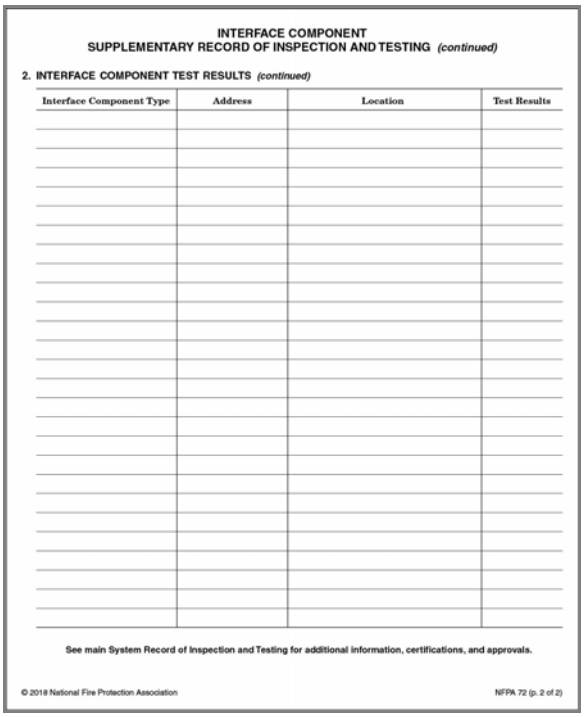
Name of property: _____

Address: _____

2. INTERFACE COMPONENT TEST RESULTS

Interface Component Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

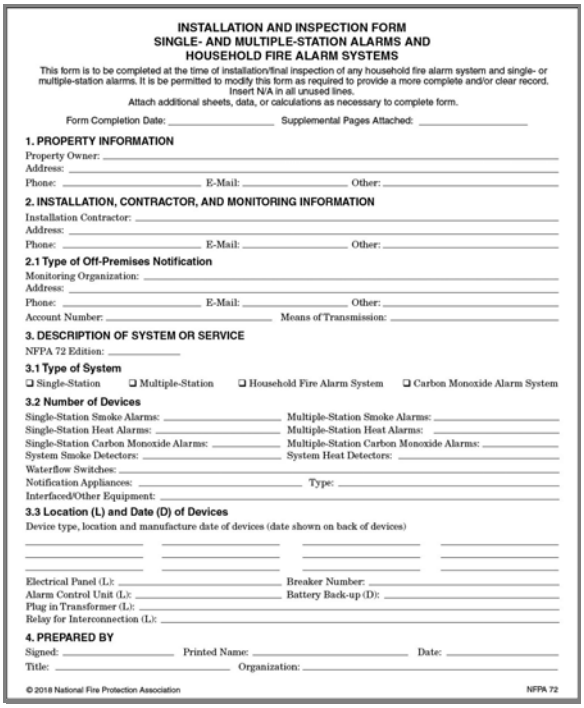
2. INTERFACE COMPONENT TEST RESULTS *(continued)*

Interface Component Type	Address	Location	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

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



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

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

Form Completion Date: _____ Supplemental Pages Attached: _____

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

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

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

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

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

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

3.3 Location (L) and Date (D) of Devices
Device type, location and manufacture date of devices (date shown on back of devices)

Electrical Panel (L): _____ Breaker Number: _____
Alarm Control Unit (L): _____ Battery Back-up (D): _____
Plug in Transformer (L): _____
Relay for Interconnection (L): _____

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

© 2018 National Fire Protection Association NFPA 72

Statement of Problem and Substantiation for Public Input

The word "Media" should be removed because this term references broadcasting, newspaper, TV, radio, etc. and could create confusion.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.

Affiliation: FUn Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 10:07:54 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5133-NFPA 72-2019
Statement: The Technical Committee edits the text for clarity.

Public Input No. 517-NFPA 72-2019 [Section No. 7.8.2]

7.8.2 Forms for Documentation.

Forms for documentation shall be as follows:

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

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

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

Figure 7.8.2(a) System Record of Completion. (SIG-FUN)

SYSTEM RECORD OF COMPLETION

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

Form Completion Date:_____ Supplemental Pages Attached:_____

1. PROPERTY INFORMATION

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

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

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

4.1 Control Unit

Manufacturer:_____ Model number:_____

4.2 Software and Firmware

Firmware revision number:_____

4.3 Alarm Verification

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)

SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

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

5.1.2 Secondary Power

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

5.2 Control Unit

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

6. CIRCUITS AND PATHWAYS

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

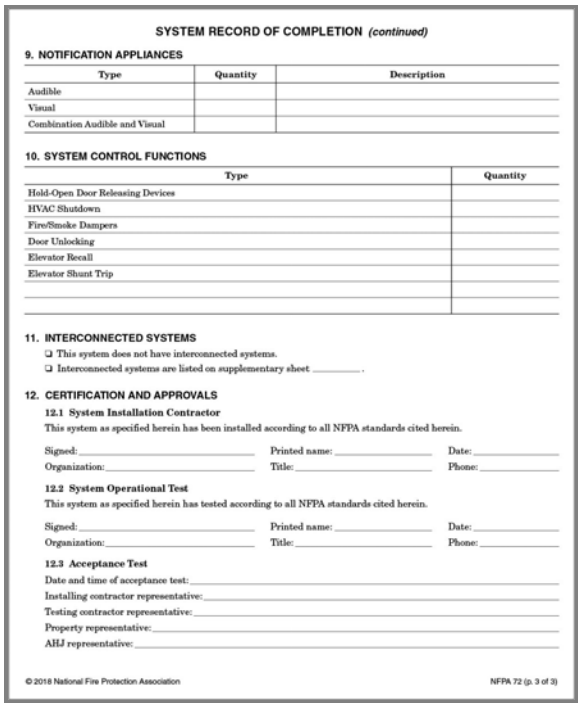
7. REMOTE ANNUNCIATORS

Type	Location

8. INITIATING DEVICES

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)



SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description
Audible		
Visual		
Combination Audible and Visual		

10. SYSTEM CONTROL FUNCTIONS

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

11. INTERCONNECTED SYSTEMS

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

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

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

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

12.2 System Operational Test

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

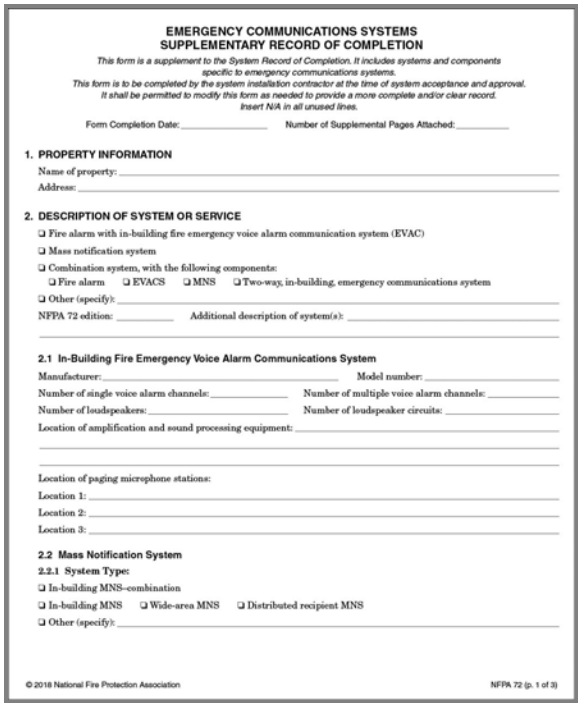
Signed: _____ Printed name: _____ Date: _____
Organization: _____ Title: _____ Phone: _____

12.3 Acceptance Test

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

2.1 In-Building Fire Emergency Voice Alarm Communications System

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

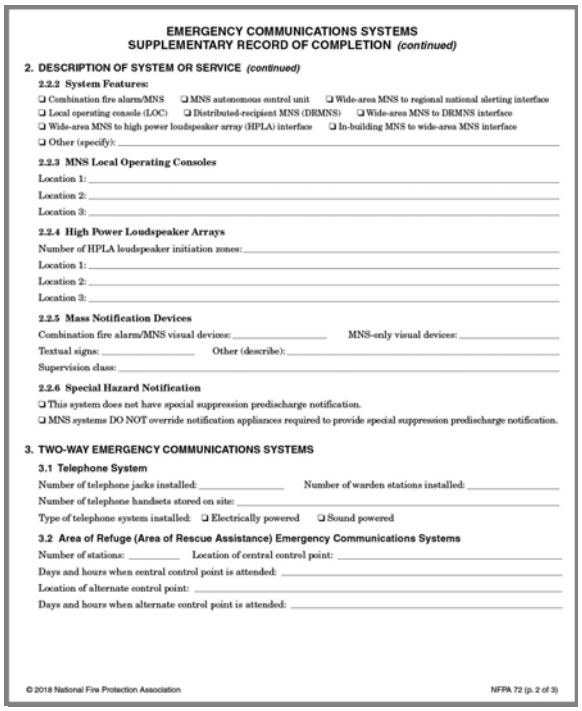
Location of paging microphone stations:
Location 1: _____
Location 2: _____
Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

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

2.2.4 High Power Loudspeaker Arrays

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

2.2.5 Mass Notification Devices

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

2.2.6 Special Hazard Notification

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

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

3.1 Telephone System

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)

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

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

3.3 Elevator Emergency Communications Systems

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

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

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

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.1.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.1.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.1.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

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

2.2.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

© 2018 National Fire Protection Association

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

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

2.2.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.2.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.2.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.3.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.3.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

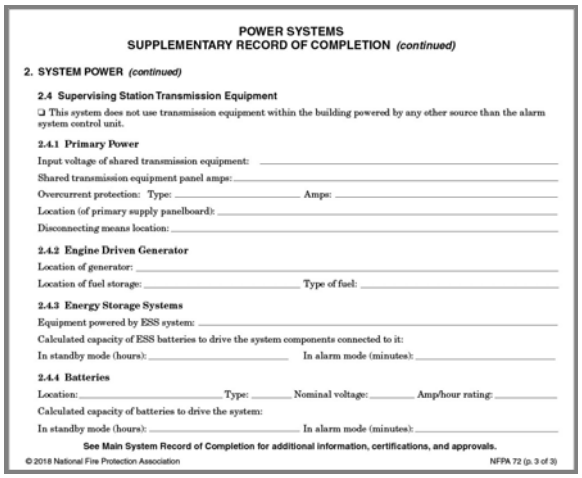
2.3.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

© 2018 National Fire Protection Association



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

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

2.4.1 Primary Power

Input voltage of shared transmission equipment: _____

Shared transmission equipment panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.4.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.4.3 Energy Storage Systems

Equipment powered by ESS system: _____

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

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

2.4.4 Batteries

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

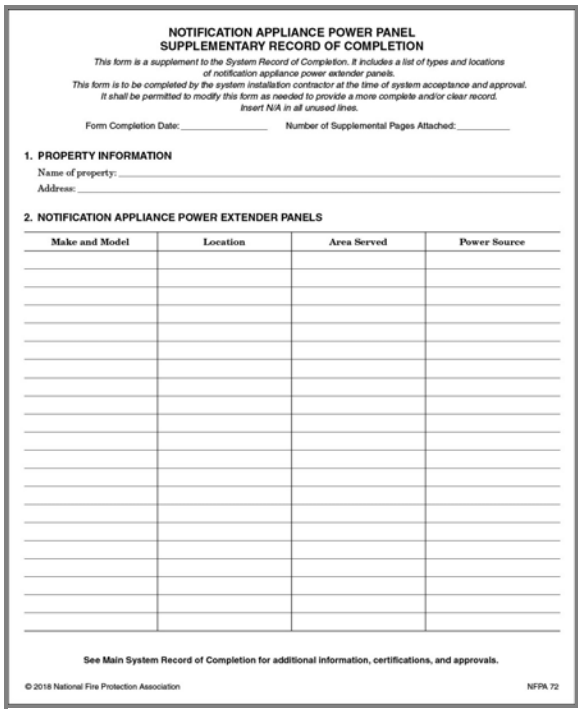
Calculated capacity of batteries to drive the system:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

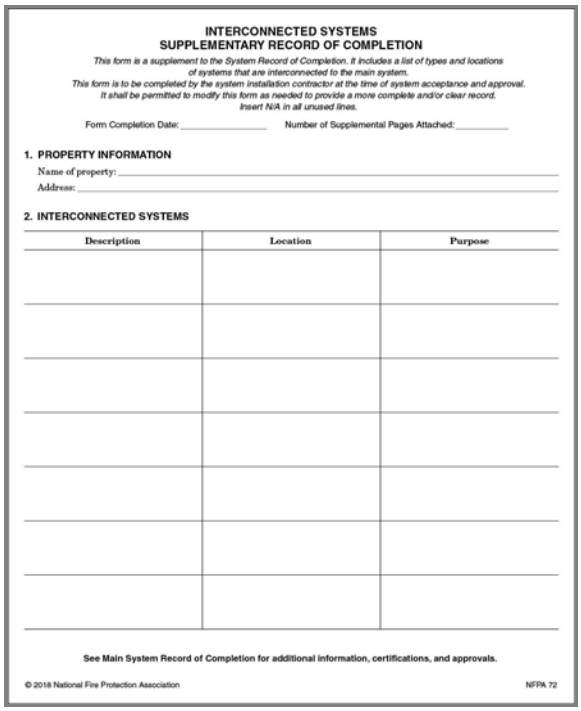
2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source

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

© 2018 National Fire Protection Association NFPA 72

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



INTERCONNECTED SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

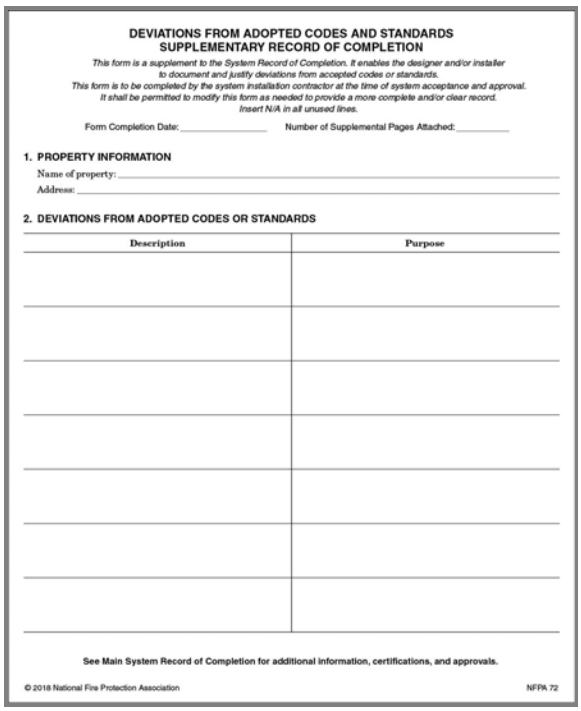
2. INTERCONNECTED SYSTEMS

Description	Location	Purpose

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

© 2018 National Fire Protection Association NFPA 72

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



DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose

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

© 2018 National Fire Protection Association NFPA 72

Figure 7.8.2(g) System Record of Inspection and Testing. (SIG-TMS)

SYSTEM RECORD OF INSPECTION AND TESTING

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

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

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

1. PROPERTY INFORMATION

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

2. TESTING AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

4.1 Control Unit

Manufacturer: _____ Model number: _____

4.2 Software Firmware

Firmware revision number: _____

4.3 System Power

4.3.1 Primary (Main) Power

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

© 2018 National Fire Protection Association

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

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

4.3.2 Secondary Power

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

5. NOTIFICATIONS MADE PRIOR TO TESTING

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

6. TESTING RESULTS

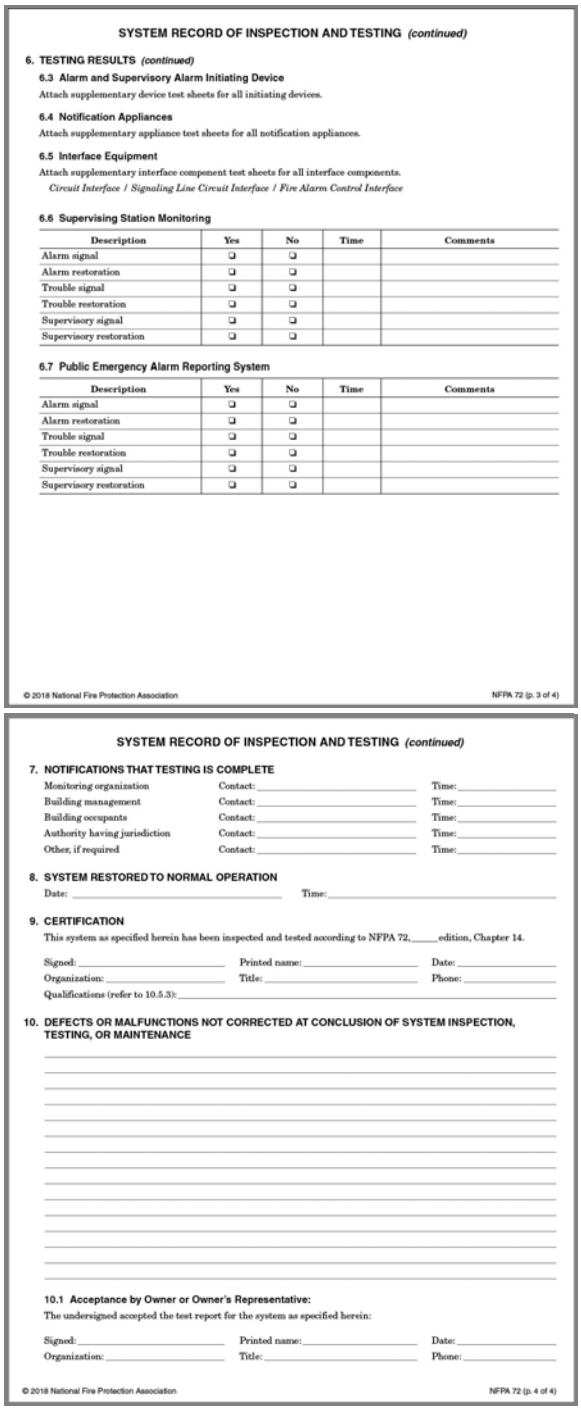
6.1 Control Unit and Related Equipment

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

6.2 Secondary Power

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

© 2018 National Fire Protection Association



SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

6. TESTING RESULTS *(continued)*

6.3 Alarm and Supervisory Alarm Initiating Device

Attach supplementary device test sheets for all initiating devices.

6.4 Notification Appliances

Attach supplementary appliance test sheets for all notification appliances.

6.5 Interface Equipment

Attach supplementary interface component test sheets for all interface components.

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

6.6 Supervising Station Monitoring

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

6.7 Public Emergency Alarm Reporting System

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 4)

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

7. NOTIFICATIONS THAT TESTING IS COMPLETE

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

8. SYSTEM RESTORED TO NORMAL OPERATION

Date: _____ Time: _____

9. CERTIFICATION

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

Signed: _____ Printed name: _____ Date: _____

Organization: _____ Title: _____ Phone: _____

Qualifications (refer to 10.5.3): _____

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

10.1 Acceptance by Owner or Owner's Representative:

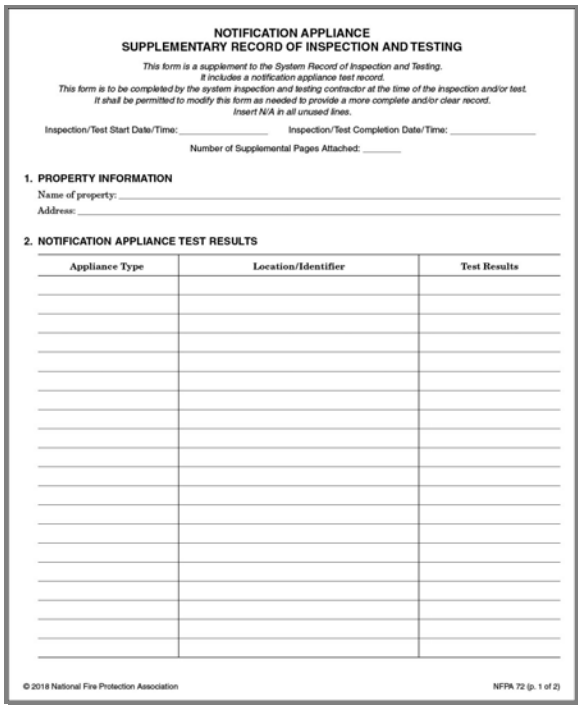
The undersigned accepted the test report for the system as specified herein:

Signed: _____ Printed name: _____ Date: _____

Organization: _____ Title: _____ Phone: _____

© 2018 National Fire Protection Association NFPA 72 (p. 4 of 4)

Figure 7.8.2(h) Notification Appliance Supplementary Record of Inspection and Testing. (SIG-TMS)



NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

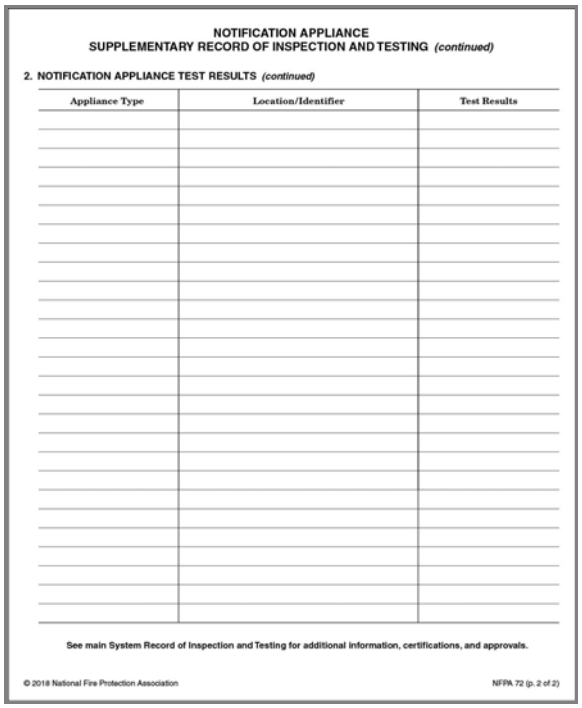
Name of property: _____

Address: _____

2. NOTIFICATION APPLIANCE TEST RESULTS

Appliance Type	Location/Identifier	Test Results

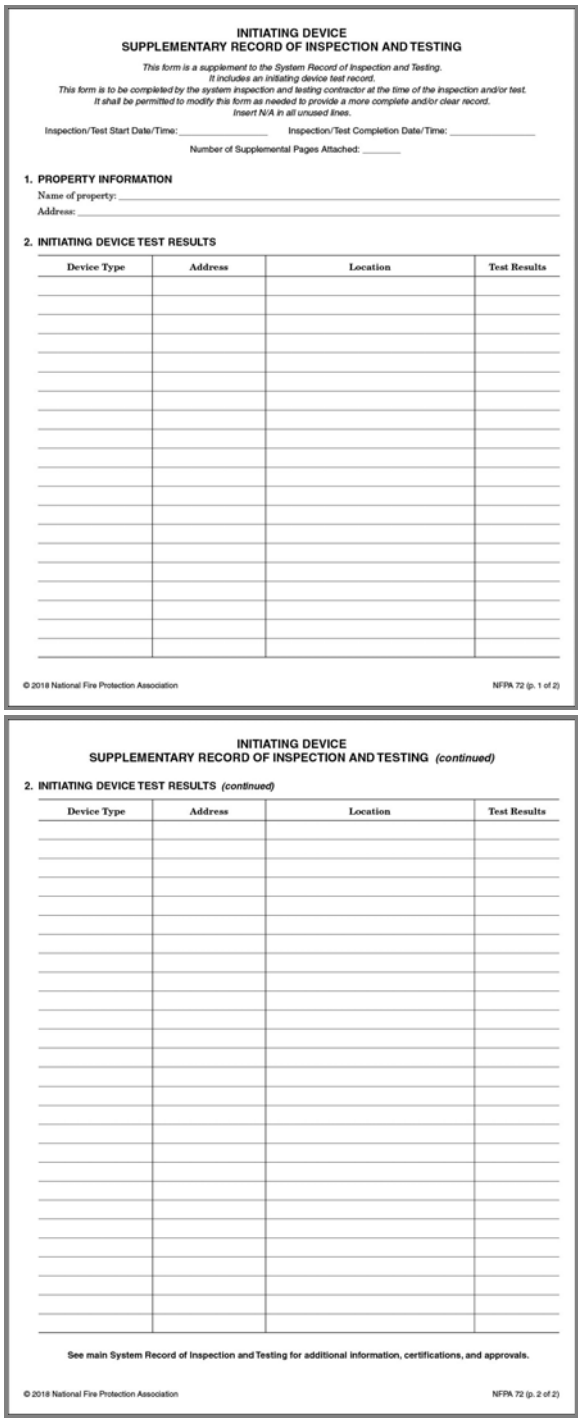
© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

2. NOTIFICATION APPLIANCE TEST RESULTS *(continued)*

Appliance Type	Location/Identifier	Test Results



INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. INITIATING DEVICE TEST RESULTS

Device Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

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

2. INITIATING DEVICE TEST RESULTS *(continued)*

Device Type	Address	Location	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(j) Mass Notification System Supplementary Record of Inspection and Testing. (SIG-TMS)



MASS NOTIFICATION SYSTEM
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. MASS NOTIFICATION SYSTEM

2.1 System Type

❑ In-building MNS—combination

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

❑ Other (specify): _____

2.2 System Features

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

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

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

❑ Other (specify): _____

3. IN-BUILDING MASS NOTIFICATION SYSTEM

3.1 Primary Power

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

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

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

3.3 Energy Storage Systems ❑ This system does not have an ESS.

Equipment powered by an ESS system: _____

Location of ESS system: _____

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

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

3.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

❑ Batteries are marked with date of manufacture.

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

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

4. MASS NOTIFICATION EQUIPMENT TEST RESULTS

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(k) Emergency Communications Systems Supplementary Record of Inspection and Testing. (SIG-TMS)

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

❑ Mass notification system

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

❑ Other (specify): _____

Additional description of system(s): _____

_____

2.1 In-Building Fire Emergency Voice Alarm Communication System

Manufacturer: _____ Model number: _____

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

Number of loudspeakers: _____ Number of loudspeaker circuits: _____

Location of amplification and sound processing equipment: _____

_____

_____

Location of paging microphone stations:

Location 1: _____

Location 2: _____

Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

❑ In-building MNS—combination

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

❑ Other (specify): _____

© 2018 National Fire Protection Association

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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

Location 1: _____

Location 2: _____

Location 3: _____

2.2.4 High-Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones: _____

Location 1: _____

Location 2: _____

Location 3: _____

2.2.5 Mass Notification Devices

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

Textual signs: _____ Other (describe): _____

Supervision class: _____

2.2.6 Special Hazard Notification

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

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

3. TWO-WAY EMERGENCY COMMUNICATION SYSTEMS

3.1 Telephone System

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

Number of telephone handsets stored on site: _____

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

© 2018 National Fire Protection Association

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

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

3.3 Elevator Emergency Communications Systems

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

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communication System

Describe: _____

4. TESTING RESULTS

4.1 Control Unit and Related Equipment

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

4.2 Secondary Power

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

© 2018 National Fire Protection Association

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

4. TESTING RESULTS *(continued)*

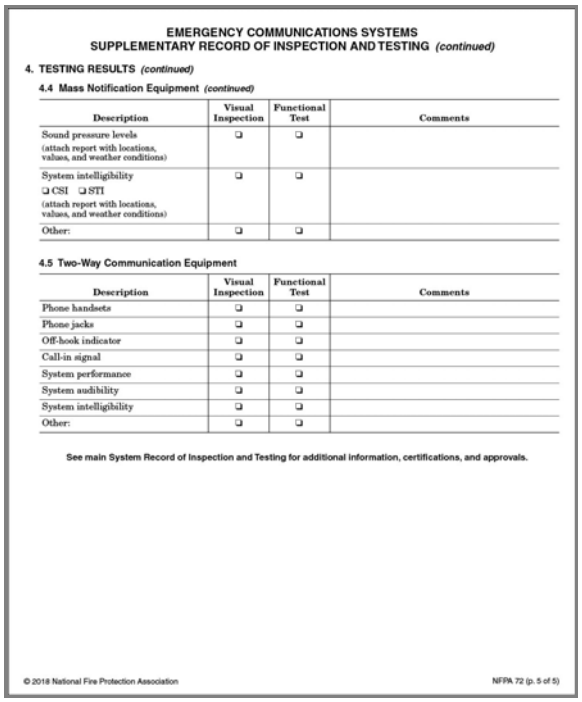
4.3 Emergency Communications Equipment

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

4.4 Mass Notification Equipment

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

© 2018 National Fire Protection Association



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

4. TESTING RESULTS *(continued)*

4.4 Mass Notification Equipment *(continued)*

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

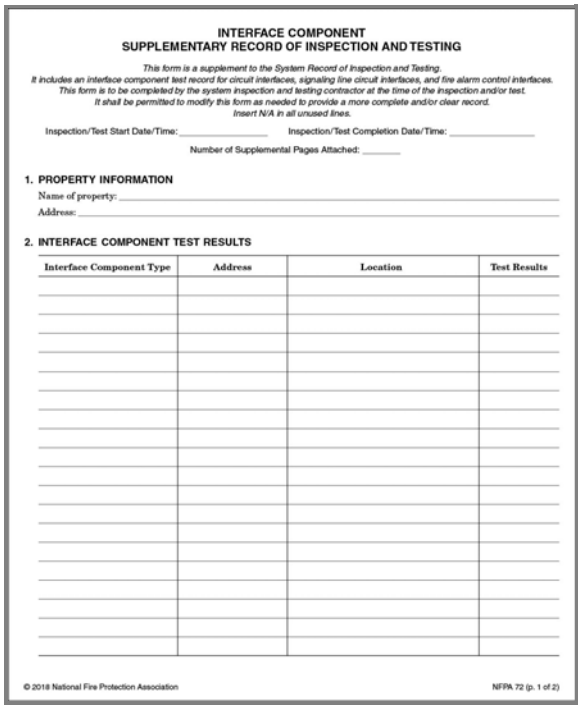
4.5 Two-Way Communication Equipment

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 5 of 5)

Figure 7.8.2(l) Interface Component Supplementary Record of Inspection and Testing. (SIG-TMS)



INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

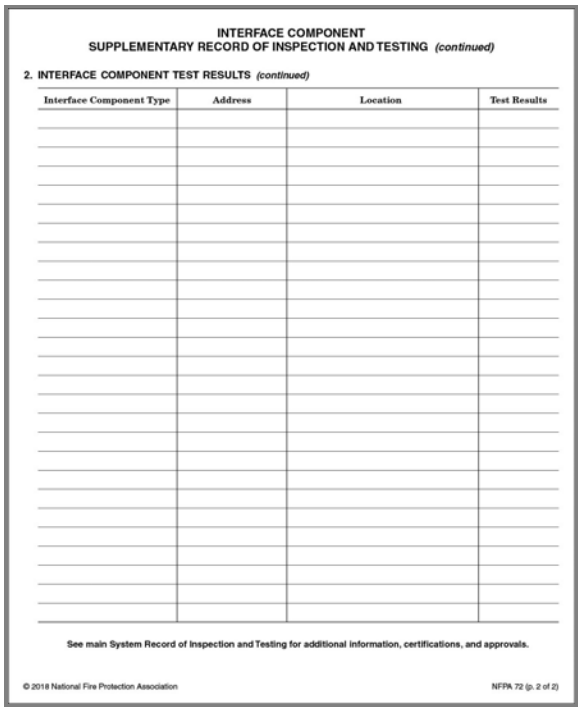
Name of property: _____

Address: _____

2. INTERFACE COMPONENT TEST RESULTS

Interface Component Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

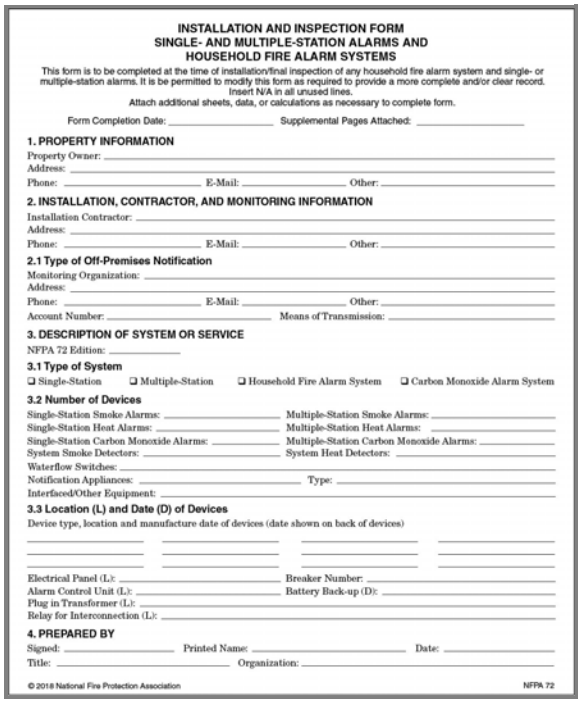
2. INTERFACE COMPONENT TEST RESULTS *(continued)*

Interface Component Type	Address	Location	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

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



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

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

Attach additional sheets, data, or calculations as necessary to complete form.

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Property Owner: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2. INSTALLATION, CONTRACTOR, AND MONITORING INFORMATION

Installation Contractor: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2.1 Type of Off-Premises Notification

Monitoring Organization: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____
Account Number: _____ Means of Transmission: _____

3. DESCRIPTION OF SYSTEM OR SERVICE

NFPA 72 Edition: _____

3.1 Type of System

❑ Single-Station ❑ Multiple-Station ❑ Household Fire Alarm System ❑ Carbon Monoxide Alarm System

3.2 Number of Devices

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

3.3 Location (L) and Date (D) of Devices

Device type, location and manufacture date of devices (date shown on back of devices)

Electrical Panel (L): _____ Breaker Number: _____
Alarm Control Unit (L): _____ Battery Back-up (D): _____
Plug in Transformer (L): _____
Relay for Interconnection (L): _____

4. PREPARED BY

Signed: _____ Printed Name: _____ Date: _____
Title: _____ Organization: _____

© 2018 National Fire Protection Association NFPA 72

Additional Proposed Changes

File Name	Description	Approved
SYSTEM_RECORD_OF_COMPLETION_Section_9_PI.docx		

Statement of Problem and Substantiation for Public Input

Revise Section 9 of the System Record of Completion to include a column to identify addressable notification appliances as these may be connected to signaling line circuits and not to notification pathways.

Submitter Information Verification

Submitter Full Name: Andrew Berezowski
Organization: Honeywell Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 17:12:46 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5133-NFPA 72-2019
Statement: The Technical Committee edits the text for clarity.

Public Input No. 620-NFPA 72-2019 [Section No. 7.8.2]

7.8.2 Forms for Documentation.

Forms for documentation shall be as follows:

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

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

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

Figure 7.8.2(a) System Record of Completion. (SIG-FUN)

7.8.2 System Record of Completion

Insert into System Record of Completion Form (Table 7.8.2.(a)):

12.4 Cybersecurity Certified o Not Certified o Not Applicable o

Certified: Certification Number _____, Issued by _____, Valid through _____:



SYSTEM RECORD OF COMPLETION

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

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

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

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

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

4.1 Control Unit

Manufacturer: _____ Model number: _____

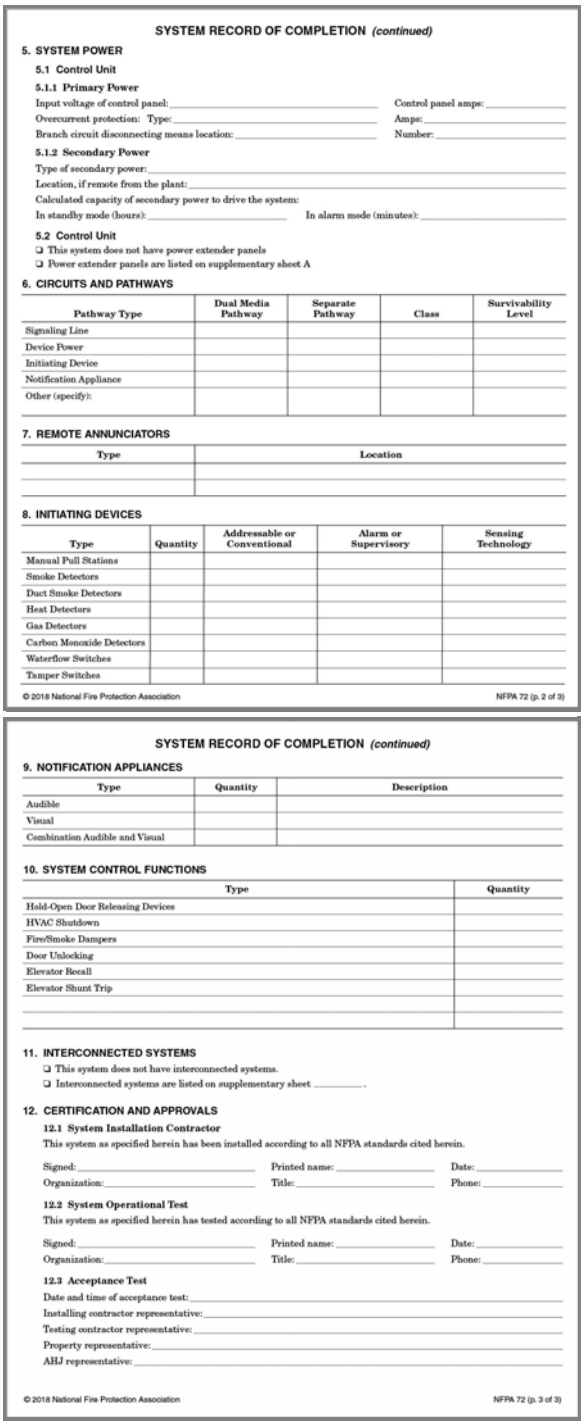
4.2 Software and Firmware

Firmware revision number: _____

4.3 Alarm Verification ❑ This system does not incorporate alarm verification.

Number of devices subject to alarm verification: _____ Alarm verification set for _____ seconds

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Branch circuit disconnecting means location: _____ Number: _____

5.1.2 Secondary Power

Type of secondary power: _____

Location, if remote from the plant: _____

Calculated capacity of secondary power to drive the system:

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

5.2 Control Unit

❑ This system does not have power extender panels

❑ Power extender panels are listed on supplementary sheet A

6. CIRCUITS AND PATHWAYS

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

7. REMOTE ANNUNCIATORS

Type	Location

8. INITIATING DEVICES

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)

SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description
Audible		
Visual		
Combination Audible and Visual		

10. SYSTEM CONTROL FUNCTIONS

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

11. INTERCONNECTED SYSTEMS

❑ This system does not have interconnected systems.

❑ Interconnected systems are listed on supplementary sheet _____.

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

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

Signed: _____ Printed name: _____ Date: _____

Organization: _____ Title: _____ Phone: _____

12.2 System Operational Test

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

Signed: _____ Printed name: _____ Date: _____

Organization: _____ Title: _____ Phone: _____

12.3 Acceptance Test

Date and time of acceptance test: _____

Installing contractor representative: _____

Testing contractor representative: _____

Property representative: _____

AHJ representative: _____

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

2.1 In-Building Fire Emergency Voice Alarm Communications System

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

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

2.2 Mass Notification System

2.2.1 System Type:

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

© 2018 National Fire Protection Association

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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

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

2.2.4 High Power Loudspeaker Arrays

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

2.2.5 Mass Notification Devices

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

2.2.6 Special Hazard Notification

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

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

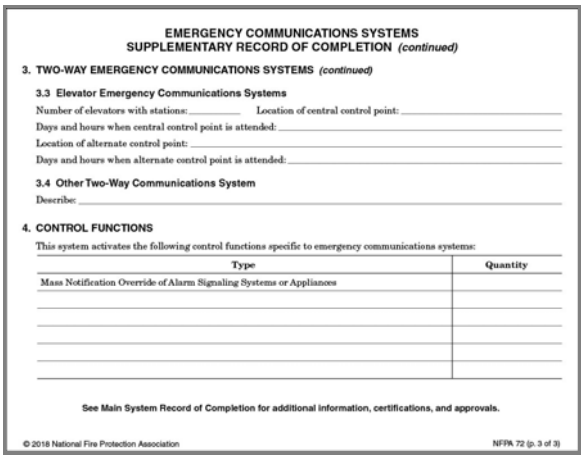
3.1 Telephone System

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

© 2018 National Fire Protection Association



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

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

3.3 Elevator Emergency Communications Systems

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

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

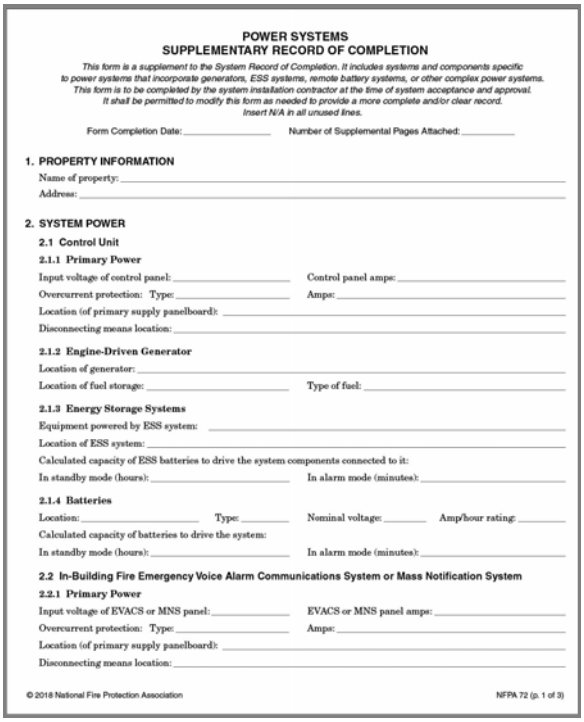
This system activates the following control functions specific to emergency communications systems:

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.1.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.1.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.1.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

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

2.2.1 Primary Power

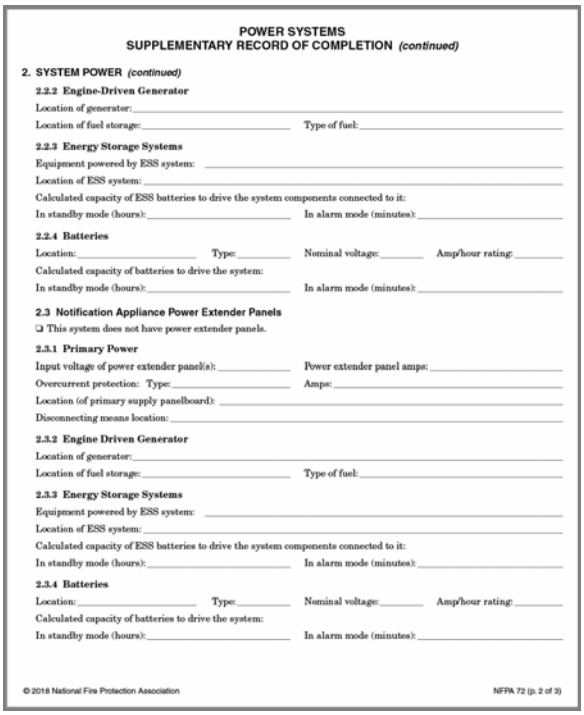
Input voltage of EVACS or MNS panel: _____ EVACS or MNS panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.2.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.2.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.2.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.3.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.3.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.3.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

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

2.4.1 Primary Power

Input voltage of shared transmission equipment: _____

Shared transmission equipment panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.4.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.4.3 Energy Storage Systems

Equipment powered by ESS system: _____

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

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

2.4.4 Batteries

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

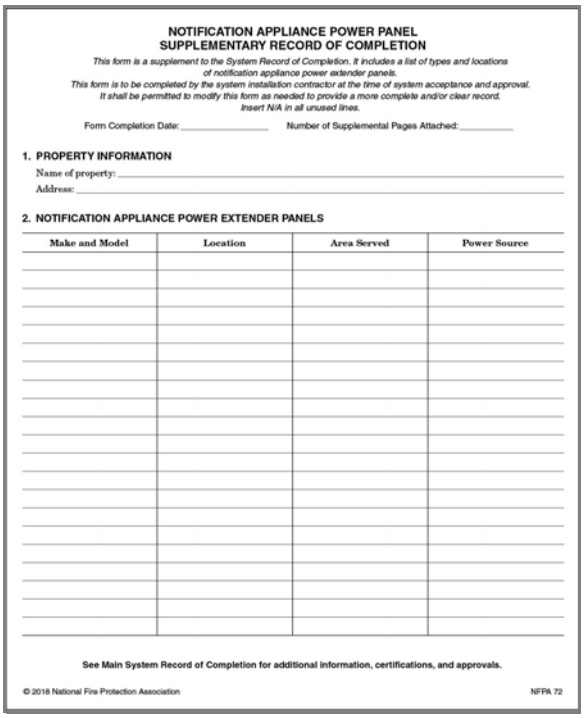
Calculated capacity of batteries to drive the system:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

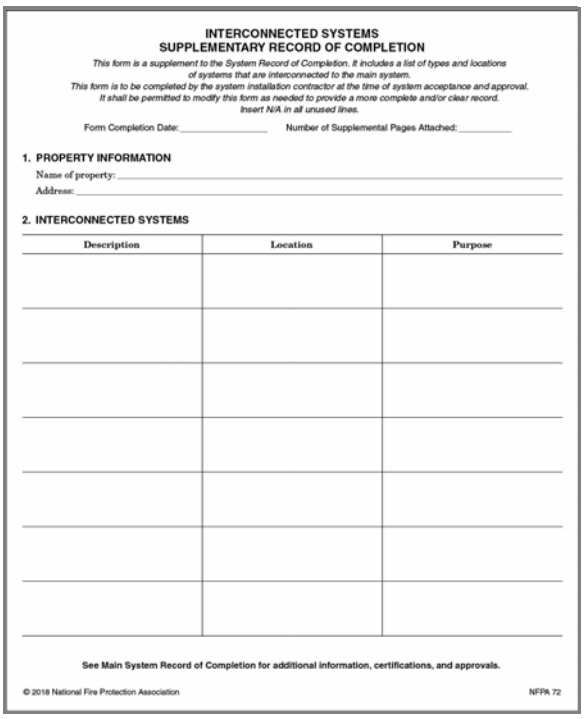
2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source

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

© 2018 National Fire Protection Association NFPA 72

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



INTERCONNECTED SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

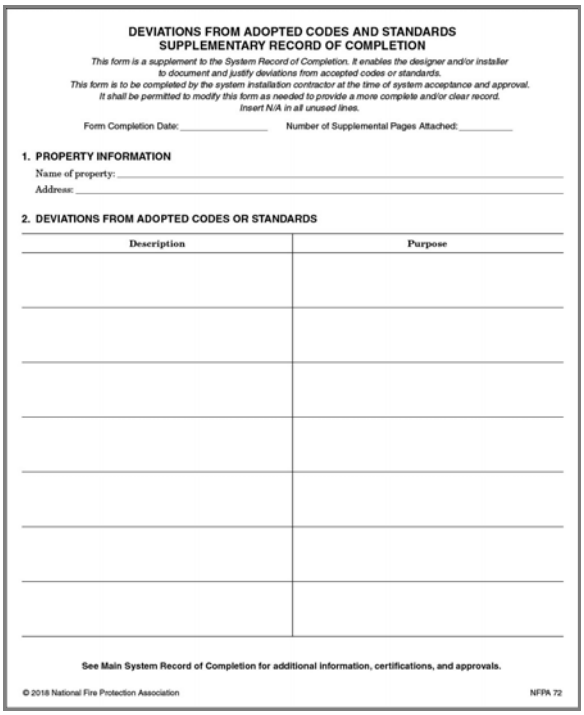
2. INTERCONNECTED SYSTEMS

Description	Location	Purpose

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

© 2018 National Fire Protection Association NFPA 72

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



DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose

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

© 2018 National Fire Protection Association NFPA 72

Figure 7.8.2(g) System Record of Inspection and Testing. (SIG-TMS)



SYSTEM RECORD OF INSPECTION AND TESTING

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

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____
Supplemental Form(s) Attached: _____ (yes/no)

1. PROPERTY INFORMATION

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

2. TESTING AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

4.1 Control Unit

Manufacturer: _____ Model number: _____

4.2 Software Firmware

Firmware revision number: _____

4.3 System Power

4.3.1 Primary (Main) Power

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 4)

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

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

4.3.2 Secondary Power

Type: _____ Location: _____

Battery type (if applicable): _____

Calculated capacity of batteries to drive the system:

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

5. NOTIFICATIONS MADE PRIOR TO TESTING

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

6. TESTING RESULTS

6.1 Control Unit and Related Equipment

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

6.2 Secondary Power

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

© 2018 National Fire Protection Association

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

6. TESTING RESULTS *(continued)*

6.3 Alarm and Supervisory Alarm Initiating Device

Attach supplementary device test sheets for all initiating devices.

6.4 Notification Appliances

Attach supplementary appliance test sheets for all notification appliances.

6.5 Interface Equipment

Attach supplementary interface component test sheets for all interface components.

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

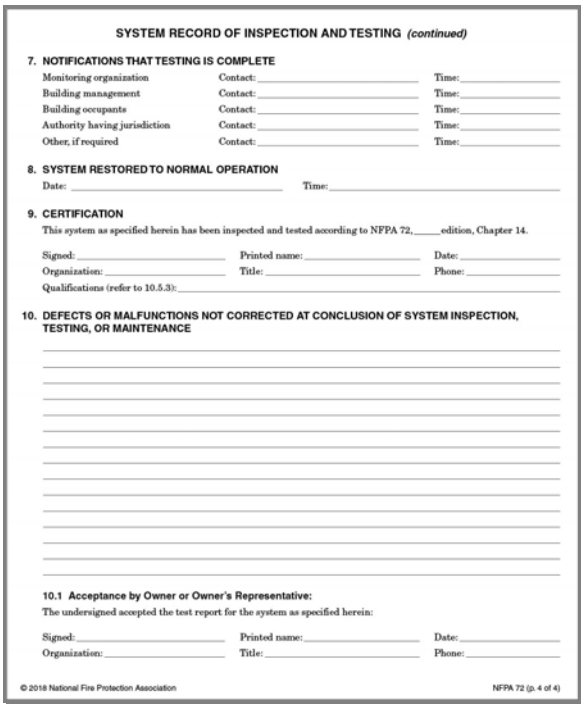
6.6 Supervising Station Monitoring

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

6.7 Public Emergency Alarm Reporting System

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

© 2018 National Fire Protection Association



SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

7. NOTIFICATIONS THAT TESTING IS COMPLETE

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

8. SYSTEM RESTORED TO NORMAL OPERATION

Date: Time:

9. CERTIFICATION

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

Signed: Printed name: Date:
Organization: Title: Phone:
Qualifications (refer to 10.5.3):

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

10.1 Acceptance by Owner or Owner's Representative:

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 4 of 4)

Figure 7.8.2(h) Notification Appliance Supplementary Record of Inspection and Testing. (SIG-TMS)



NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached:

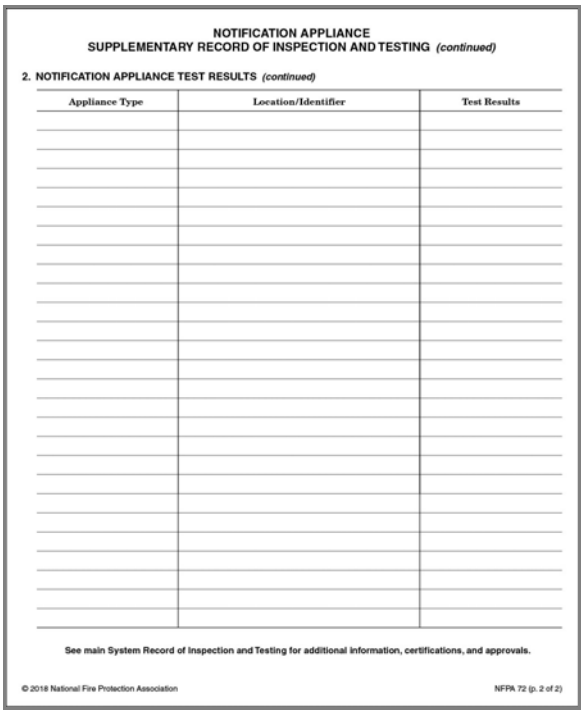
1. PROPERTY INFORMATION

Name of property:
Address:

2. NOTIFICATION APPLIANCE TEST RESULTS

Appliance Type	Location/Identifier	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

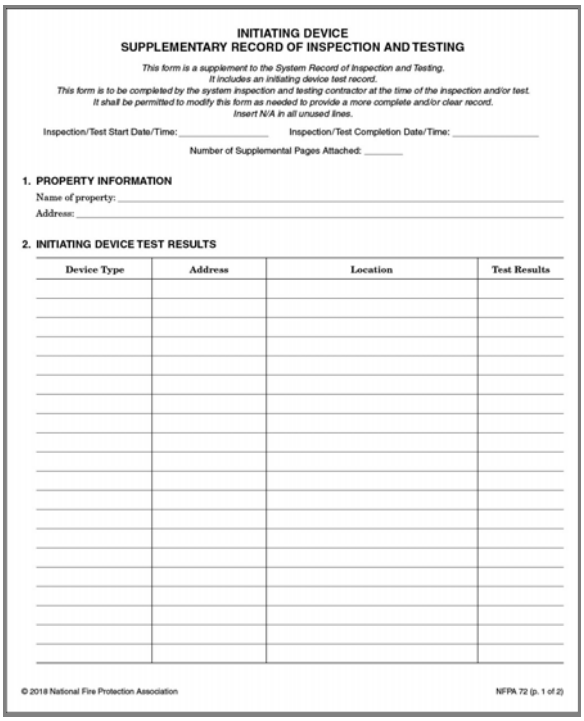
2. NOTIFICATION APPLIANCE TEST RESULTS *(continued)*

Appliance Type	Location/Identifier	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(i) Initiating Device Supplementary Record of Inspection and Testing. (SIG-TMS)



INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. INITIATING DEVICE TEST RESULTS

Device Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

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

2. INITIATING DEVICE TEST RESULTS *(continued)*

Device Type	Address	Location	Test Results

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

4. MASS NOTIFICATION EQUIPMENT TEST RESULTS

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(k) Emergency Communications Systems Supplementary Record of Inspection and Testing. (SIG-TMS)

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property:_____

Address:_____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

❑ Mass notification system

❑ Combination system, with the following components:

❑ Fire alarm ❑ EVACS ❑ MNS ❑ Two-way, in-building, emergency communication system

❑ Other (specify):_____

Additional description of system(s):_____

_____

2.1 In-Building Fire Emergency Voice Alarm Communication System

Manufacturer:_____ Model number:_____

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

Number of loudspeakers:_____ Number of loudspeaker circuits:_____

Location of amplification and sound processing equipment:_____

_____

_____

Location of paging microphone stations:

Location 1:_____

Location 2:_____

Location 3:_____

2.2 Mass Notification System

2.2.1 System Type:

❑ In-building MNS—combination

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

❑ Other (specify):_____

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 5)

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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

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

2.2.4 High-Power Loudspeaker Arrays

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

2.2.5 Mass Notification Devices

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

2.2.6 Special Hazard Notification

❑ This system does not have special suppression pre-discharge notification
❑ MNS systems DO NOT override notification appliances required to provide special suppression pre-discharge notification

3. TWO-WAY EMERGENCY COMMUNICATION SYSTEMS

3.1 Telephone System

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

© 2018 National Fire Protection Association

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

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

3.3 Elevator Emergency Communications Systems

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

3.4 Other Two-Way Communication System

Describe: _____

4. TESTING RESULTS

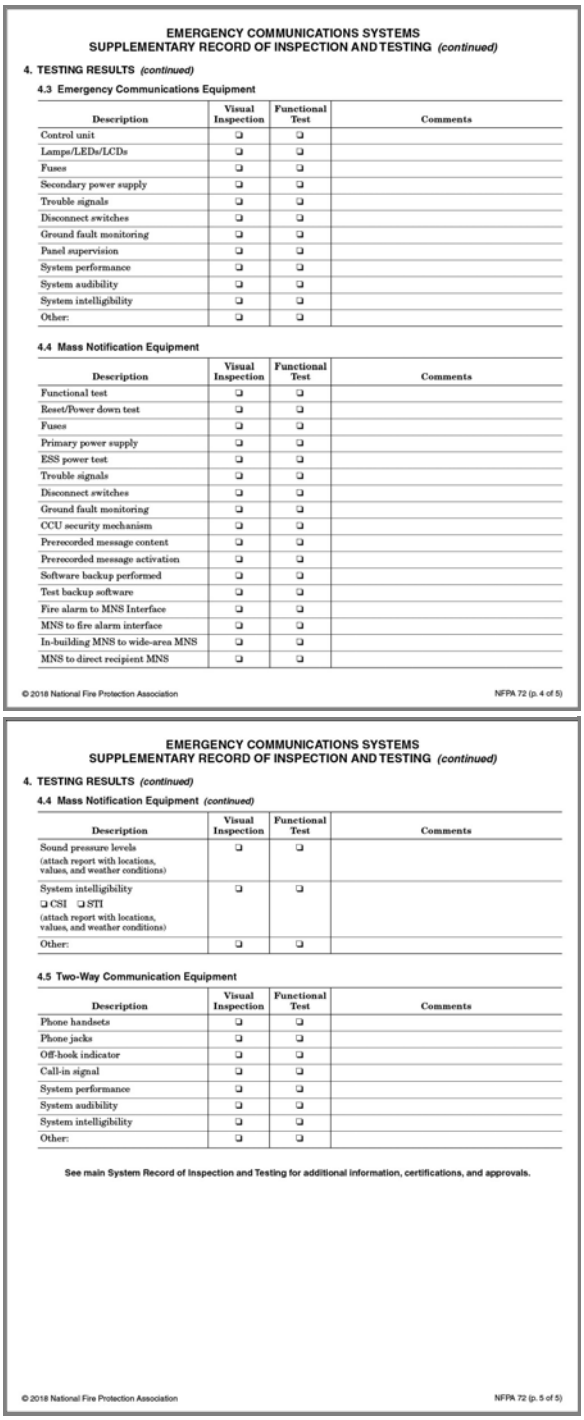
4.1 Control Unit and Related Equipment

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

4.2 Secondary Power

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

© 2018 National Fire Protection Association



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

4. TESTING RESULTS *(continued)*

4.3 Emergency Communications Equipment

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

4.4 Mass Notification Equipment

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

© 2018 National Fire Protection Association NFPA 72 (p. 4 of 5)

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

4. TESTING RESULTS *(continued)*

4.4 Mass Notification Equipment *(continued)*

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

4.5 Two-Way Communication Equipment

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

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

© 2018 National Fire Protection Association NFPA 72 (p. 5 of 5)

Figure 7.8.2(I) Interface Component Supplementary Record of Inspection and Testing. (SIG-TMS)



INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

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

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

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

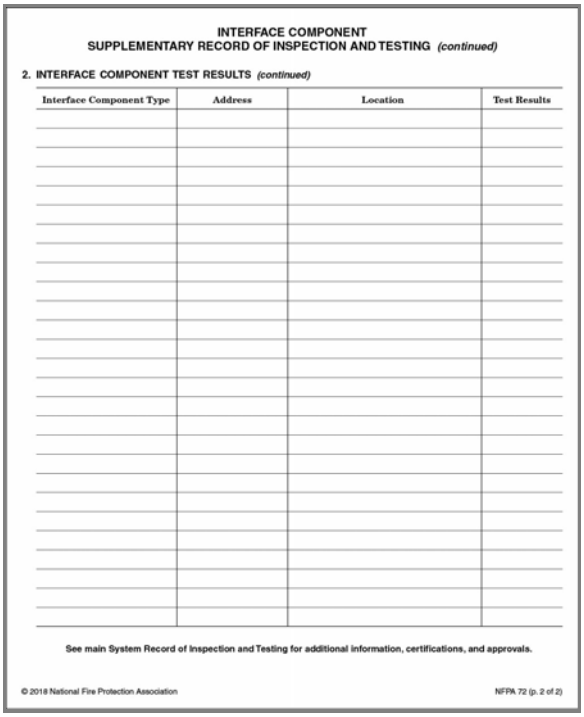
Name of property: _____

Address: _____

2. INTERFACE COMPONENT TEST RESULTS

Interface Component Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



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

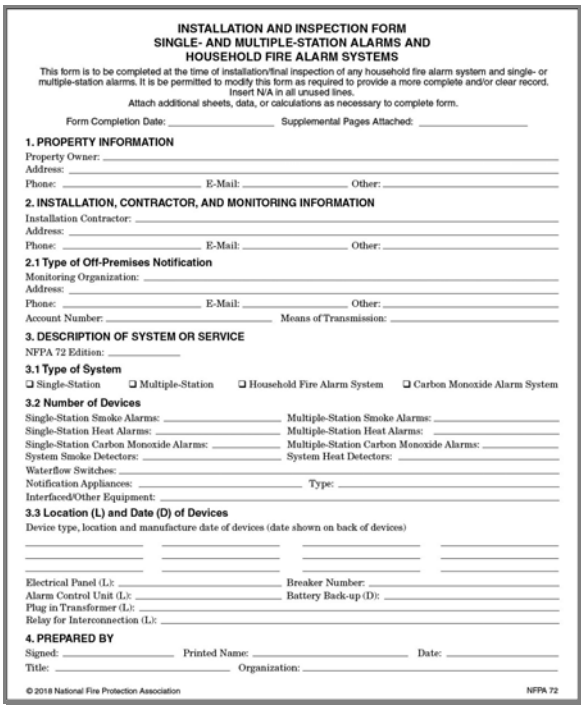
2. INTERFACE COMPONENT TEST RESULTS *(continued)*

Interface Component Type	Address	Location	Test Results

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

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



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

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

Attach additional sheets, data, or calculations as necessary to complete form.

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Property Owner: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2. INSTALLATION, CONTRACTOR, AND MONITORING INFORMATION

Installation Contractor: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2.1 Type of Off-Premises Notification

Monitoring Organization: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____
Account Number: _____ Means of Transmission: _____

3. DESCRIPTION OF SYSTEM OR SERVICE

NFPA 72 Edition: _____

3.1 Type of System

❑ Single-Station ❑ Multiple-Station ❑ Household Fire Alarm System ❑ Carbon Monoxide Alarm System

3.2 Number of Devices

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

3.3 Location (L) and Date (D) of Devices

Device type, location and manufacture date of devices (date shown on back of devices)

_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____

Electrical Panel (L): _____ Breaker Number: _____
Alarm Control Unit (L): _____ Battery Back-up (D): _____
Plug in Transformer (L): _____
Relay for Interconnection (L): _____

4. PREPARED BY

Signed: _____ Printed Name: _____ Date: _____
Title: _____ Organization: _____

© 2018 National Fire Protection Association NFPA 72

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	Part of a broader public input intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:05:03 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The forms need to be further reviewed to determine the exact placement of cyber security documentation.

Public Input No. 90-NFPA 72-2019 [Section No. 7.8.2]

7.8.2 Forms for Documentation.

Forms for documentation shall be as follows:

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

(2)* ~~Unless otherwise permitted or required in~~ Inspection and testing shall be documented as required by 7.6.6 ~~or 7~~ . ~~8.1.2, Figure 7.8.2~~ (~~g) through~~ ~~Figure 7.8.2(l) shall be used to document the record of inspection and testing.~~ (SIG-TMS)

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

Figure 7.8.2(a) System Record of Completion. (SIG-FUN)



SYSTEM RECORD OF COMPLETION

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

Attach additional sheets, data, or calculations as necessary to provide a complete record.

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

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

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

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

3. DOCUMENTATION

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

4. DESCRIPTION OF SYSTEM OR SERVICE

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

4.1 Control Unit

Manufacturer: _____ Model number: _____

4.2 Software and Firmware

Firmware revision number: _____

4.3 Alarm Verification

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

© 2018 National Fire Protection Association



SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

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

5.1.2 Secondary Power

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

5.2 Control Unit

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

6. CIRCUITS AND PATHWAYS

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

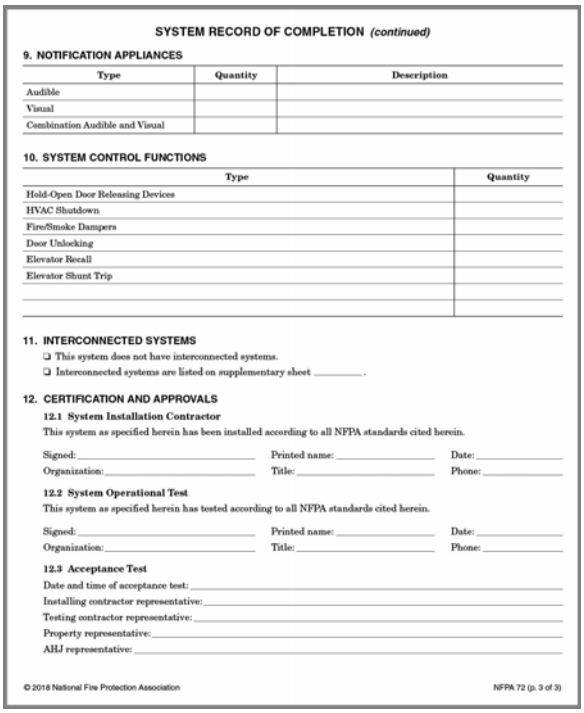
7. REMOTE ANNUNCIATORS

Type	Location

8. INITIATING DEVICES

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

© 2018 National Fire Protection Association



SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description
Audible		
Visual		
Combination Audible and Visual		

10. SYSTEM CONTROL FUNCTIONS

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

11. INTERCONNECTED SYSTEMS

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

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

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

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

12.2 System Operational Test

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

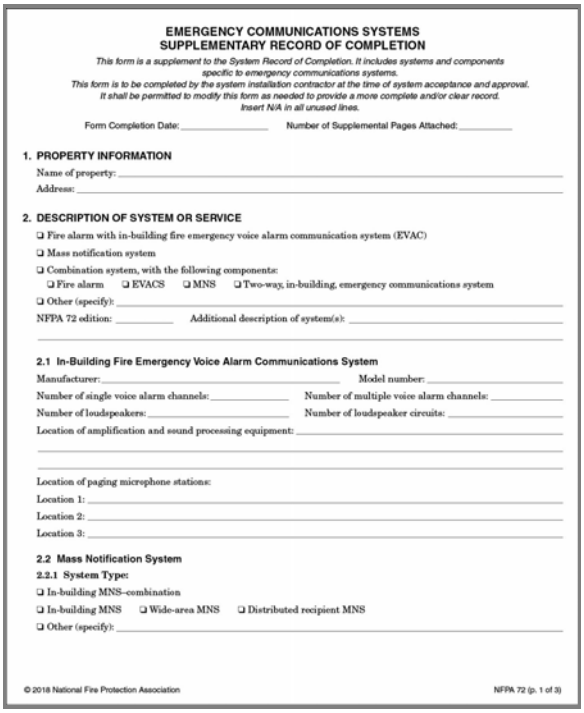
Signed: _____ Printed name: _____ Date: _____
Organization: _____ Title: _____ Phone: _____

12.3 Acceptance Test

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____
Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

2.1 In-Building Fire Emergency Voice Alarm Communications System

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

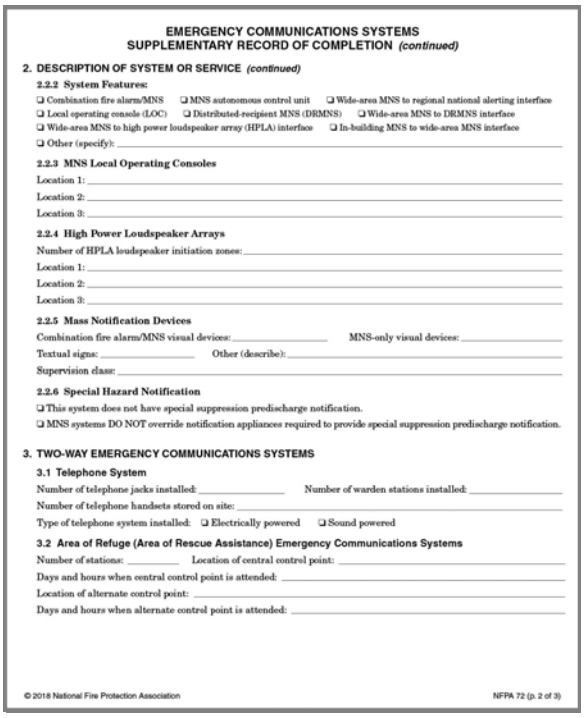
Location of paging microphone stations:
Location 1: _____
Location 2: _____
Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

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

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



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

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

2.2.2 System Features:

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

2.2.3 MNS Local Operating Consoles

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

2.2.4 High Power Loudspeaker Arrays

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

2.2.5 Mass Notification Devices

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

2.2.6 Special Hazard Notification

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

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

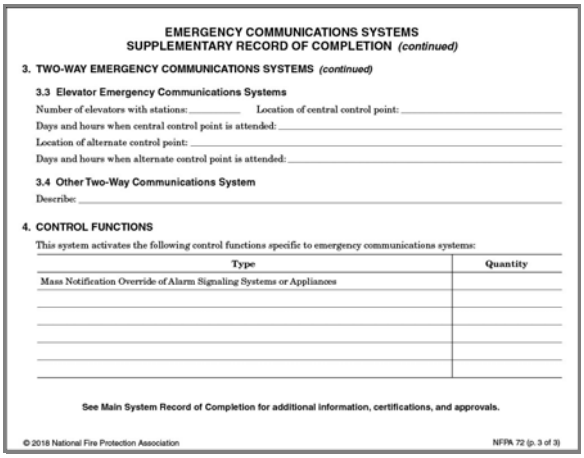
3.1 Telephone System

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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

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

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)



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

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

3.3 Elevator Emergency Communications Systems

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

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

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

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	

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

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

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

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

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

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

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

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

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.1.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.1.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

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

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

2.1.4 Batteries

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

Calculated capacity of batteries to drive the system:

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

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

2.2.1 Primary Power

Input voltage of EVACS or MNS panel: _____ EVACS or MNS panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

© 2018 National Fire Protection Association

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.2.2 Engine-Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.2.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.2.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

Input voltage of power extender panel(s): _____ Power extender panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.3.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.3.3 Energy Storage Systems

Equipment powered by ESS system: _____

Location of ESS system: _____

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

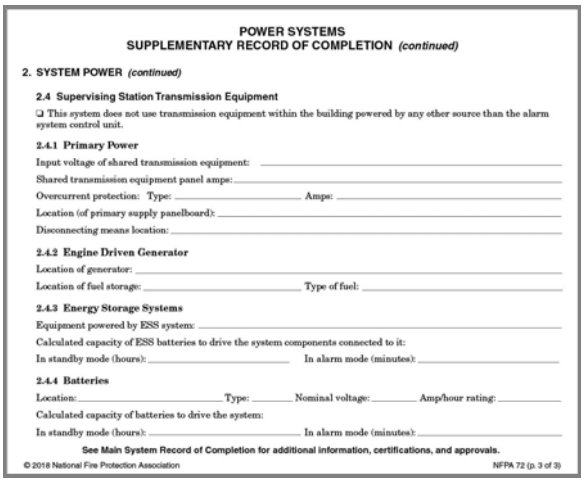
2.3.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

© 2018 National Fire Protection Association



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

❑ This system does not use transmission equipment within the building powered by any other source than the alarm system control unit.

2.4.1 Primary Power

Input voltage of shared transmission equipment: _____

Shared transmission equipment panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Location (of primary supply panelboard): _____

Disconnecting means location: _____

2.4.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.4.3 Energy Storage Systems

Equipment powered by ESS system: _____

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.4.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

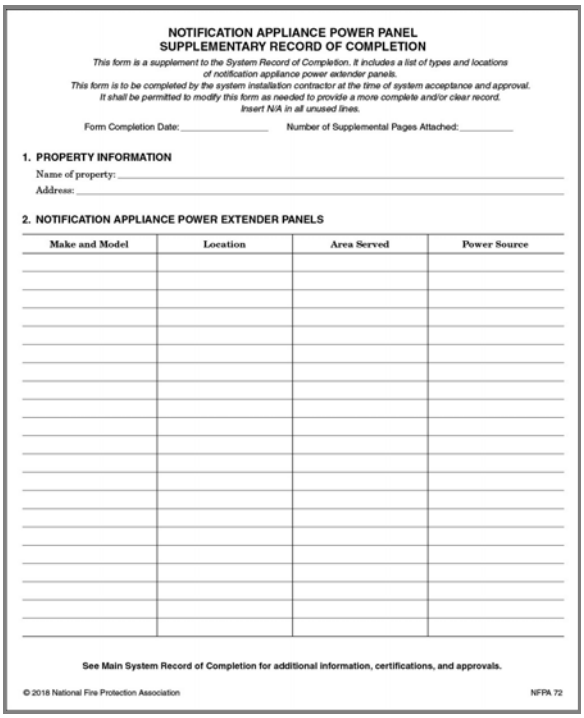
Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

Figure 7.8.2(d) Notification Appliance Power Panel Supplementary Record of Completion. (SIG-FUN)



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes a list of types and locations of notification appliance power extender panels.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: _____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

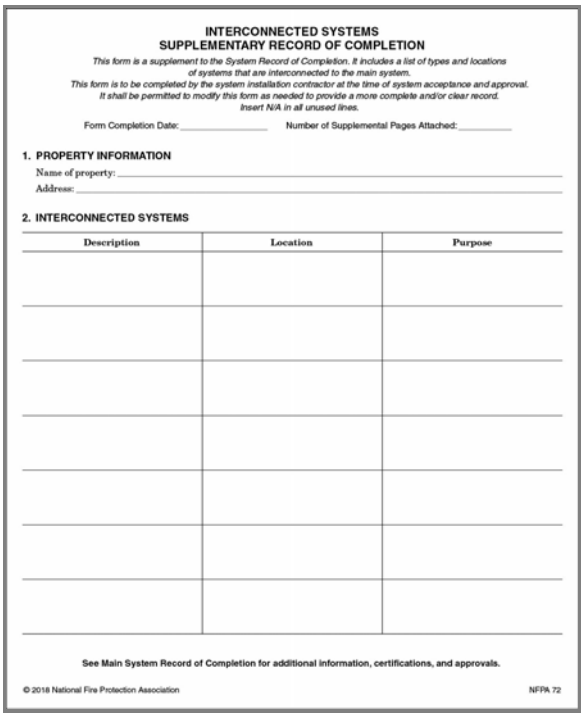
2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Figure 7.8.2(e) Interconnected Systems Supplementary Record of Completion. (SIG-FUN)



INTERCONNECTED SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes a list of types and locations of systems that are interconnected to the main system.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: _____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

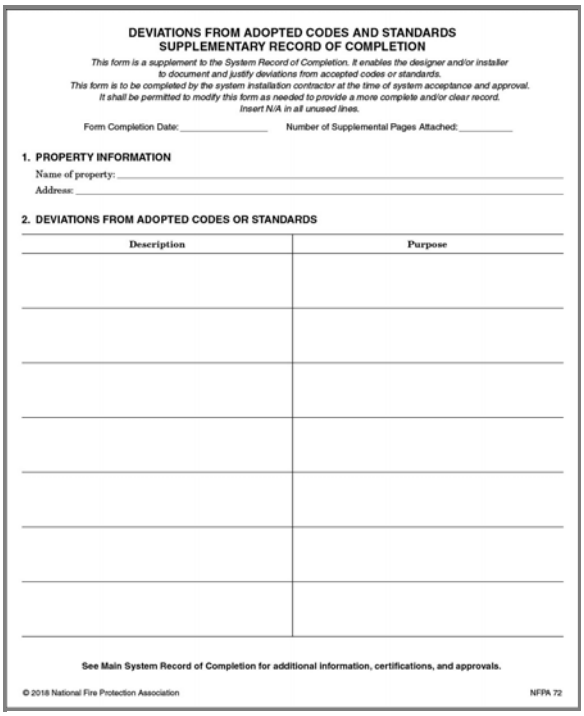
2. INTERCONNECTED SYSTEMS

Description	Location	Purpose

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Figure 7.8.2(f) Deviations from Adopted Codes and Standards Supplementary Record of Completion. (SIG-FUN)



DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It enables the designer and/or installer to document and justify deviations from accepted codes or standards.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: _____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Figure 7.8.2(g)

~~System Record of Inspection and Testing. (SIG-TMS)~~

SYSTEM RECORD OF INSPECTION AND TESTING

This form is to be completed by the system inspection and testing contractor at the time of a system test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.
Attach additional sheets, data, or calculations as necessary to provide a complete record.

Inspection/Test Start Date/Time:_____ Inspection/Test Completion Date/Time:_____

Supplemental Form(s) Attached: _____ (yes/no)

1. PROPERTY INFORMATION

Name of property:_____
Address:_____
Description of property:_____
Name of property representative:_____
Address:_____
Phone:_____ Fax:_____ E-mail:_____

2. TESTING AND MONITORING INFORMATION

Testing organization:_____
Address:_____
Phone:_____ Fax:_____ E-mail:_____
Monitoring organization:_____
Address:_____
Phone:_____ Fax:_____ E-mail:_____
Account number:_____ Phone line 1:_____ Phone line 2:_____
Means of transmission:_____
Entity to which alarms are retransmitted:_____ Phone:_____

3. DOCUMENTATION

Onsite location of the required record documents and site-specific software:_____

4. DESCRIPTION OF SYSTEM OR SERVICE

4.1 Control Unit

Manufacturer:_____ Model number:_____

4.2 Software Firmware

Firmware revision number:_____

4.3 System Power

4.3.1 Primary (Main) Power

Nominal voltage:_____ Amps:_____ Location:_____
Overcurrent protection type:_____ Amps:_____ Disconnecting means location:_____

© 2018 National Fire Protection Association

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

4. DESCRIPTION OF SYSTEM OR SERVICE *(continued)*

4.3.2 Secondary Power

Type:_____ Location:_____
Battery type (if applicable):_____
Calculated capacity of batteries to drive the system:
In standby mode (hours):_____ In alarm mode (minutes):_____

5. NOTIFICATIONS MADE PRIOR TO TESTING

Monitoring organization	Contact:_____	Time:_____
Building management	Contact:_____	Time:_____
Building occupants	Contact:_____	Time:_____
Authority having jurisdiction	Contact:_____	Time:_____
Other, if required	Contact:_____	Time:_____

6. TESTING RESULTS

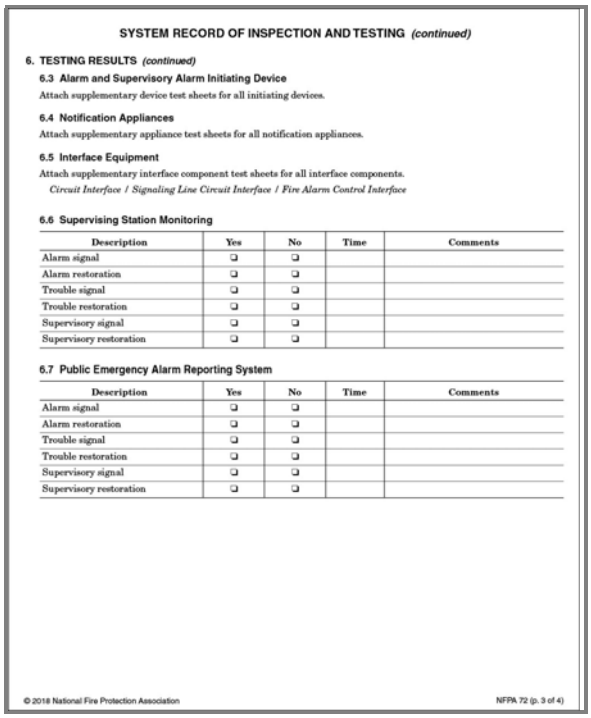
6.1 Control Unit and Related Equipment

Description	Visual Inspection	Functional Test	Comments
Control unit	❑	❑	
Lamps/LEDs/LCDs	❑	❑	
Fuses	❑	❑	
Trouble signals	❑	❑	
Disconnect switches	❑	❑	
Ground-fault monitoring	❑	❑	
Supervision	❑	❑	
Local annunciator	❑	❑	
Remote annunciators	❑	❑	
Remote power panels	❑	❑	
	❑	❑	

6.2 Secondary Power

Description	Visual Inspection	Functional Test	Comments
Battery condition	❑	❑	
Load voltage	❑	❑	
Discharge test	❑	❑	
Charger test	❑	❑	
Remote panel batteries	❑	❑	

© 2018 National Fire Protection Association



SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

6. TESTING RESULTS *(continued)*

6.3 Alarm and Supervisory Alarm Initiating Device

Attach supplementary device test sheets for all initiating devices.

6.4 Notification Appliances

Attach supplementary appliance test sheets for all notification appliances.

6.5 Interface Equipment

Attach supplementary interface component test sheets for all interface components.

Circuit Interface / Signaling Line Circuit Interface / Fire Alarm Control Interface

6.6 Supervising Station Monitoring

Description	Yes	No	Time	Comments
Alarm signal	❑	❑		
Alarm restoration	❑	❑		
Trouble signal	❑	❑		
Trouble restoration	❑	❑		
Supervisory signal	❑	❑		
Supervisory restoration	❑	❑		

6.7 Public Emergency Alarm Reporting System

Description	Yes	No	Time	Comments
Alarm signal	❑	❑		
Alarm restoration	❑	❑		
Trouble signal	❑	❑		
Trouble restoration	❑	❑		
Supervisory signal	❑	❑		
Supervisory restoration	❑	❑		

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 4)

SYSTEM RECORD OF INSPECTION AND TESTING *(continued)*

7. NOTIFICATIONS THAT TESTING IS COMPLETE

Monitoring organization	Contact: _____	Time: _____
Building management	Contact: _____	Time: _____
Building occupants	Contact: _____	Time: _____
Authority having jurisdiction	Contact: _____	Time: _____
Other, if required	Contact: _____	Time: _____

8. SYSTEM RESTORED TO NORMAL OPERATION

Date: _____ Time: _____

9. CERTIFICATION

This system as specified herein has been inspected and tested according to NFPA 72,_____edition, Chapter 14.

Signed: _____ Printed name: _____ Date: _____

Organization: _____ Title: _____ Phone: _____

Qualifications (refer to 10.5.3): _____

10. DEFECTS OR MALFUNCTIONS NOT CORRECTED AT CONCLUSION OF SYSTEM INSPECTION, TESTING, OR MAINTENANCE

10.1 Acceptance by Owner or Owner's Representative:

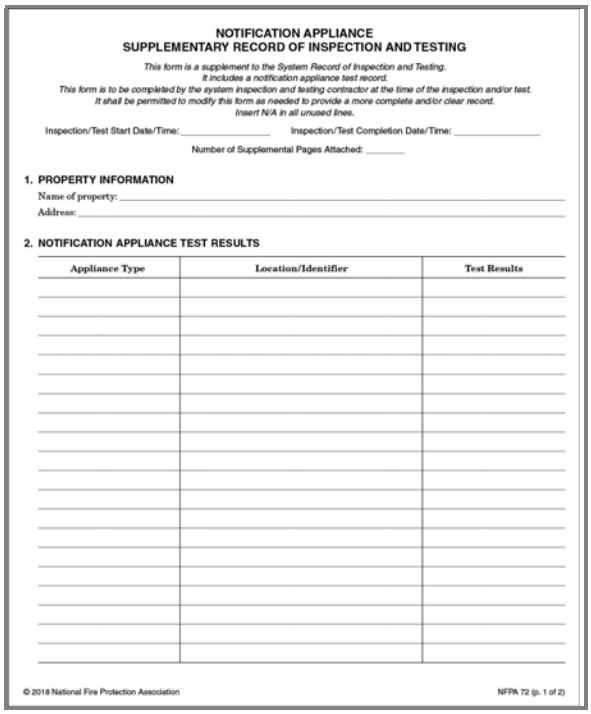
The undersigned accepted the test report for the system as specified herein:

Signed: _____ Printed name: _____ Date: _____

Organization: _____ Title: _____ Phone: _____

© 2018 National Fire Protection Association NFPA 72 (p. 4 of 4)

~~Figure 7.8.2(h) Notification Appliance Supplementary Record of Inspection and Testing. (SIG-TMS)~~



NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes a notification appliance test record.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time:_____ Inspection/Test Completion Date/Time: _____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. NOTIFICATION APPLIANCE TEST RESULTS

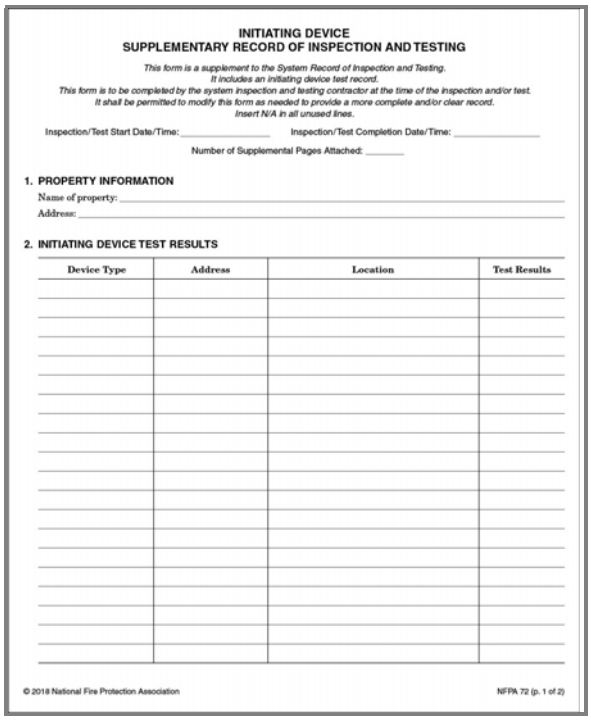
Appliance Type	Location/Identifier	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

NOTIFICATION APPLIANCE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

2. NOTIFICATION APPLIANCE TEST RESULTS *(continued)*

Appliance Type	Location/Identifier	Test Results



INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes an initiating device test record.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

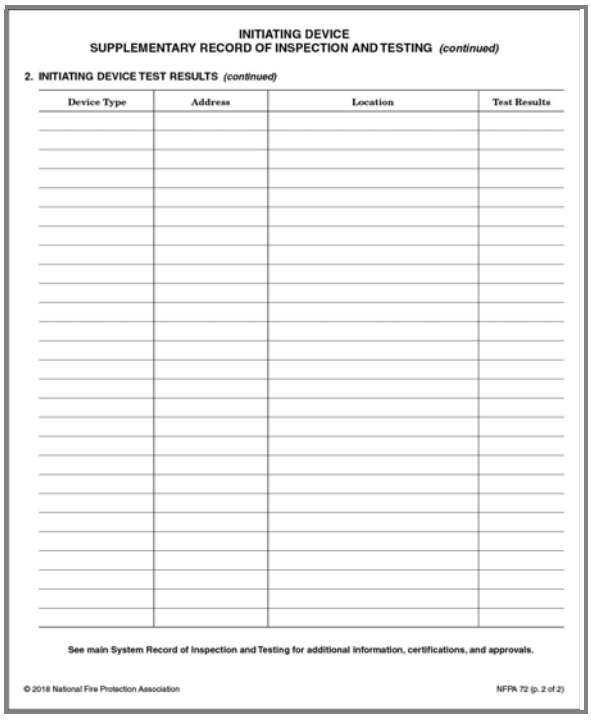
Name of property: _____

Address: _____

2. INITIATING DEVICE TEST RESULTS

Device Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



INITIATING DEVICE
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

2. INITIATING DEVICE TEST RESULTS *(continued)*

Device Type	Address	Location	Test Results

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

~~Figure 7.8.2(j) Mass Notification System Supplementary Record of Inspection and Testing. (SIG-TMS)~~



MASS NOTIFICATION SYSTEM
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes a mass notification system test record.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. MASS NOTIFICATION SYSTEM

2.1 System Type

❑ In-building MNS—combination

❑ In-building MNS—stand alone ❑ Wide-area MNS ❑ Distributed recipient MNS

❑ Other (specify): _____

2.2 System Features

❑ Combination fire alarm/MNS ❑ MNS ACU only ❑ Wide-area MNS to regional national alerting interface

❑ Local operating console (LOC) ❑ Direct recipient MNS (DRMNS) ❑ Wide-area MNS to DRMNS interface

❑ Wide-area MNS to high-power loudspeaker array (HPLA) interface ❑ In-building MNS to wide-area MNS interface

❑ Other (specify): _____

3. IN-BUILDING MASS NOTIFICATION SYSTEM

3.1 Primary Power

Input voltage of MNS panel: _____ MNS panel amps: _____

3.2 Engine-Driven Generator ❑ This system does not have a generator.

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

3.3 Energy Storage Systems ❑ This system does not have an ESS.

Equipment powered by an ESS system: _____

Location of ESS system: _____

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

3.4 Batteries

Location: _____ Type: _____ Nominal voltage: _____ Amp/hour rating: _____

Calculated capacity of batteries to drive the system:

In standby mode (hours): _____ In alarm mode (minutes): _____

❑ Batteries are marked with date of manufacture.

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

MASS NOTIFICATION SYSTEM
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

4. MASS NOTIFICATION EQUIPMENT TEST RESULTS

Description	Visual Inspection	Functional Test	Comments
Functional test			
Reset/power down test			
Fuses			
Primary power supply			
ESS power test			
Trouble signals			
Disconnect switches			
Ground-fault monitoring			
CCU security mechanism			
Prerecorded message content			
Prerecorded message activation			
Software backup performed			
Test backup software			
Fire alarm to MNS interface			
MNS to fire alarm interface			
In-building MNS to wide-area MNS			
MNS to direct recipient MNS			
Sound pressure levels Occupied ❑ Yes ❑ No Ambient dBA: _____ Alarm dBA: _____ (attach supplementary notification appliance form(s) with locations, values, and weather conditions)			
System intelligibility Test method: _____ Score: _____ CIS value: _____ (attach supplementary notification appliance form(s) with locations, values, and weather conditions)			
Other (specify):			

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Figure 7.8.2(k) Emergency Communications Systems Supplementary Record of Inspection and Testing. (SIG-TMS)

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes systems and components specific to emergency communication systems.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time:_____ Inspection/Test Completion Date/Time:_____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property:_____

Address:_____

2. DESCRIPTION OF SYSTEM OR SERVICE

❑ Fire alarm with in-building fire emergency voice alarm communication system (EVAC)

❑ Mass notification system

❑ Combination system, with the following components:
❑ Fire alarm ❑ EVACS ❑ MNS ❑ Two-way, in-building, emergency communication system

❑ Other (specify):_____

Additional description of system(s):_____

_____

2.1 In-Building Fire Emergency Voice Alarm Communication System

Manufacturer:_____ Model number:_____

Number of single voice alarm channels:_____ Number of multiple voice alarm channels:_____

Number of loudspeakers:_____ Number of loudspeaker circuits:_____

Location of amplification and sound processing equipment:_____

_____

_____

Location of paging microphone stations:

Location 1:_____

Location 2:_____

Location 3:_____

2.2 Mass Notification System

2.2.1 System Type:

❑ In-building MNS—combination

❑ In-building MNS ❑ Wide-area MNS ❑ Distributed recipient MNS

❑ Other (specify):_____

© 2018 National Fire Protection Association

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

2. DESCRIPTION OF SYSTEM OR SERVICE *(continued)*

2.2.2 System Features:

❑ Combination fire alarm/MNS ❑ MNS autonomous control unit ❑ Wide-area MNS to regional national alerting interface
❑ Local operating console (LOC) ❑ Distributed-recipient MNS (DRMNS) ❑ Wide-area MNS to DRMNS interface
❑ Wide-area MNS to high-power loudspeaker array (HPLA) interface ❑ In-building MNS to wide-area MNS interface
❑ Other (specify):_____

2.2.3 MNS Local Operating Consoles

Location 1:_____

Location 2:_____

Location 3:_____

2.2.4 High-Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones:_____

Location 1:_____

Location 2:_____

Location 3:_____

2.2.5 Mass Notification Devices

Combination fire alarm/MNS visual devices:_____ MNS-only visual devices:_____

Textual signs:_____ Other (describe):_____

Supervision class:_____

2.2.6 Special Hazard Notification

❑ This system does not have special suppression pre-discharge notification

❑ MNS systems DO NOT override notification appliances required to provide special suppression pre-discharge notification

3. TWO-WAY EMERGENCY COMMUNICATION SYSTEMS

3.1 Telephone System

Number of telephone jacks installed:_____ Number of warden stations installed:_____

Number of telephone handsets stored on site:_____

Type of telephone system installed: ❑ Electrically powered ❑ Sound powered

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

Number of stations:_____ Location of central control point:_____

Days and hours when central control point is attended:_____

Location of alternate control point:_____

Days and hours when alternate control point is attended:_____

© 2018 National Fire Protection Association

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS *(continued)*

3.3 Elevator Emergency Communications Systems

Number of elevators with stations: _____ Location of central control point: _____

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communication System

Describe: _____

4. TESTING RESULTS

4.1 Control Unit and Related Equipment

Description	Visual Inspection	Functional Test	Comments
Control unit	❑	❑	
Lamps/LEDs/LCDs	❑	❑	
Fuses	❑	❑	
Trouble signals	❑	❑	
Disconnect switches	❑	❑	
Ground fault monitoring	❑	❑	
Supervision	❑	❑	
Local annunciator	❑	❑	
Remote annunciators	❑	❑	
Remote power panels	❑	❑	
Other:	❑	❑	

4.2 Secondary Power

Description	Visual Inspection	Functional Test	Comments
Battery condition	❑	❑	
Load voltage	❑	❑	
Discharge test	❑	❑	
Charger test	❑	❑	
Remote panel batteries	❑	❑	

© 2018 National Fire Protection Association

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

4. TESTING RESULTS *(continued)*

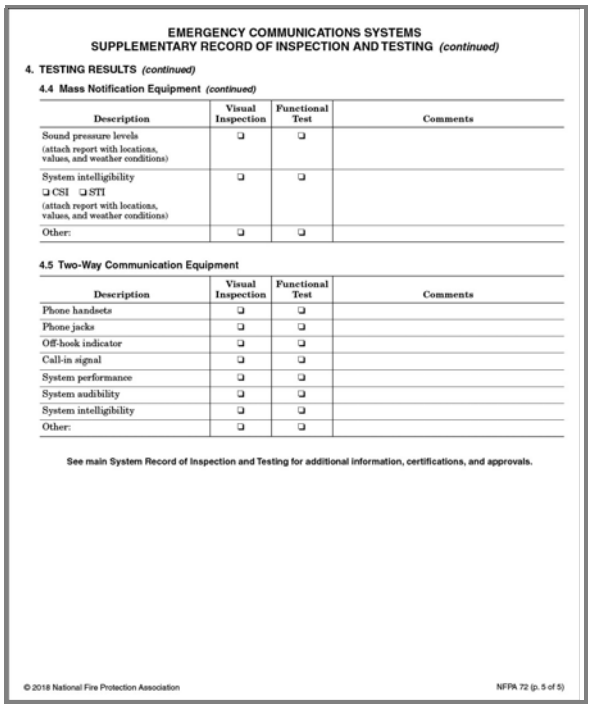
4.3 Emergency Communications Equipment

Description	Visual Inspection	Functional Test	Comments
Control unit	❑	❑	
Lamps/LEDs/LCDs	❑	❑	
Fuses	❑	❑	
Secondary power supply	❑	❑	
Trouble signals	❑	❑	
Disconnect switches	❑	❑	
Ground fault monitoring	❑	❑	
Panel supervision	❑	❑	
System performance	❑	❑	
System audibility	❑	❑	
System intelligibility	❑	❑	
Other:	❑	❑	

4.4 Mass Notification Equipment

Description	Visual Inspection	Functional Test	Comments
Functional test	❑	❑	
Reset/Power down test	❑	❑	
Fuses	❑	❑	
Primary power supply	❑	❑	
ESS power test	❑	❑	
Trouble signals	❑	❑	
Disconnect switches	❑	❑	
Ground fault monitoring	❑	❑	
CCU security mechanism	❑	❑	
Prerecorded message content	❑	❑	
Prerecorded message activation	❑	❑	
Software backup performed	❑	❑	
Test backup software	❑	❑	
Fire alarm to MNS Interface	❑	❑	
MNS to fire alarm interface	❑	❑	
In-building MNS to wide-area MNS	❑	❑	
MNS to direct recipient MNS	❑	❑	

© 2018 National Fire Protection Association



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

4. TESTING RESULTS *(continued)*

4.4 Mass Notification Equipment *(continued)*

Description	Visual Inspection	Functional Test	Comments
Sound pressure levels (attach report with locations, values, and weather conditions)	❑	❑	
System intelligibility ❑ CSI ❑ STI (attach report with locations, values, and weather conditions)	❑	❑	
Other:	❑	❑	

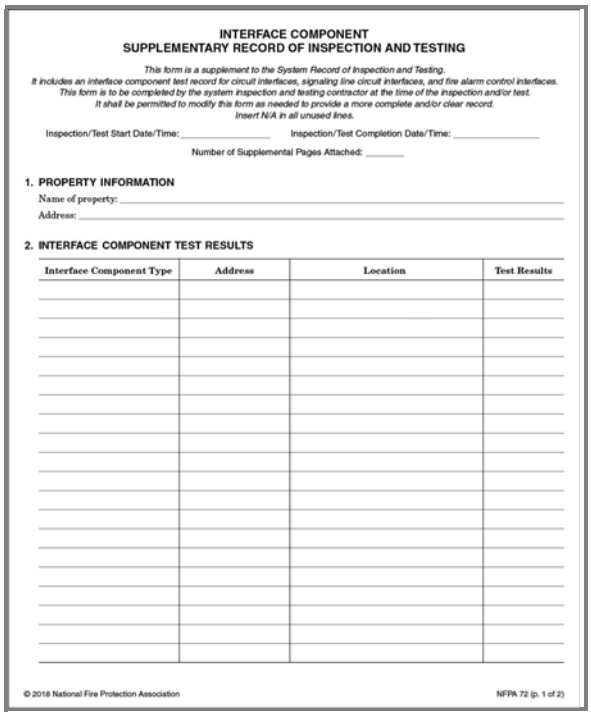
4.5 Two-Way Communication Equipment

Description	Visual Inspection	Functional Test	Comments
Phone handsets	❑	❑	
Phone jacks	❑	❑	
Off-hook indicator	❑	❑	
Call-in signal	❑	❑	
System performance	❑	❑	
System audibility	❑	❑	
System intelligibility	❑	❑	
Other:	❑	❑	

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 5 of 5)

~~Figure 7.8.2(l) Interface Component Supplementary Record of Inspection and Testing. (SIG-TMS)~~



INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING

This form is a supplement to the System Record of Inspection and Testing.
It includes an interface component test record for circuit interfaces, signaling line circuit interfaces, and fire alarm control interfaces.
This form is to be completed by the system inspection and testing contractor at the time of the inspection and/or test.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Inspection/Test Start Date/Time: _____ Inspection/Test Completion Date/Time: _____

Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

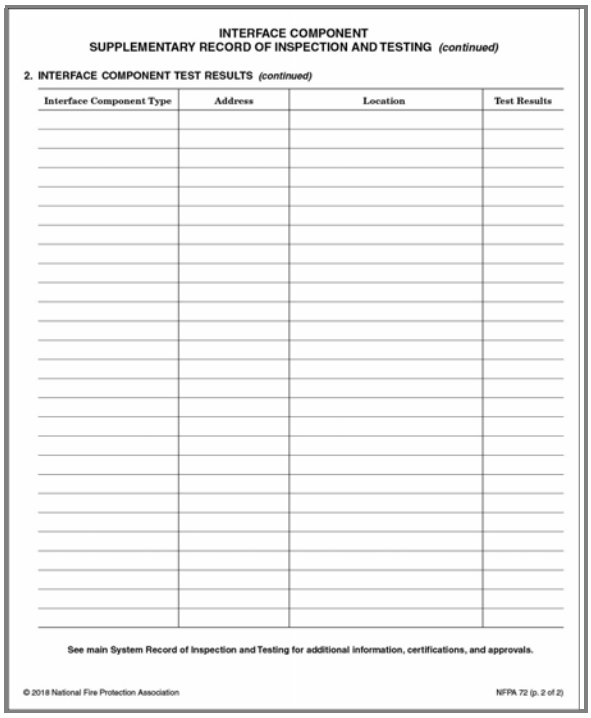
Name of property: _____

Address: _____

2. INTERFACE COMPONENT TEST RESULTS

Interface Component Type	Address	Location	Test Results

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)



INTERFACE COMPONENT
SUPPLEMENTARY RECORD OF INSPECTION AND TESTING *(continued)*

2. INTERFACE COMPONENT TEST RESULTS *(continued)*

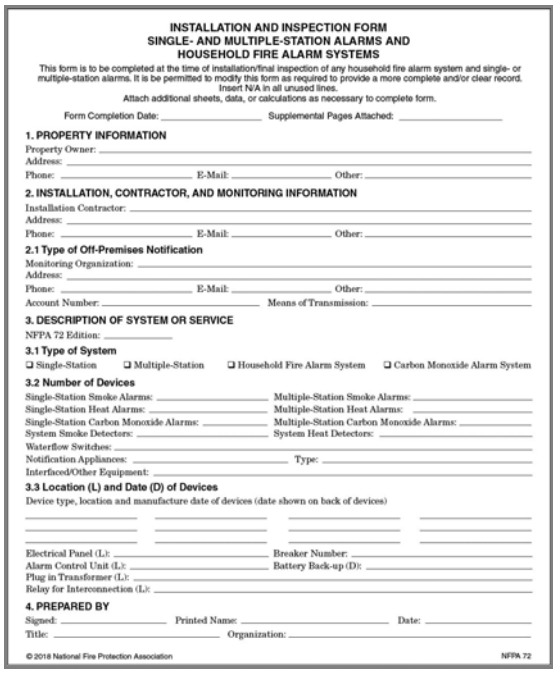
Interface Component Type	Address	Location	Test Results

See main System Record of Inspection and Testing for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

~~Figure 7.8.2(m)~~

Installation and Inspection Form Single- and Multiple-Station Alarms and Household Fire Alarm Systems.



INSTALLATION AND INSPECTION FORM
SINGLE- AND MULTIPLE-STATION ALARMS AND
HOUSEHOLD FIRE ALARM SYSTEMS

This form is to be completed at the time of installation/final inspection of any household fire alarm system and single- or multiple-station alarms. It is be permitted to modify this form as required to provide a more complete and/or clear record. Insert N/A in all unused lines.

Attach additional sheets, data, or calculations as necessary to complete form.

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Property Owner: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2. INSTALLATION, CONTRACTOR, AND MONITORING INFORMATION

Installation Contractor: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____

2.1 Type of Off-Premises Notification

Monitoring Organization: _____
Address: _____
Phone: _____ E-Mail: _____ Other: _____
Account Number: _____ Means of Transmission: _____

3. DESCRIPTION OF SYSTEM OR SERVICE

NFPA 72 Edition: _____

3.1 Type of System

❑ Single-Station ❑ Multiple-Station ❑ Household Fire Alarm System ❑ Carbon Monoxide Alarm System

3.2 Number of Devices

Single-Station Smoke Alarms: _____ Multiple-Station Smoke Alarms: _____
Single-Station Heat Alarms: _____ Multiple-Station Heat Alarms: _____
Single-Station Carbon Monoxide Alarms: _____ Multiple-Station Carbon Monoxide Alarms: _____
System Smoke Detectors: _____ System Heat Detectors: _____
Waterflow Switches: _____
Notification Appliances: _____ Type: _____
Interfaced/Other Equipment: _____

3.3 Location (L) and Date (D) of Devices

Device type, location and manufacture date of devices (date shown on back of devices)

Electrical Panel (L): _____ Breaker Number: _____
Alarm Control Unit (L): _____ Battery Back-up (D): _____
Plug in Transformer (L): _____
Relay for Interconnection (L): _____

4. PREPARED BY

Signed: _____ Printed Name: _____ Date: _____
Title: _____ Organization: _____

© 2018 National Fire Protection Association NFPA 72

Statement of Problem and Substantiation for Public Input

In keeping with the Code's intent for the Inspection and Testing forms to be used as a guide and not a mandate for ITM documentation, this PI proposes to relocate (not remove) the Inspection and Testing forms to the Annex and relate them to Section 7.6.6. This will provide better guidance to the service contractor and to enforcers that these forms can still be used if preferred but are not mandatory.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]	
Public Input No. 91-NFPA 72-2019 [Section No. A.7.8.2(2)]	
Public Input No. 92-NFPA 72-2019 [New Section after A.7.7.1.2]	
Public Input No. 84-NFPA 72-2019 [Section No. 7.2.1]	
Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]	
Public Input No. 84-NFPA 72-2019 [Section No. 7.2.1]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 02 09:38:31 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The referenced forms contain a statement that permits the forms to be modified as needed.

Public Input No. 615-NFPA 72-2019 [New Section after 10.3]

TITLE OF NEW CONTENT

Type your content here ...Abandoned fire alarm equipment shall shall be removed or clearly marked as not in service.

Statement of Problem and Substantiation for Public Input

The standard does not address abandoned equipment or already installed equipment that is no longer needed. The intent of the modification is to provide the system owner with options regarding equipment that it is already installed, but no longer needed.

Submitter Information Verification

Submitter Full Name: Paul Kahle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:59:37 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5091-NFPA 72-2019
Statement: Abandoned equipment must be removed to avoid confusion between which fire alarm equipment is functional and which is not.

Public Input No. 226-NFPA 72-2019 [New Section after 10.3.3]

Equipment required for seismic risk category usage shall be evaluated for the purpose to AC156 - *"Seismic Certification by Shake-table Testing of Nonstructural Components."*

Statement of Problem and Substantiation for Public Input

As more buildings are being constructed to withstand seismic activity the fire alarm control unit is being asked to also meet some type of testing compliance to prove the system is able to withstand seismic activity in a building. Language has been added for other life safety systems like sprinkler and battery systems but NFPA 72 has not addressed the concept. This language should be added to start the recognition of fire alarm and life safety systems needing to be hardened to withstand seismic activity and still operate to notify the occupants and send signals offsite.
More information about the testing criteria can be found at https://icc-es.org/acceptance-criteria/ac156/

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 15:13:08 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5101-NFPA 72-2019
Statement: This language should be added to start the recognition of fire alarm and life safety systems needing to be hardened to withstand seismic activity.

Public Input No. 103-NFPA 72-2019 [Section No. 10.3.3]

10.3.3*

All devices and appliances that receive their operating power from ~~the~~ an initiating device circuit (IDC) or from a signaling line circuit (SLC) of a control unit shall be listed for use with the control unit.

Statement of Problem and Substantiation for Public Input

Clarification that the "power" in question is operating power, not, for example, signaling power and not political power. See related edits to annex material.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 104-NFPA 72-2019 [Section No. A.10.3.3]	
Public Input No. 104-NFPA 72-2019 [Section No. A.10.3.3]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 08 11:48:07 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5097-NFPA 72-2019
Statement: The text clarifies that the "power" in question is operating power. See related edits to annex material.

Public Input No. 174-NFPA 72-2019 [Section No. 10.3.5]

10.3.5

Equipment shall be designed so that it is capable of performing its intended functions under the following conditions:

(1) * At 85 percent and at 110 percent of the nameplate primary (main) and secondary (standby) input voltage(s)

(2) At ambient temperatures of 32°F (0°C) and ~~120°F~~ 100°F (~~49°C~~ 38°C)

(3) At a relative humidity of 85 percent and an ambient temperature of 86°F (30°C)

Statement of Problem and Substantiation for Public Input

This clause appears to be in conflict with 17.7.1.8 and UL 217/UL 268. Chapter 17 only requires that detectors be listed to work to 100 degrees F.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 17 14:00:39 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The requirements of Chapter 10 apply to all equipment unless otherwise modified by other chapters. Section 17.1.3 states that Chapters 7, 10,12, 21, 23, and 24 apply unless they are in conflict with Chapter 17.

Public Input No. 40-NFPA 72-2019 [Section No. 10.3.5]

10.3.5

Equipment shall be designed so that it is capable of performing its intended functions under the following conditions:

(1) * At 85 percent and at 110 percent of the nameplate primary (main) and secondary (standby) input voltage(s)

(2) At ambient temperatures of 32°F (0°C) and 120°F (49°C)

(3) At a relative humidity of 85 percent and an ambient temperature of 86°F (30°C)

Delete the statement "(3) At a relative humidity of 85 percent and an ambient temperature of 86 degrees F (30 degrees C)."

In its place, please insert "(3) At a relative humidity of 10 percent and a relative humidity of 90 percent, irrespective of temperature."

Statement of Problem and Substantiation for Public Input

The reason for this change is that the 85% RH and 86F test point is just that, a point. It's unclear whether 119F and 85% RH is acceptable. It's also unclear whether 33F and 85% is acceptable, but it should be noted that either of these conditions could well be more exacting than the single point 85% RH and 86F. Further, the single point has been taken to mean (by some authorities) that the room in which the panel is installed, has to be maintained at that condition. In doing so, the AHJ is forcing the issue of air conditioning for the fire alarm panel room, which is clearly not the intent in light of the allowable 32F to 120F range. The test point offered by number (3) above, does not dovetail with the intent of the Code and this document is, after all, a Code, not a test description or test standard.

The 90 percent RH number is being suggested as a "shift" from the 85 percent relative humidity because in hot humid climates, many mornings could present conditions that exceed 85 percent relative humidity. Without this wider tolerance, the Code, in effect, would mandate air conditioning in hot humid climates, and clearly this is not the intent.

Submitter Information Verification

Submitter Full Name: Alfonso Fernandez-Fraga
Organization: Initial Engineers PA
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jan 28 15:55:44 EST 2019
Committee: SIG-FUN

Committee Statement

Resolution: The parameters are used by the listing agencies to confirm the ability of the equipment to be installed to meet the requirements of NFPA 72. These values are the minimum requirements that the test standards use to establish their testing guidelines. Air-conditioning may be needed for certain installations based on ambient conditions. There is no technical substantiation provided supporting the change in values.

Public Input No. 315-NFPA 72-2019 [New Section after 10.4.4]

TITLE OF NEW CONTENT

Accessability of Equipment - All electrical panels, control panels, power supplies and other equipment that requires servicing while energized shall be redily accessable.

Statement of Problem and Substantiation for Public Input

Power supplies and control panels require servicing, inspection, testing or maintenance while energized need to be readily accessible so that they can be safely serviced. This is an existing requirement in NFPA 70-, (NEC) Article 110.26 and needs to be added here for additional clarity.

Submitter Information Verification

Submitter Full Name: Thomas Parrish
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 12:06:02 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The proposed language is too restrictive based on the definitions of accessible and readily accessible as defined in NFPA 72.

Public Input No. 181-NFPA 72-2019 [Section No. 10.4.4]

10.4.4*

Unless otherwise ~~permitted~~ required by the authority having jurisdiction, control unit displays, visible indicators, or controls shall be mounted such that the distance to the highest switch, lamp, or textual display does not exceed 6 ft (1.8 m) above the finished floor, and the lowest switch, lamp, or textual display shall not be less than ~~15 in~~ 48 in . (375 mm) above the finished floor.

Statement of Problem and Substantiation for Public Input

The current text of Section 10.4.4 is problematic for the fire service. First, the text indicates that "Unless otherwise permitted by the authority having jurisdiction..." the displays, indicators or controls shall be mounted such that they are located within a specified range above and below the finished floor. The use of the word "permitted" allows the AHJ to authorize a different mounting height, but does not allow the AHJ to specify a height which may allow for the functional access to the displays, indicators or controls by firefighters. An AHJ may "permit" a mounting height of 60 inches AFF, but, as currently worded, the installer could still choose to mount the equipment anywhere within the prescribed range. The use of the word "...required..." would allow the AHJ to specify a more practical range, or specific mounting height, than currently is indicated in the code.

Second, a mounting height of 15 inches above the finish floor is not functionally practical for a firefighter wearing an SCBA. In order to read the display a firefighter would have to get down on their hands and knees. A minimal mounting height of 48 inches would be practical for any firefighter while remaining on their feet.

Submitter Information Verification

Submitter Full Name: Warren Olsen
Organization: Fire Safety Consultants, Inc.
Affiliation: Illinois Fire Inspectors Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 19 14:53:02 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: Based on the size of panels and space where they are located it may not be possible to install them within the proposed range. The panels consist of LED lights, switches, and textual displays (labels) which are intended to be allowed to be installed within 15 in. of the finished floor.

Public Input No. 191-NFPA 72-2019 [Section No. 10.4.4]

10.4.4*

Unless otherwise permitted by the authority having jurisdiction, control unit displays, visible indicators, or controls shall be mounted such that the distance to the highest switch, lamp, or the center line of the textual display does not exceed 6 ft (1.8 m) above the finished floor, and the lowest switch, lamp, or the center line of the textual display shall not be less than 15 in. (375 mm) above the finished floor.

Statement of Problem and Substantiation for Public Input

This revision is added since different panels or control units have different types of textual displays that can have various dimensions (some of them can be very large displays) . In order to prevent inconsistencies regarding the intent of the code, this PI proposes to apply the specific measurements to the center line of any textual display.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 26 17:23:47 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The construction of the panels for the space where they are installed may not place the center line within this range.

Public Input No. 515-NFPA 72-2019 [New Section after 10.4.5]

10.4.5*

(3) When the FACU is installed on the exterior of the building, a heat detector shall be installed in accordance with this code to protect the FACU.

Statement of Problem and Substantiation for Public Input

This section does not address a FACU being installed on the exterior of the building. A heat detector shall be required to be installed to protect the FACU.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 16:16:25 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: Proposed changes to the Code gives one both a prescriptive and risk assessment options.

Public Input No. 210-NFPA 72-2019 [Section No. 10.4.5]

10.4.5*

Unless otherwise permitted by 10.4.~~6~~ 5.1 or 10.4.5.2 , in areas that are not continuously occupied, early warning fire detection shall be at the location of each control unit(s), notification appliance circuit power extender(s), and supervising station transmitting equipment to provide notification of fire at that location by one of the following means:

(1) An automatic smoke detector at the location of each control unit(s), notification appliance circuit power extender(s), and supervising station transmitting equipment

(2) An automatic heat detector where ambient conditions prohibit installation of an automatic smoke detector

Statement of Problem and Substantiation for Public Input

The Correlating Committee has directed the Technical Committee to review 10.4.5 with regard to the following:

- Does this section require a detector if the FACU is installed in a NEMA enclosure on the exterior wall of the building?
- If so, is the intent to provide a heat detector (assuming the environment is not suitable for smoke detection) on the wall or overhang above the enclosure or should the detector be installed inside the NEMA enclosure?
- What if there is no overhang to collect heat?
- What if the building exterior is noncombustible?
- If a detector is not required when the panel is located outdoors, can clarifying language be provided?

The questions above focus on the FACU being installed in a NEMA enclosure, however, there are likely many other applications that would create a list of similar questions. A risk analysis needs to be performed to determine if early warning fire detection is necessary to provide protection for the control unit(s), notification appliance circuit power extender(s) and supervising station transmitting equipment AND if the risk analysis shows smoke or heat detectors are not necessary, the omission must be approved by the AHJ.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 211-NFPA 72-2019 [Section No. 10.4.6]	
Public Input No. 212-NFPA 72-2019 [New Section after 10.4.6]	
Public Input No. 213-NFPA 72-2019 [Section No. A.10.4.5]	
Public Input No. 214-NFPA 72-2019 [New Section after A.10.4.5]	

Submitter Information Verification

Submitter Full Name: Todd Warner
Organization: Brooks Equipment Company, Inc.
Affiliation: Fire Equipment Manufacturer's Association (FEMA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 12:39:29 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5341-NFPA 72-2019

Statement: A risk analysis needs to be performed to determine if early warning fire detection is necessary to provide protection for the control unit(s), notification appliance circuit power extender(s) and supervising station transmitting equipment AND if the risk analysis shows smoke or heat detectors are not necessary, the omission must be approved by the AHJ.

Public Input No. 322-NFPA 72-2019 [Section No. 10.4.5]

10.4.5*

Unless otherwise permitted by 10.4.6 and 10.4.6.1 , in areas that are not continuously occupied, early warning fire detection shall be at the location of each control unit(s), notification appliance circuit power extender(s), and supervising station transmitting equipment to provide notification of fire at that location by one of the following means:

(1) An automatic smoke detector at the location of each control unit(s), notification appliance circuit power extender(s), and supervising station transmitting equipment

(2) An automatic heat detector where ambient conditions prohibit installation of an automatic smoke detector

Statement of Problem and Substantiation for Public Input

This change is needed to correlate with new section 10.4.6.1.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 324-NFPA 72-2019 [New Section after 10.4.6]	

Submitter Information Verification

Submitter Full Name: David Frable
Organization: US General Services Administration
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 15:51:00 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: This section reference is not required as Section 10.4.5 already references risk analysis which would allow the removal of the detector based on the results of the risk analysis.

Public Input No. 212-NFPA 72-2019 [New Section after 10.4.6]

TITLE OF NEW CONTENT

10.4.5.2 Where a risk analysis shows that early warning fire detection is not required and where acceptable to the authority having jurisdiction, the requirements of 10.4.5 shall not apply.

Statement of Problem and Substantiation for Public Input

Additional section relating to PI#210

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 210-NFPA 72-2019 [Section No. 10.4.5]	Existing modified to include new sub-paragraph
Public Input No. 211-NFPA 72-2019 [Section No. 10.4.6]	New sub-paragraph to address issues raised by CC

Submitter Information Verification

Submitter Full Name: Todd Warner
Organization: Brooks Equipment Company, Inc.
Affiliation: Fire Equipment Manufacturers Association (FEMA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 12:44:05 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5341-NFPA 72-2019
Statement: A risk analysis needs to be performed to determine if early warning fire detection is necessary to provide protection for the control unit(s), notification appliance circuit power extender(s) and supervising station transmitting equipment AND if the risk analysis shows smoke or heat detectors are not necessary, the omission must be approved by the AHJ.

Public Input No. 324-NFPA 72-2019 [New Section after 10.4.6]

TITLE OF NEW CONTENT

10.4.6.1 Early warning fire detection shall not be required to be installed at the location of the fire control unit(s) located in a fire command center or emergency command center protected by an automatic sprinkler system designed in accordance *with NFPA 13, Standard for the Installation of Sprinkler Systems.*

Statement of Problem and Substantiation for Public Input

I have proposed to provide an additional reasonable and cost effective option via a new subsection for ensuring the performance of the fire alarm control unit(s) located within a fire command center/emergency command center. This option would permit fire control unit(s) located in a fire command center/emergency command center protected by an automatic sprinkler system designed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems to not be required to have early warning fire detection installed at the location of the fire control unit(s).This option acknowledges the benefits of a building protected throughout by an automatic sprinkler system designed and installed in accordance with NFPA 13. Since the purpose of a sprinkler system is to control fire spread, it makes sense that in a sprinklered fire command center/emergency command center fire would not experience growth to the point of disabling equipment. This option would also reduce the costs associated with the current protection requirements (e.g., installation and ITM).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 322-NFPA 72-2019 [Section No. 10.4.5]	

Submitter Information Verification

Submitter Full Name: David Frable
Organization: US General Services Administration
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 15:55:13 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The intent is, should there be a risk of fire in the fire command center that the fire control unit shall be capable of initiating onsite and/or supervising station notification signals prior to potential damage from the activation of a sprinkler system.

Public Input No. 211-NFPA 72-2019 [Section No. 10.4.6]

10.4.6 – 5.1 *

Smoke or heat detector(s) shall not be required to be installed at the location of dedicated function(s) fire alarm control unit(s) that are not required to provide local or supervising station notification signals.

Statement of Problem and Substantiation for Public Input

Required as part of PI#210. New appendix section needed due to incorrect references.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 210-NFPA 72-2019 [Section No. 10.4.5]	Renumbered as needed by PI#210
Public Input No. 213-NFPA 72-2019 [Section No. A.10.4.5]	
Public Input No. 214-NFPA 72-2019 [New Section after A.10.4.5]	
Public Input No. 212-NFPA 72-2019 [New Section after 10.4.6]	
Public Input No. 213-NFPA 72-2019 [Section No. A.10.4.5]	
Public Input No. 214-NFPA 72-2019 [New Section after A.10.4.5]	

Submitter Information Verification

Submitter Full Name: Todd Warner
Organization: Brooks Equipment Company, Inc.
Affiliation: Fire Equipment Manufacturers Association (FEMA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 12:41:54 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5341-NFPA 72-2019
Statement: A risk analysis needs to be performed to determine if early warning fire detection is necessary to provide protection for the control unit(s), notification appliance circuit power extender(s) and supervising station transmitting equipment AND if the risk analysis shows smoke or heat detectors are not necessary, the omission must be approved by the AHJ.

Public Input No. 450-NFPA 72-2019 [New Section after 10.4.7.3]

TITLE OF NEW CONTENT 10.5 (new) Cyber Security Requirements

Type your content here ...

10.5.1 Systems shall be designed and installed in accordance with one or more of the following cyber security standards:

(1) ANSI/ISA-62443 Series

(2) NIST Framework for Improving Critical Infrastructure Cybersecurity Version 1.1

(3) ANSI/UL 2900 Series

(4) or other standards accepted by the authority having jurisdiction

10.5.2 Evidence of compliance with the requirements of 10.5.1 shall include one or more of the following:

(1) The ISA Security Compliance Institute (ISCI) Conformity Assessment Program

(2) Certification of compliance by a Nationally Recognized Test Laboratory

(3) Manufacturer certification for the specific type and brand of system provided.

Statement of Problem and Substantiation for Public Input

Legislation has been enacted in several jurisdictions requiring design for cyber security. The standards proposed here contain the current industry recognized methodology for cyber security software design and maintenance and should be included in the fundamental requirements for fire alarm and signaling systems.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 14:36:39 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5122-NFPA 72-2019
Statement: With the changes in technology and communication methods this is a place holder to address potential cyber security threats.

Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]

10.4.8 Cybersecurity Classification

Emergency Communications Systems (ECS) and fire alarm systems shall be designated as a) Cybersecurity Certified, or b) Cybersecurity not certified, or c) Cybersecurity not applicable.

10.4.8.1 Emergency communication systems and fire alarm systems designated as Cybersecurity Certified must maintain a record of certification in accordance with Chapter 7.

10.4.8.2* In accordance with section 21.2.11 cybersecurity classification designation shall be acceptable to the authority having jurisdiction.

10.4.8.3 Cybersecurity Certificate issuing body and reference standard shall be internationally recognized such as:

Underwriters Laboratory UL 2900-2-3, *Outline of Investigation for Software Cybersecurity for Network-Connectable Products, Part 2-3: Particular Requirements for Security and Life Safety Signaling Systems*

NIST Framework for Improving Critical Infrastructure Cybersecurity

ISO/IEC 27001, *Information technology – Security techniques – Information security management systems – Requirements*

ISO 15408, *Information technology -- Security techniques -- Evaluation criteria for IT security*

ANSI/ISA/IEC 62443 , *Security for industrial automation and control system.*

Statement of Problem and Substantiation for Public Input

To quote from Casey Grant, executive director of the Fire Protection Research Foundation. “Today, built-in fire protection systems are everywhere, including fire alarm systems, sprinkler systems, special suppression systems, and so on. To improve their capabilities, these systems are becoming more and more interconnected—the ability of these systems to actively communicate with other systems is critical to their functionality and effectiveness. But this interconnectedness also raises a great concern: Are fire protection systems being exposed as the soft underbelly of the cyber safety infrastructure?” [https://www.nfpa.org/News-and-Research/Publications-and-media/NFPA-Journal/2019/May-June-2019/Columns/Research].

Cybersecurity is not a one size fits all risk. An isolated fire alarm, with no direct interconnection with other systems or networks is at minimal risk of being manipulated remotely by bad actors accessing the system via a computer network. Existing emergency control function code already creates data security requirements for interconnected systems. Systems that only transmit data, rather then receive are at a lower risk of being inappropriately manipulated. However, as technology evolves, so do the risks. Unforeseen or unknown vulnerabilities in the most secure interconnected systems are discovered and exploited by bad actors.

Cybersecurity standards utilize risk assessment models and tools that are routinely updated as new threats and vulnerabilities become known. This code should take the same approach to cybersecurity, applying a risk assessment model, creating appropriate requirements. Higher likelihood risks with moderate to catastrophic consequences should be required to prove the efficacy of the systems resistance to cyber attacks. Since cybersecurity threats are always evolving, this concern cannot be treated as a static design factor but must be considered ongoingly. Once a system has been determined to have a risk profile to mandate ongoing and evolving protection, certification becomes a necessity. Cybersecurity certificates issued by independent testing laboratories purposely expire in a short time frame (i.e., one year) to establish an ongoing pattern of assessment, testing, and updates to address newly discovered vulnerabilities.

This series of public inputs addresses the issue of introducing cybersecurity concerns and actions in a responsible manor that respects both the risks, and the individuality of a multitude of system types and occupancies. By avoiding a painting every system with the same brush approach, and instead utilizing the risk assessment principles of the cybersecurity industry, the costs associated with providing a comprehensive level of cybersecurity and the additional cost of ongoing independent testing and verification can be applied where the risk likelihood and consequences require it.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 603-NFPA 72-2019 [Section No. 21.2.11]	

Public Input No. 613-NFPA 72-2019 [New Section after 3.3.63]
Public Input No. 618-NFPA 72-2019 [Section No. 7.2.1]
Public Input No. 620-NFPA 72-2019 [Section No. 7.8.2]
Public Input No. 621-NFPA 72-2019 [New Section after A.10.4.5]
Public Input No. 622-NFPA 72-2019 [Section No. 14.3.1]
Public Input No. 626-NFPA 72-2019 [New Section after 23.6.3.8.8]
Public Input No. 629-NFPA 72-2019 [New Section after 24.3.12.10]
Public Input No. 630-NFPA 72-2019 [New Section after 26.2.9]
Public Input No. 631-NFPA 72-2019 [New Section after 27.2.4]

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:14:48 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The Technical Committee has proposed a first revision which addresses the cyber security concerns.

Public Input No. 451-NFPA 72-2019 [Section No. 10.5.3]

10.5.3* Inspection, Testing, and Service Personnel. (SIG-TMS)

10.5. 3 The system completion documentation shall include the name of the cyber security standard(s) and levels employed.

10.5. 3.1* Inspection Personnel.

Inspections shall be performed by personnel who have developed competence through training and experience that are acceptable to the authority having jurisdiction or meet the requirement of 10.5.3.4.

10.5.3.2* Testing Personnel.

Testing personnel shall have knowledge and experience of the testing requirements contained in this Code, of the equipment being tested, and of the test methods. That knowledge and experience shall be acceptable to the authority having jurisdiction or meet the requirement of 10.5.3.4.

10.5.3.3 Service Personnel.

Service personnel shall have knowledge and experience of the maintenance and servicing requirements contained in this Code, of the equipment being serviced or maintained, and of the servicing or maintenance methods. That knowledge and experience shall be acceptable to the authority having jurisdiction or meet the requirement of 10.5.3.4.

10.5.3.4 Means of Qualification.

Qualified personnel shall include, but not be limited to, one or more of the following:

(1)* Personnel who are factory trained and certified for the specific type and brand of system being serviced

(2)* Personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction

(3)* Personnel who are registered, licensed, or certified by a state or local authority to perform service on systems addressed within the scope of this Code, either individually or through their affiliation with an organization

(4) Personnel who are employed and qualified by an organization listed by a nationally recognized testing laboratory for the servicing of systems within the scope of this Code

10.5.3.5* Programming Personnel.

10.5.3.5.1

Personnel programming a system shall be certified by the system manufacturer.

10.5.3.5.2

System installation personnel shall be permitted to configure systems in the field per manufacturers' published instructions.

10.5.3.5.3

System end users shall be permitted to manage system operation per manufacturers' published instructions or training.

10.5.3.6 Evidence of Qualification.

Evidence of qualifications shall be provided to the authority having jurisdiction upon request.

Statement of Problem and Substantiation for Public Input

The cyber security design level is important in determining the robustness of the system in various environments.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema

Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 14:48:57 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The requirements are proposed in the wrong location and have been addressed in the documentation, Chapter 7.

Public Input No. 316-NFPA 72-2019 [Section No. 10.5.3.4]

10.5.3.4 Means of Qualification.

Qualified personnel shall include, but not be limited to, one or more of the following:

(1)* Personnel who are factory trained and certified for the specific type and brand of system being serviced

(2)* Personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction

(3)* Personnel who are registered, licensed, or certified by a state or local authority to perform service on systems addressed within the scope of this Code, either individually or through their affiliation with an ~~organization~~

(4) ~~Personnel who are employed and qualified by an organization listed by a nationally recognized testing laboratory for the servicing of systems within the scope of this Code~~

(5) organization

Statement of Problem and Substantiation for Public Input

Qualifications are a required and have acceptable means to demonstrate qualifications are included in the code. Just being employed by either a listing agency or working for a company that is listed does not provide any evidence of the individuals qualifications. We not allow AHJ inspections and plan review personnel to perform those duties just because the chief has assigned them to to that job, then why are we allowing this qualification.

Submitter Information Verification

Submitter Full Name: Thomas Parrish
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 12:16:40 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The section in question clearly states that the personnel must be qualified by the listed organization.

Public Input No. 452-NFPA 72-2019 [Section No. 10.5.4]

10.5.4 Plans Examiners and Inspectors.

10.5. 4 Documentation containing instructions regarding the installation and maintenance of cyber security related system elements shall be provided to the system owner, or network provider as appliable.

10.5. 4.1

Plans and specifications submitted for review and approval shall be reviewed by personnel who are qualified to review such plans and specifications.

10.5.4.2

System installations shall be inspected by personnel who are qualified to perform such inspections.

10.5.4.3

State or local licensure regulations shall be followed to determine qualified personnel.

10.5.4.4

Personnel shall provide documentation of their qualifications by one or more of the following:

(1) Registration, licensing, or certification by a state or local authority

(2) Meeting the requirements of NFPA 1031

(3) Assignment by the authority having jurisdiction to personnel having equivalent competency with 10.5.4.4(1) or 10.5.4.4(2)

Statement of Problem and Substantiation for Public Input

Cyber security features can be readily compromised by improper installation and maintenance practices and the responsible parties must be made aware of the installation and maintenance required practices.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 14:51:25 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The requirements are proposed in the wrong location and have been addressed in the documentation, Chapter 7.

Public Input No. 488-NFPA 72-2019 [New Section after 10.5.6]

10.5.7 Trained Response Personnel

10.5.7.1* Trained Response Personnel shall be individuals who have become proficient in performing a skill reliably and safely through instruction and practice/field experience acceptable to the AHJ to carry out the duties to which they have been assigned, including the receipt, handling, assignment, investigation, and documentation of critical assignments and duties which may have a definite effect on the life safety of building occupants.

10.5.7.2 Trained response personnel shall be qualified or shall be supervised by persons who are qualified in the receipt, handling, investigation, and documentation of life safety system alarm response.

10.5.7.3 Fire service response personnel shall meet the requirement of qualified and trained response personnel.

A.10.5.7.1 For the purposes of this Code, Trained Response Personnel shall be trained and experienced personnel who should be thoroughly aware or trained, including the following items:

(1) Be thoroughly familiar with the floor plan and layout of the facility, including room names and descriptions.

(2) Understand the programmed fire alarm sequence, including presignal, positive alarm sequence, cross-zoning, or other applicable sequences. This includes understanding the specific time sequences involved in the programming.

(3) Be able to accurately distinguish all specific fire alarm devices by sight and accurately understand what activates each device.

(4) Be able to make an accurate and thorough decision regarding the emergency situation in a limited amount of time.

Statement of Problem and Substantiation for Public Input

Paragraph 23.8.1.2.1 requires that “trained personnel” acknowledge an alarm condition within 15 seconds and investigate an alarm condition within 180 seconds “to evaluate the fire condition and reset the system.” This “trained personnel” term is not defined in NFPA 72 nor in the “NFPA Glossary of Terms – 2019”. Thus, given the importance of this alarm investigation, a defined term should be added. A related PI changes the term “trained personnel” to “qualified personnel” in 23.8.1.2.1 and a new definition for ‘trained response personnel’ is provided as a new paragraph 10.5.7. A definition of this term is offered, and Annex material is offered that is more specific to this term as it applies to NFPA 72, Paragraph 23.8.1.2.1. The Annex material is based on what is critical for the trained/qualified personnel to understand as they investigate a positive alarm sequence within the very limited amount of time available in the Code. The AHJ must know that the “trained/qualified personnel” will be adequately qualified before permitting a delayed notification sequence like positive alarm sequence, and this language, for the first time, provides adequate definitions of this term.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 487-NFPA 72-2019 [Section No. 23.8.1.2]	
Public Input No. 489-NFPA 72-2019 [Section No. 23.8.1.1.2]	
Public Input No. 490-NFPA 72-2019 [New Section after 3.3.200.5]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:

City:
State:
Zip:
Submittal Date: Mon Jun 24 23:01:18 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: Trained response personnel may not only be the fire service but could be onsite fire brigades or facility managers for example. Qualified personnel are already defined and used within the body of the code.

Public Input No. 440-NFPA 72-2019 [Section No. 10.6.4]

Consider revising the section below to align with

10.6.4* Stored Energy ~~Storage~~ Power Supply Systems (~~ESS~~ SEPSS).

10.6.4.1

The ~~ESS device~~ SEPSS device shall be configured in compliance with NFPA 111 for a Type O, Class 24, Level 1 system.

10.6.4.2

Where connected to an engine-driven generator arranged in accordance with 10.6.11.3.1, the ~~ESS device~~ SEPSS device shall be permitted to be configured in compliance with NFPA 111 for a Type O, Class 4, Level 1 system.

10.6.4.3

The ~~ESS device~~ SPESS device shall comply with the requirements of 10.6.5.

10.6.4.4

Failure of the ~~ESS shall~~ SPESS shall result in the initiation of a trouble signal in accordance with Section 10.15.

Statement of Problem and Substantiation for Public Input

Aligned with NFPA 111 termanology. ESS are now covered by NFPA 855 and carry a different meaning/use than SEPSS.

Submitter Information Verification

Submitter Full Name: Joshua Brackett
Organization: Baptist Health
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 12:24:15 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5157-NFPA 72-2019
Statement: The text correlates with NFPA 111 Standard on Stored Electrical Energy Emergency and Standby Power Systems. The Technical Committee revises the text by deleting the Class 24 capacity designation and adds text to require EPSS/SEPSS capacity in accordance with this Code. The reference to 10.6.7.3.1(2) in PI 636 was not included since this is addressed by the 10.6.4.2 Class 4 requirement and there is no standby vs. alarm load differentiated in 10.6.7.3.1(2).

Public Input No. 636-NFPA 72-2019 [New Section after 10.6.4.1]

TITLE OF NEW CONTENT

The energy capacity of the ESS device shall be determined using the same loading requirements as for secondary power supplies specified in 10.6.7.2 or for an ESS backed by a generator, 10.6.7.3.1(2).

Statement of Problem and Substantiation for Public Input

See related PI that removes Class 24. This makes it clear that the ESS must have the same storage capability as secondary power supplies. That is 24/5, 25/15 or 4/5, 4/15.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 635-NFPA 72-2019 [Section No. 10.6.4.1]	
Public Input No. 637-NFPA 72-2019 [New Section after 10.6.4.1]	
Public Input No. 635-NFPA 72-2019 [Section No. 10.6.4.1]	
Public Input No. 637-NFPA 72-2019 [New Section after 10.6.4.1]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:44:15 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5157-NFPA 72-2019

Statement: The text correlates with NFPA 111 Standard on Stored Electrical Energy Emergency and Standby Power Systems. The Technical Committee revises the text by deleting the Class 24 capacity designation and adds text to require EPSS/SEPSS capacity in accordance with this Code. The reference to 10.6.7.3.1(2) in PI 636 was not included since this is addressed by the 10.6.4.2 Class 4 requirement and there is no standby vs. alarm load differentiated in 10.6.7.3.1(2).

Public Input No. 637-NFPA 72-2019 [New Section after 10.6.4.1]

TITLE OF NEW CONTENT

The power delivered by the ESS device shall be based on the largest system demand.

Statement of Problem and Substantiation for Public Input

An ESS stores energy. Like a keg. However, I can have a large energy capacity, but the system might not be able to discharge at the rate that the system needs. That is the difference between power and energy. It is typically only with very large systems where the ability to provide sufficient current is hampered by ESS capabilities. In short, I can have a full keg (7.75 gallons) but will go thirsty is it it can only discharge at a rate of 1/4 gal/hour. An ESS might have a capacity of 1000 amp-hours, but not be able to discharge at a rate of 15 amps (made up example). While this might be an issue also for secondary batteries, it is rare because the charger and power supply are designed by the mfg to work over a specified range. An ESS is a complete 3rd party system, so requires additional engineering scrutiny.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 635-NFPA 72-2019 [Section No. 10.6.4.1]	
Public Input No. 636-NFPA 72-2019 [New Section after 10.6.4.1]	
Public Input No. 635-NFPA 72-2019 [Section No. 10.6.4.1]	
Public Input No. 636-NFPA 72-2019 [New Section after 10.6.4.1]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:50:14 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5157-NFPA 72-2019

Statement: The text correlates with NFPA 111 Standard on Stored Electrical Energy Emergency and Standby Power Systems. The Technical Committee revises the text by deleting the Class 24 capacity designation and adds text to require EPSS/SEPSS capacity in accordance with this Code. The reference to 10.6.7.3.1(2) in PI 636 was not included since this is addressed by the 10.6.4.2 Class 4 requirement and there is no standby vs. alarm load differentiated in 10.6.7.3.1(2).

Public Input No. 635-NFPA 72-2019 [Section No. 10.6.4.1]

10.6.4.1

The ESS device shall be configured in compliance with NFPA 111 for a Type O, ~~Class 24,~~ Level 1 system.

Statement of Problem and Substantiation for Public Input

Removed the Class 24 requirement. See related proposal for defining required capacity. This was done because "Class" in NFPA 111 is a rating for how long the load can be carried. But, in NFPA 72 we typically require two different loads for different periods of time. Specifying Class 24 might result in a system with 24 hours of standby and zero energy reserve for a subsequent alarm load as would be required if a user chooses the two source option in 10.6.3.1.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 636-NFPA 72-2019 [New Section after 10.6.4.1]	
Public Input No. 637-NFPA 72-2019 [New Section after 10.6.4.1]	
Public Input No. 636-NFPA 72-2019 [New Section after 10.6.4.1]	
Public Input No. 637-NFPA 72-2019 [New Section after 10.6.4.1]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:42:59 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5157-NFPA 72-2019

Statement: The text correlates with NFPA 111 Standard on Stored Electrical Energy Emergency and Standby Power Systems. The Technical Committee revises the text by deleting the Class 24 capacity designation and adds text to require EPSS/SEPSS capacity in accordance with this Code. The reference to 10.6.7.3.1(2) in PI 636 was not included since this is addressed by the 10.6.4.2 Class 4 requirement and there is no standby vs. alarm load differentiated in 10.6.7.3.1(2).

Public Input No. 384-NFPA 72-2019 [Section No. 10.6.4.3]

10.6.4.3

The ~~ESS device shall~~ ESS shall comply with the requirements of 10.6.5.

Statement of Problem and Substantiation for Public Input

By it's own definition, an ESS is a system not a device. This clarifiaction supports the differenation, eliminating potential confusion between an ESS in the context of NFPA 111 and a commerical UPS - which many would consider a device.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 383-NFPA 72-2019 [New Section after 10.6.8.4]	Supporting the changes proposed in 10.6.8 and the substantiation of PI 383.

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 18:55:44 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5157-NFPA 72-2019

Statement: The text correlates with NFPA 111 Standard on Stored Electrical Energy Emergency and Standby Power Systems. The Technical Committee revises the text by deleting the Class 24 capacity designation and adds text to require EPSS/SEPSS capacity in accordance with this Code. The reference to 10.6.7.3.1(2) in PI 636 was not included since this is addressed by the 10.6.4.2 Class 4 requirement and there is no standby vs. alarm load differentiated in 10.6.7.3.1(2).

Public Input No. 309-NFPA 72-2019 [Section No. 10.6.7.2]

10.6.7.2 *

~~Capacity~~

Capacity .

10.6.7.2.1

–

~~The~~

The secondary power supply for all systems that do not use in-building fire emergency voice/alarm communications service shall have sufficient capacity to operate the system under quiescent load (system operating in a nonalarm condition) for a minimum of 24 hours and, at the end of that period, shall be capable of operating all alarm notification appliances used for evacuation or to direct aid to the location of an emergency for 5 minutes, unless otherwise permitted or required by 10.6.7.2.

~~1.1~~

2 through 10.6.7.2.

~~2.~~

10.

~~6.7.~~

2.

~~1.1~~ * –

~~Battery calculations shall include a minimum 20 percent safety margin above the calculated amp-hour capacity required.~~

10.6.7.2.

~~1.~~

2

–

The secondary power supply for in-building fire emergency voice/alarm communications service shall be capable of operating the system under quiescent load for a minimum of 24 hours and then shall be capable of operating the system during a fire or other emergency condition for a period of 15 minutes at maximum connected load.

10.6.7.2.

~~1.~~

3

–

The secondary power supply capacity for supervising station facilities and equipment shall be capable of supporting operations for a minimum of 24 hours.

10.6.7.2.

~~1.~~

4

–

The secondary power supply for high-power loudspeaker arrays used for wide-area mass notification systems shall be in accordance with 24.6.5.2 .

10.6.7.2.

~~1.~~

5

–

The secondary power supply for textual visual notification appliances shall be in accordance with 24.6.10.1 .

10.6.7.2.

~~1.~~

6

~~–~~

The secondary power supply capacity for emergency command centers of a wide-area mass notification systems shall be capable of supporting operations for a minimum of 24 hours.

10.6.7.2.

~~1.~~

7

~~–~~

The secondary power supply for in-building mass notification systems shall be capable of operating the system under quiescent load for a minimum of 24 hours and then shall be capable of operating the system during emergency conditions for a period of 15 minutes at maximum connected load.

10.6.7.2.

~~2~~ –

8 The secondary power supply capacity required shall include all power supply loads that are not automatically disconnected upon the transfer to secondary power supply.

10.6.7.2.

~~3~~ ~~*~~ –

9* Battery calculations shall include a minimum 20 percent safety margin above the calculated amp-hour capacity required. (note: annex would be the old A.10.6.7.2.1.1)

10.6.7.2.10 Carbon Monoxide Detection

10.6.7.2.10.1* Where carbon monoxide detection is not monitored by a supervising station, the secondary power supply shall have sufficient capacity to operate the carbon monoxide detection system under quiescent load (system operating in a nonalarm condition) for a minimum of 24 hours and, at the end of that period, shall be capable of operating the carbon monoxide detection system and all carbon monoxide notification appliances for 12 hours.

~~(note annex would be the old A. 10.6.7.2.~~

~~4~~

~~3)~~ ~~–~~

~~**10.6.7.2.10.2** - Where carbon monoxide detection is monitored by a supervising station, the secondary power supply shall have sufficient capacity to operate the carbon monoxide detection system under quiescent load (system operating in a nonalarm condition) for a minimum of 24 hours and, at the end of that period, shall be capable of operating the carbon monoxide detection system and all notification appliances for 5 minutes.~~

Additional Proposed Changes

File Name	Description	Approved
Secondary_Power.docx	A clean version of the proposed new text	

Statement of Problem and Substantiation for Public Input

This is suggested as a reorganization that is not intended to change any requirements, but to make the requirements more clear. The problem is that the sections are not mutually exclusive, so the Code contradicts itself and the 20% safety factor technically only applies to section 10.6.7.2.1 since it is a subset of that section. It could be argued that the 20% safety factor does not apply to existing section 10.6.7.2.1.2 since it is a subset of 10.6.7.2.1 and has no effect on 10.6.7.2.1.2, but the intent of the committee seems to be that they want it to apply to 10.6.7.2.1.2.

The language of 10.6.7.2.1.2 is contradictory to 10.6.7.2.1.1 since 10.6.7.2.1.1 seems to apply to all systems. The language needs to clarify that 10.6.7.2.1.1 only applies to those systems where 10.6.7.2.1.2 does not apply. I have tried to fix these problems with the reorganization.

Submitter Information Verification

Submitter Full Name: Kenneth Isman

Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 17 17:08:01 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5186-NFPA 72-2019

Statement: The text has been reorganized for readability. Thus, carbon monoxide detection remains a separate section.

The Technical Committee revises the text for derating batteries (10.6.7.2.3) to apply a minimum 1.25 correction factor and adds further guidance to the annex for other battery technologies and temperature compensation.

The Technical Committee adds the section numbered 10.6.7.2.1.7 to clarify that communications equipment at the protected premises that is used to transmit signals to a supervising station must have primary and secondary power sources.

The Technical Committee does not accept a mandated minimum with respect to the number of addressable devices that should be supported during an alarm condition. This parameter should be specified by the manufacturer in accordance with the product listing.

Public Input No. 17-NFPA 72-2018 [Section No. 10.6.7.2.1.1]

10.6.7.2.1.1*

Battery calculations shall include a minimum 20 percent safety margin above the calculated amp-hour capacity required. When calculating the battery alarm load in systems with Signaling Line Circuits, the designer shall allow for a maximun of 20% of the initiating device being in alarm per circuit that must include the total number of signal and relay modules that will operate to a worst case alarm conditon.

Statement of Problem and Substantiation for Public Input

There is no real set or defined amounts of devices in addressable system that must be calculated to be in alarm when figuring the back up battery requirements. Figuring 100% percent is not realistic and from my investigation the manufactures are not stating a number but just providing a chart used to figure this out. For example, a system with three loops may have a total of three hundred smoke detectors, if all were in alarm at the same time all the lights on they would not be on due to loop current power limitations and the likelihood of this happening with the building being fully occupied is little to none. Everyone would or should have been out or safe by that point. There got to be some sort of a rule and number to use here just like the 20% figure for over sizing the batteries. This was recently discussed with a manufactures and others in the industry with me. Additionally there are limitations as to the size batteries that these fire alarm systems can handle and charge so there got to be limitations here as well. To figure 100% can exceed the sized of the battery changes so what then? We are forced by AHJ's to figure 100% because this is undefined as it must be and not at 100%. The alarm operation time is set and this should be as well. What is calculated for the backup battery load but does not state when doing the backup battery load calculations what percent of the alarm detection devices must be calculated to be in alarm and using the 100% figure on a very large addressable systems does not make any sense. This should apply to systems with IDC's and conventional detection zones since the same issues applies with the LED operation based upon current limitations. I can also applies to conventional system without IDC's.

Submitter Information Verification

Submitter Full Name: Stuart Gilbert
Organization: Superior Prot Svcs
Street Address:
City:
State:
Zip:
Submittal Date: Sat Oct 27 15:53:55 EDT 2018
Committee: SIG-FUN

Committee Statement

Resolution: FR-5186-NFPA 72-2019

Statement: The text has been reorganized for readability. Thus, carbon monoxide detection remains a separate section.

The Technical Committee revises the text for derating batteries (10.6.7.2.3) to apply a minimum 1.25 correction factor and adds further guidance to the annex for other battery technologies and temperature compensation.

The Technical Committee adds the section numbered 10.6.7.2.1.7 to clarify that communications equipment at the protected premises that is used to transmit signals to a supervising station must have primary and secondary power sources.

The Technical Committee does not accept a mandated minimum with respect to the number of

addressable devices that should be supported during an alarm condition. This parameter should be specified by the manufacturer in accordance with the product listing.

Public Input No. 560-NFPA 72-2019 [Section No. 10.6.7.2.1.1]

10.6.7.2.1.1*

Battery calculations shall include a ~~minimum 20 percent safety margin above the calculated amp-hour capacity required~~ correction factor of 1.25 to ensure the system's current demand can be met by the battery after a 20 percent loss in capacity at the end of useful service life .

Additional Proposed Changes

File Name	Description	Approved
IEEE_485.docx	IEEE-485, Section 6.2.3 Aging factor	

Statement of Problem and Substantiation for Public Input

Fire alarm manufacturer's published literature (e.g., Simplex 4100ES, Notifier NFS2-640, Gamewell S3 installation manuals) often list a derating factor of 1.2 in battery calculations to offset reductions in battery performance. A derating factor of 1.2 is mathematically incorrect and does not provide a 20 percent safety margin at the end of battery service life. Since a battery must continue to provide 100 percent of the system's calculated current demand even when capacity has decreased to 80 percent, the correct multiplication factor that should be used in battery calculations is 1.25 (e.g., 80% x 1.2 = 96% whereas 80% x 1.25 = 100%). Fire alarm manufacturers should begin using 1.25 as the standard correction factor. From Section 6.2.3, Aging Factor, of IEEE-Std-485, Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications, . . . "to ensure that the battery is capable of meeting its design loads throughout its service life, the battery's rated capacity should be at least 125% (1.25 aging factor) of the load expected at the end of its service life."

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 564-NFPA 72-2019 [New Section after 10.6.7.2.1.2]	
Public Input No. 564-NFPA 72-2019 [New Section after 10.6.7.2.1.2]	
Public Input No. 576-NFPA 72-2019 [Section No. A.10.6.7.2.1.1]	
Public Input No. 580-NFPA 72-2019 [New Section after A.10.6.7.2.1.1]	

Submitter Information Verification

Submitter Full Name: Herbert Hurst
Organization: Savannah River Nuclear Solutio
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:15:58 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5186-NFPA 72-2019

Statement: The text has been reorganized for readability. Thus, carbon monoxide detection remains a separate section.

The Technical Committee revises the text for derating batteries (10.6.7.2.3) to apply a minimum 1.25 correction factor and adds further guidance to the annex for other battery technologies and temperature compensation.

The Technical Committee adds the section numbered 10.6.7.2.1.7 to clarify that communications equipment at the protected premises that is used to transmit signals to a supervising station must have primary and secondary power sources.

The Technical Committee does not accept a mandated minimum with respect to the number of addressable devices that should be supported during an alarm condition. This parameter should be specified by the manufacturer in accordance with the product listing.

Public Input No. 564-NFPA 72-2019 [New Section after 10.6.7.2.1.2]

10.6.7.2.1.2*

For battery operation in environments less than 77F battery calculations shall include a temperature correction factor for the minimum expected design temperature.

Additional Proposed Changes

File Name	Description	Approved
IEEE_485.docx	IEEE-485 Table 1, Correction Factors for Temperature	

Statement of Problem and Substantiation for Public Input

This PI was originally submitted as part of the Chapter 14 Battery Task Group effort to revise battery testing for the 2019 edition. The Task Group included members of the IEEE Stationary Battery Committee who recognized that provisions for temperature compensation are not included in NFPA 72. Fire panels are listed for temperatures as low as 32F. As can be seen from the Attachment 1, TABLE 1 of IEEE-Std-485, Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications, there's a temperature correction factor of 1.3 at 40F because battery capacity is reduced approximately 23 percent between the rated temperature of 77F and 40F. For example, the capacity of an 18AH battery will be reduced to 13.8 AH at 40F from temperature alone.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 560-NFPA 72-2019 [Section No. 10.6.7.2.1.1]	
Public Input No. 576-NFPA 72-2019 [Section No. A.10.6.7.2.1.1]	
Public Input No. 580-NFPA 72-2019 [New Section after A.10.6.7.2.1.1]	
Public Input No. 560-NFPA 72-2019 [Section No. 10.6.7.2.1.1]	
Public Input No. 576-NFPA 72-2019 [Section No. A.10.6.7.2.1.1]	
Public Input No. 580-NFPA 72-2019 [New Section after A.10.6.7.2.1.1]	

Submitter Information Verification

Submitter Full Name: Herbert Hurst
Organization: Savannah River Nuclear Solutio
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:25:25 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5186-NFPA 72-2019
Statement: The text has been reorganized for readability. Thus, carbon monoxide detection remains a separate section.

The Technical Committee revises the text for derating batteries (10.6.7.2.3) to apply a minimum 1.25 correction factor and adds further guidance to the annex for other battery technologies and temperature compensation.

The Technical Committee adds the section numbered 10.6.7.2.1.7 to clarify that communications equipment at the protected premises that is used to transmit signals to a supervising station must have primary and secondary power sources.

The Technical Committee does not accept a mandated minimum with respect to the number of addressable devices that should be supported during an alarm condition. This parameter should be specified by the manufacturer in accordance with the product listing.

Public Input No. 393-NFPA 72-2019 [New Section after 10.6.7.2.1.7]

TITLE OF NEW CONTENT

10.6.7.2.1.8 The secondary power supply for communications technologies used to transmit signals between the protected premises and a supervising station shall be capable of operating the communications technology for a minimum of 24 hours under a non-transmit condition.

Statement of Problem and Substantiation for Public Input

Many times a transmitter used to send signals from a protected premises to a supervising station is integral to the fire alarm control unit and the secondary power for the FACU will supply secondary power to the transmitter (DACT, IP Communicator, etc.). There are also many times when the transmitter is detached (Private One-Way radio, DACT, GSM radio, IP Communicator) from the FACU and receives its own primary power. This equipment would also require secondary power to ensure its operation during the loss of the primary power. Based on questions from AHJs and contractors about secondary power requirements for these detached transmission means, SIG-FUN should consider adding this requirement for clarification.

Submitter Information Verification

Submitter Full Name: Warren Olsen
Organization: Fire Safety Consultants, Inc.
Affiliation: Illinois Fire Inspectors Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 13:19:23 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5186-NFPA 72-2019

Statement: The text has been reorganized for readability. Thus, carbon monoxide detection remains a separate section.

The Technical Committee revises the text for derating batteries (10.6.7.2.3) to apply a minimum 1.25 correction factor and adds further guidance to the annex for other battery technologies and temperature compensation.

The Technical Committee adds the section numbered 10.6.7.2.1.7 to clarify that communications equipment at the protected premises that is used to transmit signals to a supervising station must have primary and secondary power sources.

The Technical Committee does not accept a mandated minimum with respect to the number of addressable devices that should be supported during an alarm condition. This parameter should be specified by the manufacturer in accordance with the product listing.

Public Input No. 204-NFPA 72-2019 [New Section after 10.6.7.3.2]

TITLE OF NEW CONTENT

Type your content here ...New Paragraph 10.6.7.3.3

Fire Alarm Systems monitoring Emergency Servicwes Communications System shall increase the secondary energy source capacity to comply with NFPA 1221 as outlined in pargraph 9.6.12.2 (2)

Statement of Problem and Substantiation for Public Input

NFPA 1221 which is for Emergency Services Communication Systems is required to continue functioning as the first responders resolve the fire situation at the protected Premise. Therefore the secondary capacity needs to be 24 hours of standby plus alarm for fire alarm panel of either 5 to 10 minutes of alarm or 15 minutes for fire voice at 100% is not enough capacity to comply with the requirementsd of NFPA 1221 which is 12 hours at 100% useage.

Submitter Information Verification

Submitter Full Name: Vic Humm
Organization: Vic Humm &; Associates
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 30 10:40:05 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: NFPA 1221 section 9.6.13.2.1 requires that a dedicated annunciator be provided within the fire command center to annunciate the status a two-way radio communications enhancement system. NFPA 1221 section 9.6.12 requires a secondary source of power that provides 12 hours of operation for all active electronic components. The dedicated annunciator is an active component and it will therefore provide system status during emergency operations for up to 12 hours. The fire alarm system should not be required to increase alarm load capacity to 12 hours when the status of the two-way radio communications enhancement system is available to the emergency operations personnel via the dedicated annunciator.

Public Input No. 574-NFPA 72-2019 [Section No. 10.6.8]

10.6.8 Power Supply for Remotely Located ~~Control~~ Equipment.

10.6.8.1*

Additional power supplies required for system operation shall comply with 10.6.1 through 10.6.6 and with 10.6.9.

10.6.8.2

The location of remotely located power supplies shall be identified at the master control unit.

10.6.8.3

The master control unit display shall be permitted to satisfy the requirement of 10.6.8.2.

10.6.8.4

The location of remotely located power supplies shall be identified on the record drawings.

Statement of Problem and Substantiation for Public Input

There is no definition of "control equipment" in the standard. The component potentially used in this application might or might not be a control unit. The term "equipment" conveys the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:57:21 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: A new definition for control equipment has been added to Chapter 3.

Public Input No. 383-NFPA 72-2019 [New Section after 10.6.8.4]

10.6.8.5 Commercial Uninterruptable Power Supplies (UPS) utilized as an energy storage system (ESS) for remotely located control equipment are permitted to be listed to UL 1778 in leu of being configured in compliance with UL 111 when providing capacity in compliance with section 10.6.7.2.

Statement of Problem and Substantiation for Public Input

Commercial UPS are a well developed and mature standby power technology that is widely utilized in commercial, security, and health care applications for computer, network, and other equipment utilized for critical infrastructure and life safety purposes. It is often utilized to support power supply reliability requirements for remote equipment powered by means of power over ethernet, such as may be deployed on a Class N network. 10.6.8 recognizes the need for reliable power for remotely located control equipment and applies the same requirements as for other emergency equipment (as given by 10.6.1 through 10.6.6 and 10.6.9).

Power supply sources may consist of either “secondary power” or “energy storage systems”. In the case of Class N equipment powered over ethernet, the “secondary power option” of 10.6.3.2 – 10.6.3.4 is not appropriate because:
(a) The requirement calls for "at least two independent and reliable power supplies"…"one primary and one secondary", which could be interpreted such that commercial UPS don't qualify because they are often one integral device.
(b) Monitoring of the integrity of the power supply is required "at the point of connection to the system" which is not appropriate for remote equipment in general, and in the case of Power over Ethernet, it is monitored at the UPS itself, not the equipment being supplied.
(c) The storage battery must be dedicated to the system. For a UPS powering a PoE switch suppling power to remote equipment, it may be hard to argue that the battery is dedicated to the system. This requirement clearly reflects the traditional practice of installing batteries directly in the control panels, rather than as part of an external remote device as would be reflected by a commercial UPS.

The natural conclusion is that the option presented by 10.6.4, Energy Storage Systems, could be utilized. However, commercial UPS were removed from the body of the code and relegated to the Annex as a subset of an energy storage system. And while it is true that UPS in the broad definition is an energy storage system, the context of energy storage systems as used in 10.6.4 tends to practically speaking exclude commercial UPS.

10.6.4 creates the context of a Stored Electrical Energy Emergency and Standby Power Systems (SEPSS) by tying compliance to NFPA 111. These standby power systems, as expressed by NFPA 111 are distinct from a commercial UPS. NFPA 111 is written for a SEPSS. It separately and distinctly defines an Emergency Power System, and a UPS. NFPA 111 is not meant to apply to specific equipment or devices. It is designed to address the emergency standby power requirements of an entire facility. The scope of NFPA 111 is specifically: "installation, maintenance, operation, and testing requirements as they pertain to the performance of the stored energy emergency power supply system (SEPSS)".

Searching several leading commercial UPS manufactures product offerings, I did not discover a single reference to NFPA 111. However, very commonly these devices were listed to UL 1778, Standard for Uninterruptible Power System Equipment. There are no references to UL 1778 in NFPA 111, nor are there any references to NFPA111 in UL 1778. The conclusion is that NFPA 111 was not intended to apply to commercial UPS's - these are different things. So even though in the broad sense a commercial UPS is a type of ESS, in the context created by 10.6.4, it is not.

Class N devices are legitimately recognized by NFPA 72 and are expected to be deployed remotely. The Class N network pathway was created with power over ethernet networking in mind with expectation of leveraging commercially available technology ubiquitously deployed worldwide. A mature, listed, and readily available class of energy storage devices are available to support remote power supply requirements, but are excluded from use for remote devices by 10.6 as it currently stands. This public input resolves this problem in a responsible way by leveraging an ANSI/UL standard ensuring that these devices are listed for their purpose, and making a direct reference to the capacity requirements in 10.6.7.2 that are missing from 10.6.4 (but which certainly applies to remote control equipment deployed for emergency systems). Additionally, it re-introduces UPS in a way that clearly differentiates it from Stored Electrical Energy Emergency Standby Power Systems intended to be deployed on a larger scale then a commercial UPS device.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 384-NFPA 72-2019 [Section No. 10.6.4.3]	
Public Input No. 385-NFPA 72-2019 [Section No. A.10.6.4]	
Public Input No. 386-NFPA 72-2019 [New Section after 3.3.99.2]	
Public Input No. 387-NFPA 72-2019 [New Section after A.3.3.99]	
Public Input No. 388-NFPA 72-2019 [New Section after 3.3.315]	
Public Input No. 389-NFPA 72-2019 [Section No. A.10.6.6]	

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 18:50:19 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5143-NFPA 72-2019
Statement: The appropriate standard for fire alarm systems is UL 864.

Public Input No. 146-NFPA 72-2019 [New Section after 10.6.10.1.2]

TITLE OF NEW CONTENT

Type your content here ...

10.6.10.1.3 Effective January 1, 2024, batteries used for secondary power supply use in control units, devices and accessories shall be listed or component recognized to UL 1989 Standard for Standby Batteries or UL 1642 Standard for Lithium Batteries as appropriate.

Statement of Problem and Substantiation for Public Input

As the energy density and safety concerns increase we need to take steps to ensure these energy storage devices meet basic safety standards.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 07 10:52:40 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5147-NFPA 72-2019
Statement: The Technical Committee adds a requirement for the use of recognized rechargeable batteries because energy density and associated safety concerns are increasing.

Public Input No. 64-NFPA 72-2019 [Section No. 10.6.11.3.1.3]

10.6.11.3.1.3

Where ~~survivability of~~ pathway survivability of circuits is required by another section of the Code, equal protection shall be provided for the secondary power supply circuits.

Statement of Problem and Substantiation for Public Input

Pathway survivability is the defined term in NFPA 72.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 14:09:57 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5148-NFPA 72-2019
Statement: The text is revised for consistency with defined terms.

Public Input No. 66-NFPA 72-2019 [New Section after 10.7.9]

10.7.10
Combination systems shall comply with 23.8.4.7.

Statement of Problem and Substantiation for Public Input

Chapter 23 contains priority of signals when combination systems are installed.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 14:32:01 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5149-NFPA 72-2019
Statement: Chapter 23 contains priority of signals when combination systems are installed.

Public Input No. 359-NFPA 72-2019 [New Section after 10.9]

Sequence of Operation.

The system Sequence of Operation shall be inidcated on the system drawings and shall indicate the required notification appliances operations, sub-functions opeations, superviory operations, and the intiating device operations.

Statement of Problem and Substantiation for Public Input

Fire alarm and other systems drawings require a "Sequence of Operation" and this code does not provide guidance or reference a Sequence of Operations.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 09:58:09 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: Chapter 7 contains requirements for a sequence of operation and the associated Annex material provides an example of how to document the sequence of operation.

Public Input No. 366-NFPA 72-2019 [Section No. 10.10.9]

10.10.9

Carbon monoxide alarm signals shall comply with 18.4.4 3 ~~.2~~.

Statement of Problem and Substantiation for Public Input

In 10.10.9, review x-ref “18.4.4.2” to “18.4.3” (distinctive CO audible alarm signal). Based on the original PI submittal from the CO Task Group, this section should parallel 10.10.8, which references 18.4.2 for distinctive evacuation signals. The x-ref appears to have been misplaced at the First Draft, with all of the new material from NFPA 720.

18.4.4.2 is the section that permits audible signaling to be eliminated for public mode where approved and when visual signaling is provided.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 11:51:16 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5150-NFPA 72-2019
Statement: The Technical Committee corrects the section reference.

Public Input No. 254-NFPA 72-2019 [Section No. 10.12.2]

10.12.2 *

When an occupant notification alarm signal deactivation means is actuated, both audible and visual notification appliances shall be simultaneously deactivated, unless deactivation of only the audible devices is approved by the AHJ .

Statement of Problem and Substantiation for Public Input

The current provisions of 10.12.2 are not always helpful to responders, particularly to larger buildings with multiple exterior assembly points. The FD needs to turn off the audible device so they can hear each other and their radios while searching for the problem. When evacuated occupants no longer hear the audible device and no longer see the visual devices operating, they assume it is clear and safe to return through access points, most not controlled by the FD. The suggestions in A.10.12.2 are likewise not helpful as it is difficult to command an incident near an entrance with an audible device sounding.

Submitter Information Verification

Submitter Full Name: Charles Jarrett
Organization: Gorham Fire Department
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 10 15:50:20 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The Technical Committee continues to require that both audible and visual notification appliances to alert the public be activated and deactivated simultaneously so as not to treat blind and hard of hearing individuals differently.

Public Input No. 646-NFPA 72-2019 [Section No. 10.15.9.2]

10.15.9.2

The audible and visible trouble signal associated with signaling the depletion or failure of the primary battery of a wireless system as required by 23.16.2.1 (3) and (4) and 23.16.2.2 (3), (4) nad (6) shall automatically resound every 4 hours or less until the depletion signal is restored to normal.

Statement of Problem and Substantiation for Public Input

Editorial revision. The reference to Clause 23.16.2.is not accurate because the clause was separated into two clauses - 23.16.2.1 and 23.16.2.2. This revision adds the intended referenced clauses.

Submitter Information Verification

Submitter Full Name: Lawrence Shudak
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 18:18:53 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5152-NFPA 72-2019
Statement: The Technical Committee corrects the section references.

Public Input No. 47-NFPA 72-2019 [Section No. 10.17.2]

10.17.2*

~~Notification appliance circuits that do not have notification appliances connected directly to the circuit shall be considered control circuits~~ A circuit that is connected to the notification appliance circuit terminals of a fire alarm system or NAC extender panel and is not directly connected to a notification appliance shall be considered a control circuit .

Statement of Problem and Substantiation for Public Input

This statement is in conflict with the definition of Notification Appliance Circuit. How can there be a notification appliance circuit without a notification appliance connected to it? That is the very definition of a notification appliance circuit. This would be similar to saying "An SLC that is not addressable" , "A heat detector that does not detect heat". This language adds clarity to what a control circuit is.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 50-NFPA 72-2019 [Section No. 10.17.3]	
Public Input No. 50-NFPA 72-2019 [Section No. 10.17.3]	

Submitter Information Verification

Submitter Full Name: John McCamish
Organization: NECA IBEW Electrical Training
Affiliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Fri Mar 15 13:40:20 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5172-NFPA 72-2019

Statement: The term "Control Circuit" has been defined in Chapter 3 to distinguish it from a Notification Appliance Circuit and deletes 10.17.2 and A.10.17.2 as they are no longer needed.

The Technical Committee requests the SIG-PRO Technical Committee and the Correlating Committee change 21.2.4 and A.21.2.4 to replace the term “control circuit” with “pathway” to avoid conflict.

Public Input No. 392-NFPA 72-2019 [Section No. 10.17.3]

10.17.3

Control circuits used for the purpose of controlling NAC extender panels shall comply with all of the following:

(1) The NAC extender panel(s) connected to the control circuit shall not serve more than one notification zone where partial evacuation or reolcation is used within the building .

(2) The control circuit shall be monitored for integrity in accordance with Section 12.6.

(3) A fault in the control circuit installation conductors shall result in a trouble signal in accordance with Section 10.15.

Statement of Problem and Substantiation for Public Input

The text of the NFPA 72 Handbook explains that Section 10.17.3 applies to extender panels where partial evacuation or relocation is the chosen method of signaling the occupants of the building. The revised code text would clarify this requirement as the current code text makes no mention of this condition.

Submitter Information Verification

Submitter Full Name: Warren Olsen
Organization: Fire Safety Consultants, Inc.
Affiliation: Illinois Fire Inspectors Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 13:08:58 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5175-NFPA 72-2019
Statement: The Technical Committee edits the text to clarify use of control circuits. By limiting control circuits to a single notification zone, it addresses partial evacuation. [The change to "supervised control circuits" is addressed separately in FR-5174.]

Public Input No. 48-NFPA 72-2019 [Section No. 10.17.3]

10.17.3

Control circuits used for the purpose of controlling NAC extender panels shall comply with all of the following:

(1) ~~The~~ A control circuit connected to a NAC extender panel ~~(s) connected to the control circuit~~ shall not serve more than one notification zone.

(2) The control circuit shall be monitored for integrity in accordance with Section 12.6.

(3) A fault in the control circuit installation conductors shall result in a trouble signal in accordance with Section 10.15.

Statement of Problem and Substantiation for Public Input

Currently, An extender panel could not serve more than one floor of a building. This is an enormous expense in additional installation time and materials. By making this change an extender panel served by more than one control circuit can be used to serve different notification zones. If one control circuit is opened, only one notification zone is affected. This is accomplish by programming of the extender panel by the setting of dip switches, for example.

Submitter Information Verification

Submitter Full Name: John McCamish
Organization: NECA IBEW Electrical Training
Affiliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Fri Mar 15 13:59:52 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5175-NFPA 72-2019
Statement: The Technical Committee edits the text to clarify use of control circuits. By limiting control circuits to a single notification zone, it addresses partial evacuation. [The change to "supervised control circuits" is addressed separately in FR-5174.]

Public Input No. 50-NFPA 72-2019 [Section No. 10.17.3]

10.17.3

Control circuits used for the purpose of controlling NAC extender panels shall comply with all of the following:

(1) The NAC extender panel(s) connected to the control circuit shall not serve more than one notification zone.

(2) The control circuit shall be monitored for integrity in accordance with Section 12.6.

(3) A fault in the control circuit installation conductors shall result in a trouble signal in accordance with Section 10.15.

(4) Notification Appliances shall not be connected to control circuits.

Statement of Problem and Substantiation for Public Input

Circuits that are used for control of a NAC extender panel are not notification appliance circuits. This makes is clear that notification appliances are only to be installed on notification appliance circuits.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 47-NFPA 72-2019 [Section No. 10.17.2]	
Public Input No. 47-NFPA 72-2019 [Section No. 10.17.2]	

Submitter Information Verification

Submitter Full Name: John McCamish
Organization: NECA IBEW Electrical Training
Affiliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Fri Mar 15 14:15:57 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5172-NFPA 72-2019

Statement: The term "Control Circuit" has been defined in Chapter 3 to distinguish it from a Notification Appliance Circuit and deletes 10.17.2 and A.10.17.2 as they are no longer needed.

The Technical Committee requests the SIG-PRO Technical Committee and the Correlating Committee change 21.2.4 and A.21.2.4 to replace the term “control circuit” with “pathway” to avoid conflict.

Public Input No. 62-NFPA 72-2019 [Section No. 10.17.3]

10.17.3

Control circuits used for the purpose of controlling ~~NAC~~ multiple NAC extender panels shall comply with all of the following:

(1) ~~The NAC extender panel(s) connected to the control~~ The control circuit shall not serve more than one notification zone.

(2) The control circuit shall be monitored for integrity in accordance with Section 12.6.

(3) A fault in the control circuit installation conductors shall result in a trouble signal in accordance with Section 10.15.

Statement of Problem and Substantiation for Public Input

Clarifies the intent of the document with respect to NAC extender panels serving multiple floors in a building.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 13:25:35 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5175-NFPA 72-2019
Statement: The Technical Committee edits the text to clarify use of control circuits. By limiting control circuits to a single notification zone, it addresses partial evacuation. [The change to "supervised control circuits" is addressed separately in FR-5174.]

Public Input No. 130-NFPA 72-2019 [Sections 10.18.1.1.1, 10.18.1.1.2]

Sections 10.18.1.1.1, 10.18.1.1.2

10.18.1.~~1.1~~ 2

Visible annunciation of the location of an operated initiating device shall be by an indicator lamp, alphanumeric display, printout, or other approved means.

10.18.1.~~1.2~~ 3

The visible annunciation of the location of operated initiating devices shall not be canceled by the means used to deactivate alarm notification appliances.

Statement of Problem and Substantiation for Public Input

10.18.1.1 is an orphan - there is no 10.18.1.2. The existing 10.18.1.1.1 and 10.18.1.1.2 are subordinate to 10.18.1 and do not have to be subordinate to 10.18.1.1.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 23 16:02:05 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5171-NFPA 72-2019
Statement: The Technical Committee reorganizes the sections to address style and editorial issues. The Technical Committee views the visible annunciation as generally provided by an annunciator (defined in 3.3.21) and not a notification appliance (defined in 3.3.182). Thus the “other” as suggested in PI 131 and PI 133 was not included. Attempts to rewrite the section to use the term annunciator was defeated by the allowance of a printout, which is neither an annunciator or a notification appliance.

Public Input No. 131-NFPA 72-2019 [Section No. 10.18.1.1.2]

10.18.1.1.2

The visible annunciation of the location of operated initiating devices shall not be canceled by the means used to deactivate other alarm notification appliances.

Statement of Problem and Substantiation for Public Input

Technically, the visual alarm display is an alarm notification appliance. This addition of "other" clarifies the intent and works with proposed Annex text.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 132-NFPA 72-2019 [New Section after A.10.17.2]	
Public Input No. 132-NFPA 72-2019 [New Section after A.10.17.2]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 23 16:05:06 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5171-NFPA 72-2019

Statement: The Technical Committee reorganizes the sections to address style and editorial issues. The Technical Committee views the visible annunciation as generally provided by an annunciator (defined in 3.3.21) and not a notification appliance (defined in 3.3.182). Thus the “other” as suggested in PI 131 and PI 133 was not included. Attempts to rewrite the section to use the term annunciator was defeated by the allowance of a printout, which is neither an annunciator or a notification appliance.

Public Input No. 25-NFPA 72-2019 [New Section after 10.18.2.1.1]

10.18.2.1.2 **Where addressable initiating devices are used, they shall be programmed with the room number, room description, general area, or specific location of the device.**

Statement of Problem and Substantiation for Public Input

Some contractors do not properly program addressable devices to facilitate an efficient response. The AHJ is left with somewhat vague language to enforce proper identification of the area where alarm signals originate. This change would provide the teeth needed to ensure devices indicate the correct room or area they serve.

Submitter Information Verification

Submitter Full Name: Merton Bunker
Organization: Merton Bunker and Associates
Affiliation: None
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jan 10 08:36:39 EST 2019
Committee: SIG-FUN

Committee Statement

Resolution: The Technical Committee does not consider 10.18.1 to be the appropriate location for a requirement on the specificity of location for addressable initiating devices. Neither was the Technical Committee able to identify a suitable location without setting out different requirements for conventional, addressable, and hybrid systems. As this section is invoked only when required, this issue would be better handled by specifications, other codes, and standards when they specify addressable systems or limits on zones.

Public Input No. 133-NFPA 72-2019 [Sections 10.18.2.1.1, 10.18.2.1.2]

Sections 10.18.2.1.1, 10.18.2.1.2

10.18.2.~~1.1~~ 2

Visible annunciation shall be by an indicator lamp, an alphanumeric display, ~~a~~ printout, or other means.

10.18.2.~~1.2~~ – 3

The visible annunciation of supervisory and/or trouble conditions shall not be canceled by the means used to deactivate other supervisory or trouble notification appliances.

Statement of Problem and Substantiation for Public Input

10.18.2.1 is an orphan - there is no 10.18.2.2. The existing 10.18.2.1.1 and 10.18.2.1.2 are subordinate to 10.18.2 and do not have to be subordinate to 10.18.2.1.
Technically, the visual alarm display is an alarm notification appliance. The addition of "other" clarifies the intent and works with proposed Annex text.
Deleted "a" before printout to be consistent with existing 10.18.1.1.1.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 23 16:18:42 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5171-NFPA 72-2019
Statement: The Technical Committee reorganizes the sections to address style and editorial issues. The Technical Committee views the visible annunciation as generally provided by an annunciator (defined in 3.3.21) and not a notification appliance (defined in 3.3.182). Thus the “other” as suggested in PI 131 and PI 133 was not included. Attempts to rewrite the section to use the term annunciator was defeated by the allowance of a printout, which is neither an annunciator or a notification appliance.

Public Input No. 157-NFPA 72-2019 [Section No. 12.2.1]

12.2.1*

Performance and pathway survivability characteristics of signaling pathways (interconnections) shall comply with the defined designations of this chapter.

Statement of Problem and Substantiation for Public Input

There is no NFPA 72 definition of “survivability characteristics”. Thus, it is more accurate and defined to state “pathway survivability” in this reference. Thus, when pathway survivability is required by Chapter 23 or 24, this requirement is applicable.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 13:36:15 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5008-NFPA 72-2019
Statement: The Technical Committee revises the text to agree with 12.4* Pathway Survivability. The Technical Committee also removes the word characteristics as it is not part of the 12.4* Pathway Survivability descriptor and is not used anywhere in Section 12.4.

Public Input No. 67-NFPA 72-2019 [Section No. 12.2.3.1]

12.2.3.1

Optical fiber cables installed as part of the fire alarm system shall meet the requirements of *NFPA 70* Article 770, and be protected against physical damage in accordance with *NFPA 70* Article ~~760~~ 300 .4.

Statement of Problem and Substantiation for Public Input

Article 760 only sends one to Article 300.4 so the user of NFPA 72 should be sent more directly to the requirements.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 14:54:44 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee doesn't agree that the removal of Article 760 is appropriate. Article 760 does provide physical damage requirements and already points to appropriate subsections of Article 300. In previous committee actions, it was determined to only identify the overall article and not the section.

Public Input No. 158-NFPA 72-2019 [New Section after 12.3.8]

12.3.8.1

In order to provide adequate separation between outgoing and return cables, the minimum separation to prevent physical demage is 12 in. (300 mm) where the cable is installed vertically and 48 in. (1.22 m) whre the cable is installed horizontally.

12.3.8.2

The separation distances required by 12.3.8.1 apply for the length of the given circuit except the room or area of circuit origin and room or area of circuit termination where outgoing and return circuites must inevitably be routed in close proximity as otherwise allowed in 12.3.8.3.

Statement of Problem and Substantiation for Public Input

This idea has been in the Annex of the Code for many cycles. It is time that this is moved to the body of the Code to provide enforceable definition of a very important characteristic of Class A, N, and X pathways. By moving this from the Annex to the Code, it provides more defined language for engineers and designers to use when defining and designing how certain circuits should be installed and allowing qualified performance alternatives to be explored. This is not a difficult requirement to meet, especially since the requirement provides exemption for spaces close to the origin and termination of circuits, which by nature will be terminating in the same control unit or terminal cabinet. AHJs must have actionable and enforceable language for these circuit pathway class designations in order to enforce proper installation.

Current 12.3.8.1 will become 12.3.8.3.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 159-NFPA 72-2019 [Section No. A.12.3.8]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 13:38:00 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee rejects the proposed change because moving the material to the body of the code requires technical justification. The 1-foot and 4-foot spacing are simple guidance and has allowed a starting point for evaluating the wiring protection. Additionally, these proposed requirements do not allow for other means of protection that have been accepted as standard engineering practice.

Public Input No. 13-NFPA 72-2018 [Section No. 12.3.8 [Excluding any Sub-Sections]]

Class A, Class N, and Class X circuits using physical conductors (e.g., metallic, optical fiber) shall be installed so that the primary and redundant, or outgoing and return, conductors exiting from and returning to the control unit, respectively, are routed separately.

Class A risers shall be seperated by a minimum of at least thirty six inches apart when in the same area or enclosed space such as a closet or room with a preference of being seperated by a fire rated wall or two completly seperate areas.

Statement of Problem and Substantiation for Public Input

There is nothing specifically address some sort of standard here other than in the annex that is not code. Other related items specifically address items such as sprinklers etc. This needs to be defined. Three feet is not based upon anything specific, but there got to be a starting point. The code does not specifically address the building riser (going form the bottom to top floor of a building) as opposed to vertical wire runs in a space or on just one floor and as explained to me the Annex is consider a suggestion as opposed to code. This needs a definite requirement at it applies to survivability of class "A" risers.

Submitter Information Verification

Submitter Full Name: Stuart Gilbert
Organization: Superior Prot Svcs
Street Address:
City:
State:
Zip:
Submittal Date: Fri Oct 26 13:41:23 EDT 2018
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee does not accept the change The intent of this section is to cover all of the redundant type classes (Class A, N and X). The proposed text only requires a 36-inch spacing for Class A risers and not all Class A, N, and X circuits. The submitter did not provide substantiation for the separation distance. The Manual of Style does not permit orders of preference.

Public Input No. 540-NFPA 72-2019 [Section No. 12.6.6]

12.6.6

Monitoring for integrity shall not be required for the circuit of an alarm notification appliance installed in the same room with the ~~central control equipment,~~ control unit it is connected to provided that the notification appliance circuit conductors are installed in conduit or are equivalently protected against mechanical injury.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 10:13:11 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5012-NFPA 72-2019
Statement: The term "central control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

The word "central" is deleted because this requirement applies to any control unit.

Public Input No. 541-NFPA 72-2019 [Section No. 12.6.9]

12.6.9

Monitoring for integrity shall not be required for the interconnection between enclosures containing control ~~equipment located~~ units located within 20 ft (6 m) of each other where the conductors are installed in conduit or equivalently protected against mechanical injury.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 10:18:27 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee does not agree that the term “control units” is the proper term. Paragraph 3.3.63 defines a control unit as a system component that monitors inputs and controls outputs through various types of circuits. 12.6.9 allows multiple enclosures to be interconnected. Interconnecting a battery box to a control unit is not interconnecting control units, because the battery box doesn’t control outputs per the definition.

Public Input No. 160-NFPA 72-2019 [Section No. 12.7]

12.7* Nomenclature.

The following nomenclature shall be used to identify the required properties of the system(s) interconnections and pathway survivability:

(1) System(s) interconnections

(2) ~~Survivability~~ Pathway survivability levels (not required if Level 0)

(3) Shared pathway levels (not required if Level 0)

(4) Pathway class designation

Statement of Problem and Substantiation for Public Input

There is no NFPA 72 definition of “survivability levels”. Thus, it is more accurate and defined to state “pathway survivability” in this reference. Also, since the Code clearly defines Level 0-3 of pathway survivability levels, it should be required to define what level of survivability is being required. Just because Level 0 is being required does not mean this should not be “required” to be noted clearly.

Item (4) must be added to match the requirements of the rest of Chapter 12. The nomenclature of each system shall include the pathway class designation of all circuits. It was an error to not include this previously. This will align to other public inputs to Chapter 7 to include circuit designations in design and shop drawings.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 13:45:34 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5015-NFPA 72-2019

Statement: There is no NFPA 72 definition of “survivability levels”. Thus, it is more accurate and defined to state “pathway survivability” in this reference. Also, since the Code clearly defines Level 0-3 of pathway survivability levels, it should be required to define what level of survivability is being required.

Item (4) is added to match the requirements of the rest of Chapter 12. The nomenclature of each system shall include the pathway class designation of all circuits.

Public Input No. 6-NFPA 72-2018 [Section No. 14.2.2.2]

14.2.2.2 Impairments ~~/Deficiencies.~~

14.2.2.~~2.1~~ – 3

The requirements of Section 10.21 shall be applicable when a system is impaired.

14.2.2.4 Deficiencies

14. 2.2– .4.1

System deficiencies shall be corrected.

14.2.2.4. ~~2.3~~ – _

If a deficiency is not corrected at the conclusion of system inspection, testing, or maintenance, the system owner or the owner's designated representative shall be informed of the deficiency in writing within 24 hours.

14.2.2.2 4 .4 – 3

In the event that any equipment is observed to be part of a recall program, the system owner or the system owner's designated representative shall be notified in writing.

Statement of Problem and Substantiation for Public Input

Impairments and Deficiencies are defined separately in Chapter 3 and Impairments are addressed separately in Chapter 10. Therefore, they should be treated separately in Chapter 14 and not categorized together in one section. Section numbers may need to be corrected in line with MOS requirements.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Wed Oct 17 08:54:27 EDT 2018
Committee: SIG-TMS

Committee Statement

Resolution: FR-5278-NFPA 72-2019
Statement: Impairments and deficiencies are defined separately in Chapter 3, and impairments are addressed separately in Chapter 10. Therefore, they should be treated separately in Chapter 14 and not categorized together in one section.

The revision clarifies when periodic testing is considered to cause an impairment and eliminates needless impairments for minor out-of-service events.

Public Input No. 585-NFPA 72-2019 [Section No. 14.2.2.2.1]

14.2.2.2.1 –

~~The~~

* –

Where an automatic function of a fire alarm or signaling system is taken out of service for performance testing in accordance with Table 14.4.3.2 and manual means or compensatory measures are unavailable to compensate for the automatic function, the system or portion thereof shall be impaired and the requirements of Section 10.21 shall ~~be applicable when a system is impaired~~ apply until the automatic function is restored .

Statement of Problem and Substantiation for Public Input

The proposed change would clarify when an impairment was actually needed for periodic testing and eliminate needless impairments for de minimis out of service events.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 591-NFPA 72-2019 [New Section after A.14.2.2.1.2]	

Submitter Information Verification

Submitter Full Name: Herbert Hurst
Organization: Savannah River Nuclear Solutio
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:04:28 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5278-NFPA 72-2019

Statement: Impairments and deficiencies are defined separately in Chapter 3, and impairments are addressed separately in Chapter 10. Therefore, they should be treated separately in Chapter 14 and not categorized together in one section.

The revision clarifies when periodic testing is considered to cause an impairment and eliminates needless impairments for minor out-of-service events.

Public Input No. 639-NFPA 72-2019 [New Section after 14.2.3]

New Definition -- Recommendation

New Definition -- Recommendation

Recommendation – A suggested Fire Alarm System correction, improvement, or enhancement made by Inspection, Service, or Testing Personnel made in writing not required by this or any other code/standard at the specific point in time when the recommendation is made. Recommendations shall not be considered required system deficiency or impairment repairs, but may become ones in the future . (SIG-TMS)

New Section after 14.2.2.2.4

Addition of "Recommendation"

During required testing, service, or maintenance of Fire Alarm Systems Inspection, Service, or Testing Personnel may make note of opportunities to correct, improve, or enhance existing system performance. Such observations shall be communicated to the system owner in writing. The System Owner shall not be required to authorize implementation of the recommendation unless the recommendation becomes an impairment or deficiency.

New Annex A Material – A.#.#.# Recommendation -- A recommendation should not be considered a required system deficiency or impairment repair, but may become one in the future. Examples might include -- manufacturer suggested device replacements, Executive Software updates, corroded electrical box/fitting/raceway replacement, descriptive label corrections or other similar items not directly impacting a systems ability to complete its intended function at the point in time when the recommendations was made.

Statement of Problem and Substantiation for Public Input

Resubmitting 2019 Public Input. Passed by one vote in NFPA 72 2019 TMS TC 1 Salt Lake City, Lost by one vote in NFPA 72 2019 TMS TC2 Charlotte. Support existed for floor vote, not pursued. Several instances over the past two years where formalized definition of recommendation would have been of benefit (example, "when is a descriptive label deficient versus inaccurate but acceptable"). Informal poll of Regional AFAA offers more support for (90%) than against. Where one trends on the issue favors the interests represented, but it is unreasonable to expect installer/servicer/maintainers to communicate critical non impairment/deficiency concerns without a formalized definition and submission vehicle for the system owner/representative to consider the recommendation in context. Provides remedy for the circle of blame.

Submitter Information Verification

Submitter Full Name: E. J. Kleintop
Organization: Johnson Controls/Tyco/SimplexG
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 17:29:25 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5235-NFPA 72-2019
Statement: The new text clarifies that owners are not required to address observations that are not impairments or deficiencies.

Public Input No. 320-NFPA 72-2019 [New Section after 14.2.3.6]

Qualifications of testing personnel.

The qualifications of testing personnel shall be up to the AHJ's discression. If AHJ does not have written requirements the testing personnel will present documentation from manufacturer or nationally accedited source of said qualifications.

Statement of Problem and Substantiation for Public Input

Currently the owner or owners representative are responsible for the care of systems. This would allow owners or reps the opportunity to save costs in obtain that certification from the manufacturer to test and inspect their own equipment. Several manufacturers require testing personnel to attend training on specific equipment in order to maintain warranties.

Submitter Information Verification

Submitter Full Name: Claude Shultes
Organization: Self
Affiliation: None
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 14:58:57 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: With the exception of Central Station Service, Chapter 10 already permits the system owner to perform testing if they meet the qualification requirements of testing personnel in 10.5.3.

Public Input No. 454-NFPA 72-2019 [New Section after 14.3]

TITLE OF NEW CONTENT Tables 14.3.1 and 14.3.2

Type your content here ...

See **attachment** for revisions to Table 14.3.1 and 14.3.2

Additional Proposed Changes

File Name	Description	Approved
Tables_14.3.1-14.3.2-TMS.docx.doc	Revisions to Tables 14.3.1 and 14.3.2	

Statement of Problem and Substantiation for Public Input

In the 2019 version of NFPA 72, the concept of the building systems information unit (BSIU) was introducted into chapters 23 and 24. The testing requirements were overlooked. Testing of these systems should be required.

see attachment for revision to tables.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:16:54 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: SIG-TMS requests that the Correlating Committee form a Task Group with members from SIG-PRO, SIG-ECS, and SIG-TMS to update Table 14.3.1 and Table 14.4.3.2 for all new equipment in those chapters that is not addressed in these tables. Some of the items suggested for Table 14.3.1 are testing requirements that would be more appropriately placed in Table 14.4.3.2.

Public Input No. 507-NFPA 72-2019 [New Section after 14.3.1]

TITLE OF NEW CONTENT -- Table 14.3.1 "Visual Inspection" Paragraph 17(13)

Type your content here -- X (initial acceptance) Frequency/Annual

Paragraph 17(13)

With reference to IFC Section 1103.9, verify that CO detectors/alarms are installed in accordance with other governing laws, codes, standards, or sections of this document, and in particular with NFPA 101 Section 29.3.4.6.1 (as amended). This visual inspection and verification are prereequisites for testing as called for in Table 14.4.3.2 ("Testing"), Section 17(9)(a), and are incorporated into the building owner's responsibilities as described in NFPA 72 Sections 14.2.3.1-14.2.3.4.

Note: The author of this Public Input also submitted Input to NFPA 101, Sections 29.3.4.6.1 as referenced above, and Section 28.3.4.7. The NFPA 101 Input is based closely on IFC 2012 Section 908.7. It is intended this amendment become the standard for installation of CO detectors/alarms in both new construction and existing buildings for reasons described more fully in the comment to this Input.

Statement of Problem and Substantiation for Public Input

Thank you very much for the opportunity to submit this Input. It is intended to solve the problem of existing hotels that do not currently offer any protection for their guests from carbon monoxide poisoning.

Every hotel in America has smoke detectors in every guest room and in its public areas. Would you hazard a guess as to how many have carbon monoxide detection? I bet the answer is very, very few. I am a hotelier, developer, and formerly a city planner with nine years experience in municipal government. My wife and I were recently poisoned by CO while staying in an out-of-state hotel. It was an upscale three star property, 3-4 years old -- and there was not one CO detector in the entire building As a result, I am working with local Fire Marshals to improve our hotel properties' CO detection capabilities. In addition, I would like to see a program that expands CO detection capability in hotels around the country.

The International Fire Code 2015, Section 1103.9 addresses this directly, and similar language has been in place since 2012.

Section 1103.9 EXISTING Group I-1, I-2, and R Occupancies shall be equipped with carbon monoxide alarms in accordance with Section 915 [new construction], except the CO alarms shall be allowed to be solely battery operated. (Emphasis added).

But it is apparent that just having this language in the Code is not in itself sufficient to make it happen. If local officials are even aware of IFC 1103.9, I do not believe they understand how to interpret IFC 2015 Section 915.1 requirements. Furthermore, local officials I have spoken with say they simply do not have the resources to enforce the codes in this respect.

My concept is to institutionalize and outsource implementation of Section 1103.9. It is based on the annual fire testing and inspection (FTI) that every hotel is required to carry out using a qualified 3rd party inspection company (see NFPA 72, 10.5.3 and 14.2.3.1-14.2.3.6). The hotel pays for this inspection and the results are reported to the local Fire Marshal. Under this proposal, if the FTI finds a hotel does not have CO capability, the hotel FAILS the inspection and will soon be getting a letter or visit from the Fire Marshal's office. FTI companies prepare their own checklists for inspections based on Chapter 14 in NFPA 72. I have spoken to several FTIs who tell me it would be easy to add an item for visual inspection and verification that the hotel has provided CO protection for its guests.

I am proposing an amendment to Chapter 14 of NFPA 72, specifically Table 14.3.1, to require visual inspection in order to verify that CO detectors have been installed. Table 14.4.3.2 currently requires testing of approximately 20% of the devices every year, with the requirement that all devices are tested within a five-year period. As I read the current text, the second table requires the FTI to test any detectors he finds in the hotel -- but the first table does not require him to verify and report whether the detectors are there in the first place.

I have consulted with experts regarding the relative merits of IFC Section 908.7 in the 2012 edition vs. Section 915 in 2015 and 2018. I have read the reasons for the changes, and I understand a task force with a variety of interests drew up the changes. But I respectfully submit the changes have two principal drawbacks. First, they are very difficult to interpret and understand. After looking at the 2015 edition of Section 915, a recent conference of fire officials and industry professionals in my home state could not agree on its interpretation. They concluded the

language of Section 915, specifically the reference to a “communicating opening,” would have to be amended at the state level to clarify the meaning and correct ambiguities. Second, CO does not need “communicating openings.” Just Google the question “Can CO pass through drywall?” The answer is yes, even if the doors are sealed and there are no communicating openings.

When you consider that CO can be introduced into a guest room from inside the building by passing through walls, or from outside the building by passing into individual guest room vents (as happened to us), it is pretty hard to get around the idea that the best protection is to have single station alarms in every guest room. If not, then there must be a central CO detection system and at a minimum a single station alarm in every room on the floor of a fuel-burning appliance, and on the floor above. That is what I read the 2012 codes to call for, and I still believe they offer more protection than the newer editions. The fact remains that most hotels in the US do not now have CO protection and, despite good intentions on the part of many people, I do not yet see a clear path to remedying that.

Let’s suppose we are successful in amending NFPA 72, Chapter 14, and annual verification and testing of CO detection become part of every hotel’s FTI regimen. I believe this would be a force-multiplier welcomed by local Fire Marshals! But exactly what are the FTIs looking for in their visual inspection of a hotel’s CO capability? How many detectors should the hotel have, and where? For this approach to be successful, there has to be a clear, simple, quantifiable, easy to read standard for existing hotels to satisfy the requirements of 1103.9. FTIs are frequently asked to provide bids for their services, and low bid wins. When arriving at a hotel and working on a fixed price contract requiring them to “get in and get out,” FTIs have neither the time nor expertise to interpret 915 as it is written in 2015 and 2018 in order to determine whether a hotel meets the requirements of 1103.9 and passes or fails the FTI in terms of CO protection.

Some time ago, I submitted Public Input to NFPA “Life Safety” 101 2019 Sections 28.3.4.6.1 and Section 29.3.4.6.1 that mirrors IFC 2012 Section 908.7.

A single station CO alarm with 10-year lithium battery, meeting UL 2034 standards, is readily available for $20-$25. If a multi-story hotel has a central system, under the 2012 code it is likely just two floors will require guest room alarms. For most existing properties in the range of 60-120 guest rooms that do not have a central system, however, a Home Depot or Amazon alarm in every guest room would be affordable and would save lives.

This practical, layman’s approach is all about implementation. I believe it would “move the needle” in CO protection at hotels around the country. Fire Marshals can put together an education program for local hotels. Then, using the leverage of an annually required FTI paid for by the hotels, thus extending the FMs’ resources, they will be able get the job done.

Submitter Information Verification

Submitter Full Name: Raymond Clark
Organization: Riversage Inns
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 12:41:59 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: Visual inspection of CO detectors is covered under Table 14.3.1 (19), but it is not the within the scope of NFPA 72 to establish when CO detection is required to be installed in a structure.

Public Input No. 241-NFPA 72-2019 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

Component	Initial Acceptance	Periodic Frequency	Method	Reference
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4
2. Control equipment:	-	-	-	-
- (1) Fire alarm systems monitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Annual	-	- -
(b) Interfaced equipment	X	Annual	-	-
- (c) Lamps and LEDs	X	Annual	-	-
- (d) Primary (main) power supply	X	Annual	-	-
- (e) Trouble signals	X	Semiannual	-	-
- (2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Weekly	-	- -
(b) Interfaced equipment	X	Weekly	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
	-	(c) Lamps and LEDs	X	Weekly	-	-	
	-	(d) Primary (main) power supply	X	Weekly	-	-	
	-	(e) Trouble signals	X	Weekly	-	-	
3.	Reserved	-	-	-	-		
4.	Supervising station alarm systems — transmitters	-	-			Verify location, physical condition, and a system normal condition.	-
	-	(1) Digital alarm communicator transmitter (DACT)	X	Annual	-	-	-
	(2) Digital alarm radio transmitter (DART)	X	Annual	-	-		
	-	(3) McCulloh	X	Annual	-	-	
	-	(4) Radio alarm transmitter (RAT)	X	Annual	-	-	
	-	(5) All other types of communicators	X	Annual	-	-	
5.	In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	-		
6.	Reserved	-	-	-	-		
7.	Reserved	-	-	-	-		
8.	Reserved	-	-	-	-		
9.*	Batteries	-	-	-			
	-	(1) Valve-regulated lead-acid (VRLA) batteries	-	-	-	-	
	-	(a) General	X	N/A	Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks in cell/unit or leakage of	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	
-	(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	-
-	(2) Primary (dry cell)	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.	-
-	other than those used in low-power radio (wireless) systems in accordance with Chapter 23	-	-		-
10. Reserved	-	-	-	-	
11. Remote annunciators	X	Semiannual	Verify location and condition.	-	
12. Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
13. Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal	10.6	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
			operating status of the equipment.		
14. Transient suppressors	X	Semiannual	Verify location and condition.	-	
15. Reserved	-	-	-	-	
16. Fiber-optic 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.	17.7.3.6
-	(b) Sampling system piping and sampling ports	X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed.	17.7.3.6
-	(2) Duct detectors	-	-	-	-
-	(a) General	X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct.	17.7.5.5
-	(b) Sampling tube	X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.	17.7.5.5
-	(3) Electromechanical releasing devices	X	Semiannual	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
	-	(4) Fire extinguishing system(s) or suppression system(s) switches	X	Semiannual	-	-	
	-	(5) Manual fire alarm boxes	X	Semiannual	-	-	
	-	(6) Heat detectors	X	Semiannual	-	-	
	-	(7) Radiant energy fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	17.8	
	-	(8) Video image smoke and fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	17.7.7; 17.11.5	
	-	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual	-	-	
	-	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	-	
	-	(11) Supervisory signal devices	X	Quarterly	-	-	-
	(12) Waterflow devices	X	Quarterly	-	-		
18.	Reserved	-	-	-	-		
19.	Combination systems	-	-			Verify location and condition (all types).	-
	-	(1) Fire extinguisher electronic monitoring devices/systems	X	Semiannual	-	-	
	-	(2) Carbon monoxide detectors/systems	X	Semiannual	-	-	
20.	Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	-		
21.	Guard's tour equipment	X	Semiannual	Verify location and condition.	-		

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
22.	Notification appliances	-	-			Verify location and condition (all appliances).	-
	-	(1) Audible appliances	X	Semiannual	-	-	-
	(2) Loudspeakers	X	Semiannual	-	-		
	-	(3) Visual appliances	-	-	-	-	
	-	(a) General	X	Semiannual	-		18.5.5
	-	(b) Candela rating	X	N/A	Verify the appliance candela rating marking or the FACU controlled candela rating agrees with the approved drawings.	18.5.5	
23.	Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	-		
24.	Reserved	-	-	-	-		
25.	Two-way emergency communications systems	X	Annual	Verify location and condition.	-		
26.	Reserved	-	-	-	-		
27.	Supervising station alarm systems — receivers	-	-	-	-		
	-	(1) Signal receipt	X	Daily	Verify receipt of signal.	-	
	-	(2) Receivers	X	Annual	Verify location and normal condition.	-	
28.	Public emergency alarm reporting system transmission equipment	-	-			Verify location and condition.	-
	-	(1) Publicly accessible alarm box	X	Semiannual	-	-	
	-	(2) Auxiliary box	X	Annual	-	-	-
	(3) Master box	-	-	-	-		
	-	(a) Manual operation	X	Semiannual	-	-	-
	(b) Auxiliary operation	X	Annual	-	-		

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
					Two-way Emergency Communciation Systems	
29. ~~Reserved~~	-	-	-	-	(1) Monitored for integrity ((Add all the rest like MNS below, Terra would not allow me to cleanly revise))	X
30. Mass notification system	-	-	-	-		
-	(1) Monitored for integrity	-	-			Verify a system normal condition.
-	(a) Control equipment	-	-	-	-	
-	(i) Fuses	X	Annual	-	-	-
(ii) Interfaces	X	Annual	-		-	
-	(iii) Lamps/LED	X	Annual	-	-	
-	(iv) Primary (main) power supply	X	Annual	-	-	
-	(b) Secondary power batteries	X	Annual	-	-	
-	(c) Initiating devices	X	Annual	-	-	-
(d) Notification appliances	X	Annual	-		-	
-	(2) Not monitored for integrity; installed prior to adoption of the 2010 edition	-	-			Verify a system normal condition.
-	(a) Control equipment	-	-	-	-	
-	(i) Fuses	X	Semiannual	-	-	-
(ii) Interfaces	X	Semiannual	-		-	
-	(iii) Lamps/LED	X	Semiannual	-	-	
-	(iv) Primary (main) power supply	X	Semiannual	-	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
-	(b) Secondary power batteries	X	Semiannual	-	-	
-	(c) Initiating devices	X	Semiannual	-	-	-
(d) Notification appliances	X	Semiannual	-	-		
-	(3) Antenna	X	Annual	Verify location and condition.	-	-
(4) Transceivers	X	Annual	Verify location and condition.	-		

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

Statement of Problem and Substantiation for Public Input

72 has requirements for two way emergency communications systems but does not have testing and inspection requirements for them. This section needs to be added.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 17:08:45 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: SIG-TMS requests that the Correlating Committee form a task group with members from SIG-PRO, SIG-ECS, and SIG-TMS to update Table 14.3.1 and Table 14.4.3.2 for all new equipment in those chapters that is not addressed in these tables.

Public Input No. 290-NFPA 72-2019 [Section No. 14.3.1]

14.3.1 *

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

Component	Initial Acceptance	Periodic Frequency	Method	Reference
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4 and 14.3.5
2. Control equipment:				
(1) Fire alarm systems monitored for alarm, supervisory, and trouble signals				
Verify a system normal condition.				
(a) Fuses	X	Annual		
(b) Interfaced equipment	X	Annual		
(c) Lamps and LEDs	X	Annual		
(d) Primary (main) power supply	X	Annual		
(e) Trouble signals	X	Semiannual		
(2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals				
Verify a system normal condition.				
(a) Fuses	X	Weekly		
(b) Interfaced equipment	X	Weekly		
(c) Lamps and LEDs	X	Weekly		
(d) Primary (main) power supply	X	Weekly		
(e) Trouble signals	X	Weekly		

3. Reserved				
4. Supervising station alarm systems — transmitters				
Verify location, physical condition, and a system normal condition.				
(1) Digital alarm communicator transmitter (DACT)			X	Annual
(2) Digital alarm radio transmitter (DART)			X	Annual
(3) McCulloh			X	Annual
(4) Radio alarm transmitter (RAT)			X	Annual
(5) All other types of communicators			X	Annual
5. In-building fire emergency voice/alarm communications equipment		X	Semiannual	Verify location and condition.
6. Reserved				
7. Reserved				
8. Reserved				
9.* Batteries				
	10.6.10			
(1) Valve-regulated lead-acid (VRLA) batteries				
(a) General	X	N/A		Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks in cell/unit or leakage of electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.
(b) Marking	N/A	Semiannual		Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer’s replacement date has been exceeded.
(2) Primary (dry cell)	X	Semiannual		Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer’s replacement date has been exceeded. Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.

	other than those used in low-power radio (wireless) systems in accordance with Chapter 23				
	10. Reserved				
11.	Remote annunciators		X	Semiannual	Verify location and condition.
12.	Notification appliance circuit power extenders		X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment. 10.6
13.	Remote power supplies		X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment. 10.6
14.	Transient suppressors		X	Semiannual	Verify location and condition.
	15. Reserved				
16.	Fiber-optic 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. 17.7.3.6
	(b) Sampling system piping and sampling ports	X	N/A		Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed. 17.7.3.6
	(2) Duct detectors				
	(a) General	X		Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct. 17.7.5.5
	(b) Sampling tube	X		Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design. 17.7.5.5
	(3) Electromechanical releasing devices		X		Semiannual
	(4) Fire extinguishing system(s) or suppression system(s) switches		X		Semiannual

(5) Manual fire alarm boxes		X	Semiannual	
(6) Heat detectors		X	Semiannual	
(7) Radiant energy fire detectors	X Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.		17.8
(8) Video image smoke and fire detectors	X Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.		17.7.7; 17.11.5
(9) Smoke detectors (excluding one- and two-family dwellings)			X Semiannual	
(10) Projected beam smoke detectors	X Semiannual	Verify beam path is unobstructed.		
(11) Supervisory signal devices		X	Quarterly	
(12) Waterflow devices		X	Quarterly	

18. Reserved

19. Combination systems

Verify location and condition (all types).

(1) Fire extinguisher electronic monitoring devices/systems			X Semiannual	
(2) Carbon monoxide detectors/systems		X	Semiannual	

20. Alarm control interface and emergency control function interface	X Semiannual	Verify location and condition.		
21. Guard's tour equipment	X Semiannual	Verify location and condition.		

22. Notification appliances

Verify location and condition (all appliances).

(1) Audible appliances		X	Semiannual	
(2) Loudspeakers		X	Semiannual	

(3) Visual appliances				
(a) General		X	Semiannual	18.5.5
(b) Candela rating	X	N/A	Verify the appliance candela rating marking or the FACU controlled candela rating agrees with the approved drawings.	18.5.5
23. Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	
24. Reserved				
25. Two-way emergency communications systems		X	Annual	Verify location and condition.
26. Reserved				
27. Supervising station alarm systems — receivers				
(1) Signal receipt		X	Daily	Verify receipt of signal.
(2) Receivers	X	Annual	Verify location and normal condition.	
28. Public emergency alarm reporting system transmission equipment				
Verify location and condition.				
(1) Publicly accessible alarm box			X	Semiannual
(2) Auxiliary box			X	Annual
(3) Master box				
(a) Manual operation			X	Semiannual
(b) Auxiliary operation			X	Annual
29. Reserved				
30. Mass notification system				
(1) Monitored for integrity				

Verify a system normal condition.			
(a) Control equipment			
(i) Fuses	X		Annual
(ii) Interfaces		X	Annual
(iii) Lamps/LED		X	Annual
(iv) Primary (main) power supply		X	Annual
(b) Secondary power batteries		X	Annual
(c) Initiating devices		X	Annual
(d) Notification appliances		X	Annual
(2) Not monitored for integrity; installed prior to adoption of the 2010 edition			
Verify a system normal condition.			
(a) Control equipment			
(i) Fuses	X		Semiannual
(ii) Interfaces		X	Semiannual
(iii) Lamps/LED		X	Semiannual
(iv) Primary (main) power supply		X	Semiannual
(b) Secondary power batteries		X	Semiannual
(c) Initiating devices	X		Semiannual
(d) Notification appliances		X	Semiannual

__(3) Antenna	X	Annual	Verify location and condition.
__(4) Transceivers	X	Annual	Verify location and condition.

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

Statement of Problem and Substantiation for Public Input

In Table 14.3.1, Item 1, the reference should be to BOTH 14.3.4 and 14.3.5. Table 14.3.1 applies to initial inspections, re-acceptance inspections, and periodic inspections. At the present time, the reference to Item 1 is to 14.3.4, which is for initial and re-acceptance inspections. 14.3.5 should be referenced as it pertains to periodic inspections.

Submitter Information Verification

Submitter Full Name: Merton Bunker
Organization: Merton Bunker and Associates, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 14 11:28:54 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5219-NFPA 72-2019

Statement: The Technical Committee revises the text in Table 14.3.1 Item (1) by adding a reference to 14.3.5, as it provides the criteria for periodic inspections.

The Technical Committee revises the text in Table 14.3.1 Item (2) from control equipment to control unit to clarify that the requirement applies to control units.

The Technical Committee revises the text in Table 14.3.1 Item (14) to change "transient suppressors" to "surge protective devices" in accordance with the terminology used in Chapter 27 and the NEC and the request of SIG-TMS (see CI-5187).

The Technical Committee revises the text in Table 14.3.1 Item (17)(11) and (17)(12) from "quarterly" to "semiannual." This aligns the frequency of inspection for condition and location of tamper switches and waterflow switches with the frequency for all other equipment, except for flame detectors and video smoke detectors.

Public Input No. 459-NFPA 72-2019 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

Component	Initial Acceptance	Periodic Frequency	Method	Reference
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4
2. Control equipment:	-	-	-	-
- (1) Fire alarm systems monitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Annual	-	- -
(b) Interfaced equipment	X	Annual	-	-
- (c) Lamps and LEDs	X	Annual	-	-
- (d) Primary (main) power supply	X	Annual	-	-
- (e) Trouble signals	X	Semiannual	-	-
- (2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Weekly	-	- -
(b) Interfaced equipment	X	Weekly	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
	-	(c) Lamps and LEDs	X	Weekly	-	-	
	-	(d) Primary (main) power supply	X	Weekly	-	-	
	-	(e) Trouble signals	X	Weekly	-	-	
3.	Reserved	-	-	-	-		
4.	Supervising station alarm systems — transmitters	-	-		Verify location, physical condition, and a system normal condition.		-
	-	(1) Digital alarm communicator transmitter (DACT)	X	Annual	-	-	-
	(2) Digital alarm radio transmitter (DART)	X	Annual	-	-		
	-	(3) McCulloh	X	Annual	-	-	
	-	(4) Radio alarm transmitter (RAT)	X	Annual	-	-	
	-	(5) All other types of communicators	X	Annual	-	-	
5.	In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	-		
6.	Reserved	-	-	-	-		
7.	Reserved	-	-	-	-		
8.	Reserved	-	-	-	-		
9.*	Batteries	-	-	-			10.(
	-	(1) Valve-regulated lead-acid (VRLA) batteries	-	-	-	-	
	-	(a) General	X	N/A	Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				in cell/unit or leakage of electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	
-	(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	-
-	(2) Primary (dry cell)	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months from the manufacture month/year .	-
-	other than those used in low-power radio (wireless) systems in accordance with Chapter 23	-	-	Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.	-
10. Reserved	-	-	-	-	
11. Remote annunciators	X	Semiannual	Verify location and condition.	-	
12. Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
13. Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify	10.6	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
			that lamps and LEDs indicate normal operating status of the equipment.		
14. Transient suppressors	X	Semiannual	Verify location and condition.	-	
15. Reserved	-	-	-	-	
16. Fiber-optic 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.	17.7.3.6
-	(b) Sampling system piping and sampling ports	X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed.	17.7.3.6
-	(2) Duct detectors	-	-	-	-
-	(a) General	X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct.	17.7.5.5
-	(b) Sampling tube	X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the	17.7.5.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
				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	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.	17.7.7; 17.11.5	
-	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual	-	-	
-	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	-	
-	(11) Supervisory signal devices	X	Quarterly	-	-	-
(12) Waterflow devices	X	Quarterly	-	-		
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	-	-	

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
20.	Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	-		
21.	Guard's tour equipment	X	Semiannual	Verify location and condition.	-		
22.	Notification appliances	-	-			Verify location and condition (all appliances).	-
	- (1) Audible appliances	X	Semiannual	-	-	-	-
	(2) Loudspeakers	X	Semiannual	-	-		
	- (3) Visual appliances	-	-	-	-	-	
	- (a) General	X	Semiannual	-			18.5.5
	- (b) Candela rating	X	N/A	Verify the appliance candela rating marking or the FACU controlled candela rating agrees with the approved drawings.		18.5.5	
23.	Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	-		
24.	Reserved	-	-	-	-		
25.	Two-way emergency communications systems	X	Annual	Verify location and condition.	-		
26.	Reserved	-	-	-	-		
27.	Supervising station alarm systems — receivers	-	-	-	-		
	- (1) Signal receipt	X		Daily	Verify receipt of signal.	-	
	- (2) Receivers	X		Annual	Verify location and normal condition.	-	
28.	Public emergency alarm reporting system transmission equipment	-	-			Verify location and condition.	-
	- (1) Publicly accessible alarm box	X		Semiannual	-	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
-	(2) Auxiliary box	X	Annual	-	-	-
(3) Master box	-	-	-	-		
-	(a) Manual operation	X	Semiannual	-	-	-
(b) Auxiliary operation	X	Annual	-	-		
29. Reserved	-	-	-	-		
30. Mass notification system	-	-	-	-		
-	(1) Monitored for integrity	-	-			Verify a system normal condition.
-	(a) Control equipment	-	-	-	-	
-	(i) Fuses	X	Annual	-	-	-
(ii) Interfaces	X	Annual	-	-		
-	(iii) Lamps/LED	X	Annual	-	-	
-	(iv) Primary (main) power supply	X	Annual	-	-	
-	(b) Secondary power batteries	X	Annual	-	-	
-	(c) Initiating devices	X	Annual	-	-	-
(d) Notification appliances	X	Annual	-	-		
-	(2) Not monitored for integrity; installed prior to adoption of the 2010 edition	-	-			Verify a system normal condition.
-	(a) Control equipment	-	-	-	-	
-	(i) Fuses	X	Semiannual	-	-	-
(ii) Interfaces	X	Semiannual	-	-		
-	(iii) Lamps/LED	X	Semiannual	-	-	
-	(iv) Primary (main) power supply	X	Semiannual	-	-	
-	(b) Secondary power batteries	X	Semiannual	-	-	
-	(c) Initiating devices	X	Semiannual	-	-	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
(d) Notification appliances	X	Semiannual	-	-		
-	(3) Antenna	X	Annual	Verify location and condition.	-	-
(4) Transceivers	X	Annual	Verify location and condition.	-		

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

Statement of Problem and Substantiation for Public Input

This section is not clear that there is a 12 month grace period to replace the battery. Just trying to add verbiage that you have 12 months from the manufacture month/year to replace the battery.

Submitter Information Verification

Submitter Full Name: Jack Poole
Organization: Poole Fire Protection, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:45:52 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The proposed text does not clarify the requirement. There is no requirement that the batteries be replaced within 12 months of the date of manufacture.

Public Input No. 493-NFPA 72-2019 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

Component	Initial Acceptance	Periodic Frequency	Method	Reference
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4
2. Control equipment:	-	-	-	-
- (1) Fire alarm systems monitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Annual	-	- -
(b) Interfaced equipment	X	Annual	-	-
- (c) Lamps and LEDs	X	Annual	-	-
- (d) Primary (main) power supply	X	Annual	-	-
- (e) Trouble signals	X	Semiannual	-	-
- (2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals	-	-		Verify a system normal condition.
- (a) Fuses	X	Weekly	-	- -
(b) Interfaced equipment	X	Weekly	-	-
- (c) Lamps and LEDs	X	Weekly	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
-		(d) Primary (main) power supply	X	Weekly	-	-	
-		(e) Trouble signals	X	Weekly	-	-	
3.	Reserved	-	-	-	-		
4.	Supervising station alarm systems — transmitters	-	-			Verify location, physical condition, and a system normal condition.	-
-		(1) Digital alarm communicator transmitter (DACT)	X	Annual	-	-	-
	(2) Digital alarm radio transmitter (DART)	X	Annual	-	-		
-		(3) McCulloh	X	Annual	-	-	
-		(4) Radio alarm transmitter (RAT)	X	Annual	-	-	
-		(5) All other types of communicators	X	Annual	-	-	
5.	In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	-		
6.	Reserved	-	-	-	-		
7.	Reserved	-	-	-	-		
8.	Reserved	-	-	-	-		
9.*	Batteries	-	-	-			1
-		(1) Valve-regulated lead-acid (VRLA) batteries	-	-	-	-	
-		(a) General	X	N/A	Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks in cell/unit or leakage of electrolyte.	-	

	Component	Initial Acceptance	Periodic Frequency	Method	Reference	
					Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	
	-	(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	-
	-	(2) Primary (dry cell)	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded.	-
	-	other than those used in low-power radio (wireless) systems in accordance with Chapter 23	-	-	Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.	-
10.	Reserved	-	-	-	-	
11.	Remote annunciators	X	Semiannual	Verify location and condition.	-	
12.	Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
13.	Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating	10.6	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
			status of the equipment.		
14. ~~Transient suppressors~~ Surge Protection Device (SPD)	X	Semiannual	Verify location and condition.	-	
15. Reserved	-	-	-	-	
16. Fiber-optic 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.	17.7.3.6
-	(b) Sampling system piping and sampling ports	X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed.	17.7.3.6
-	(2) Duct detectors	-	-	-	-
-	(a) General	X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct.	17.7.5.5
-	(b) Sampling tube	X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.	17.7.5.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
-	(3) Electromechanical releasing devices	X	Semiannual	-	-	
-	(4) Fire extinguishing system(s) or suppression system(s) switches	X	Semiannual	-	-	
-	(5) Manual fire alarm boxes	X	Semiannual	-	-	
-	(6) Heat detectors	X	Semiannual	-	-	
-	(7) Radiant energy fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	17.8	
-	(8) Video image smoke and fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	17.7.7; 17.11.5	
-	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual	-	-	
-	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	-	
-	(11) Supervisory signal devices	X	Quarterly	-	-	-
	(12) Waterflow devices	X	Quarterly	-	-	
18.	Reserved	-	-	-	-	
19.	Combination systems	-	-		Verify location and condition (all types).	-
-	(1) Fire extinguisher electronic monitoring devices/systems	X	Semiannual	-	-	
-	(2) Carbon monoxide detectors/systems	X	Semiannual	-	-	
20.	Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	-	

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
21.	Guard's tour equipment	X	Semiannual	Verify location and condition.	-		
22.	Notification appliances	-	-			Verify location and condition (all appliances).	-
-	(1) Audible appliances	X	Semiannual	-		-	-
(2) Loudspeakers		X	Semiannual	-		-	
-	(3) Visual appliances	-	-	-	-	-	
-	(a) General	X	Semiannual	-			18.5.5
-	(b) Candela rating	X	N/A	Verify the appliance candela rating marking or the FACU controlled candela rating agrees with the approved drawings.		18.5.5	
23.	Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	-		
24.	Reserved	-	-	-	-		
25.	Two-way emergency communications systems	X	Annual	Verify location and condition.	-		
26.	Reserved	-	-	-	-		
27.	Supervising station alarm systems — receivers	-	-	-	-		
-	(1) Signal receipt	X	Daily	Verify receipt of signal.	-		
-	(2) Receivers	X	Annual	Verify location and normal condition.	-		
28.	Public emergency alarm reporting system transmission equipment	-	-			Verify location and condition.	-
-	(1) Publicly accessible alarm box	X	Semiannual	-		-	
-	(2) Auxiliary box	X	Annual	-		-	-
(3) Master box		-	-	-	-		
-	(a) Manual operation	X	Semiannual	-		-	-
(b) Auxiliary operation		X	Annual	-	-		

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
29. Reserved	-	-	-	-	
30. Mass notification system	-	-	-	-	
-	(1) Monitored for integrity	-	-		Verify a system normal condition.
-	(a) Control equipment	-	-	-	-
-	(i) Fuses	X	Annual	-	-
(ii) Interfaces	X	Annual	-	-	
-	(iii) Lamps/LED	X	Annual	-	-
-	(iv) Primary (main) power supply	X	Annual	-	-
-	(b) Secondary power batteries	X	Annual	-	-
-	(c) Initiating devices	X	Annual	-	-
(d) Notification appliances	X	Annual	-	-	
-	(2) Not monitored for integrity; installed prior to adoption of the 2010 edition	-	-		Verify a system normal condition.
-	(a) Control equipment	-	-	-	-
-	(i) Fuses	X	Semiannual	-	-
(ii) Interfaces	X	Semiannual	-	-	
-	(iii) Lamps/LED	X	Semiannual	-	-
-	(iv) Primary (main) power supply	X	Semiannual	-	-
-	(b) Secondary power batteries	X	Semiannual	-	-
-	(c) Initiating devices	X	Semiannual	-	-
(d) Notification appliances	X	Semiannual	-	-	
-	(3) Antenna	X	Annual	Verify location and condition.	-
(4) Transceivers	X	Annual	Verify location and condition.	-	

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published

instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

Statement of Problem and Substantiation for Public Input

UL 1449 3rd edition 3.36 definition:
Surge Protective Device (SPD) A Device composed of at least one non-linear component and intended for limiting surge voltages on equipment by diverting or limiting surge current and is capable of repeating these functions as specified. SPDs were previously known as Transient Voltage Surge Suppressors or secondary surge arrestors

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 09:04:29 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5219-NFPA 72-2019

Statement: The Technical Committee revises the text in Table 14.3.1 Item (1) by adding a reference to 14.3.5, as it provides the criteria for periodic inspections.

The Technical Committee revises the text in Table 14.3.1 Item (2) from control equipment to control unit to clarify that the requirement applies to control units.

The Technical Committee revises the text in Table 14.3.1 Item (14) to change "transient suppressors" to "surge protective devices" in accordance with the terminology used in Chapter 27 and the NEC and the request of SIG-TMS (see CI-5187).

The Technical Committee revises the text in Table 14.3.1 Item (17)(11) and (17)(12) from “quarterly” to “semiannual.” This aligns the frequency of inspection for condition and location of tamper switches and waterflow switches with the frequency for all other equipment, except for flame detectors and video smoke detectors.

Public Input No. 543-NFPA 72-2019 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

Component	Initial Acceptance	Periodic Frequency	Method	Reference
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4
2. Control ~~equipment~~ unit :	-	-	-	-
- (1) Fire alarm systems monitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Annual	-	-
(b) Interfaced equipment	X	Annual	-	-
- (c) Lamps and LEDs	X	Annual	-	-
- (d) Primary (main) power supply	X	Annual	-	-
- (e) Trouble signals	X	Semiannual	-	-
- (2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Weekly	-	-
(b) Interfaced equipment	X	Weekly	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
	-	(c) Lamps and LEDs	X	Weekly	-	-	
	-	(d) Primary (main) power supply	X	Weekly	-	-	
	-	(e) Trouble signals	X	Weekly	-	-	
3.	Reserved	-	-	-	-		
4.	Supervising station alarm systems — transmitters	-	-		Verify location, physical condition, and a system normal condition.		-
	-	(1) Digital alarm communicator transmitter (DACT)	X	Annual	-	-	-
	(2) Digital alarm radio transmitter (DART)	X	Annual	-	-		
	-	(3) McCulloh	X	Annual	-	-	
	-	(4) Radio alarm transmitter (RAT)	X	Annual	-	-	
	-	(5) All other types of communicators	X	Annual	-	-	
5.	In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	-		
6.	Reserved	-	-	-	-		
7.	Reserved	-	-	-	-		
8.	Reserved	-	-	-	-		
9.*	Batteries	-	-	-			10.(
	-	(1) Valve-regulated lead-acid (VRLA) batteries	-	-	-	-	
	-	(a) General	X	N/A	Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				in cell/unit or leakage of electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	
-	(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	-
-	(2) Primary (dry cell)	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.	-
-	other than those used in low-power radio (wireless) systems in accordance with Chapter 23	-	-		-
10. Reserved	-	-	-	-	
11. Remote annunciators	X	Semiannual	Verify location and condition.	-	
12. Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
13. Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs	10.6	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
			indicate normal operating status of the equipment.		
14. Transient suppressors	X	Semiannual	Verify location and condition.	-	
15. Reserved	-	-	-	-	
16. Fiber-optic 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.	17.7.3.6
- (b) Sampling system piping and sampling ports		X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed.	17.7.3.6
- (2) Duct detectors		-	-	-	-
- (a) General		X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct.	17.7.5.5
- (b) Sampling tube		X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with	17.7.5.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
				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	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.	17.7.7; 17.11.5	
-	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual	-	-	
-	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	-	
-	(11) Supervisory signal devices	X	Quarterly	-	-	-
(12) Waterflow devices	X	Quarterly	-	-		
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	-	-	

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
20.	Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	-		
21.	Guard's tour equipment	X	Semiannual	Verify location and condition.	-		
22.	Notification appliances	-	-			Verify location and condition (all appliances).	-
	- (1) Audible appliances	X	Semiannual	-	-	-	-
	(2) Loudspeakers	X	Semiannual	-	-		
	- (3) Visual appliances	-	-	-	-	-	
	- (a) General	X	Semiannual	-			18.5.5
	- (b) Candela rating	X	N/A	Verify the appliance candela rating marking or the FACU controlled candela rating agrees with the approved drawings.		18.5.5	
23.	Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	-		
24.	Reserved	-	-	-	-		
25.	Two-way emergency communications systems	X	Annual	Verify location and condition.	-		
26.	Reserved	-	-	-	-		
27.	Supervising station alarm systems — receivers	-	-	-	-		
	- (1) Signal receipt	X		Daily	Verify receipt of signal.	-	
	- (2) Receivers	X		Annual	Verify location and normal condition.	-	
28.	Public emergency alarm reporting system transmission equipment	-	-			Verify location and condition.	-
	- (1) Publicly accessible alarm box	X		Semiannual	-	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(2) Auxiliary box	X	Annual	-	-
(3) Master box	-	-	-	-	
-	(a) Manual operation	X	Semiannual	-	-
(b) Auxiliary operation	X	Annual	-	-	
29. Reserved	-	-	-	-	
30. Mass notification system	-	-	-	-	
-	(1) Monitored for integrity	-	-		Verify a system normal condition.
(a) Control ~~equipment~~	-	-	-	-	unit
(i) Fuses	X	Annual	-	-	
-	(ii) Interfaces	X	Annual	-	-
-	(iii) Lamps/LED	X	Annual	-	-
-	(iv) Primary (main) power supply	X	Annual	-	-
-	(b) Secondary power batteries	X	Annual	-	-
-	(c) Initiating devices	X	Annual	-	-
(d) Notification appliances	X	Annual	-	-	
-	(2) Not monitored for integrity; installed prior to adoption of the 2010 edition	-	-		Verify a system normal condition.
-	(a) Control ~~equipment~~	-	-	-	-
(i) Fuses	X	Semiannual	-	-	
-	(ii) Interfaces	X	Semiannual	-	-
-	(iii) Lamps/LED	X	Semiannual	-	-
-	(iv) Primary (main) power supply	X	Semiannual	-	-
-	(b) Secondary power batteries	X	Semiannual	-	-
-	(c) Initiating devices	X	Semiannual	-	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
(d) Notification appliances	X	Semiannual	-	-		
-	(3) Antenna	X	Annual	Verify location and condition.	-	-
(4) Transceivers	X	Annual	Verify location and condition.	-		

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 10:25:56 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5219-NFPA 72-2019

Statement: The Technical Committee revises the text in Table 14.3.1 Item (1) by adding a reference to 14.3.5, as it provides the criteria for periodic inspections.

The Technical Committee revises the text in Table 14.3.1 Item (2) from control equipment to control unit to clarify that the requirement applies to control units.

The Technical Committee revises the text in Table 14.3.1 Item (14) to change "transient suppressors" to "surge protective devices" in accordance with the terminology used in Chapter 27 and the NEC and the request of SIG-TMS (see CI-5187).

The Technical Committee revises the text in Table 14.3.1 Item (17)(11) and (17)(12) from "quarterly" to "semiannual." This aligns the frequency of inspection for condition and location of tamper switches and waterflow switches with the frequency for all other equipment, except for flame detectors and video smoke detectors.

Public Input No. 622-NFPA 72-2019 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4	
2. Control equipment:	-	-	-	-	
-	(1) Fire alarm systems monitored for alarm, supervisory, and trouble signals	-	-		Ve sy no co
-	(a) Fuses	X	Annual	-	-
(b) Interfaced equipment	X	Annual	-	-	
-	(c) Lamps and LEDs	X	Annual	-	-
-	(d) Primary (main) power supply	X	Annual	-	-
-	(e) Trouble signals	X	Semiannual	-	-
-	(2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals	-	-		Ve sy no co
-	(a) Fuses	X	Weekly	-	-
(b) Interfaced equipment	X	Weekly	-	-	
-	(c) Lamps and LEDs	X	Weekly	-	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(d) Primary (main) power supply	X	Weekly	-	-
-	(e) Trouble signals	X	Weekly	-	-
3. Reserved	-	-	-	-	
4. Supervising station alarm systems — transmitters	-	-			Verify location, physical condition, and a system normal condition.
-	(1) Digital alarm communicator transmitter (DACT)	X	Annual	-	-
(2) Digital alarm radio transmitter (DART)	X	Annual	-	-	
-	(3) McCulloh	X	Annual	-	-
-	(4) Radio alarm transmitter (RAT)	X	Annual	-	-
-	(5) All other types of communicators	X	Annual	-	-
5. In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	-	
6. ~~Reserved~~ Cybersecurity	- X	-	-	- Annual	Verify that there are no changes to network connectivity that would render initial acceptance as no longer valid. Verify that any system that is designated with cybersecurity certification, has maintained a valid certificate. 1
7. Reserved	-	-	-	-	
8. Reserved	-	-	-	-	
9.* Batteries	-	-	-		
-	(1) Valve-regulated lead-acid (VRLA) batteries	-	-	-	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
-	(a) General	X	N/A	Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks in cell/unit or leakage of electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	-
-	(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	-
-	(2) Primary (dry cell)	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.	-
-	other than those used in low-power radio (wireless) systems in accordance with Chapter 23	-	-		-
10. Reserved	-	-	-	-	
11. Remote annunciators	X	Semiannual	Verify location and condition.	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
12. Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
13. Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
14. Transient suppressors	X	Semiannual	Verify location and condition.	-	
15. Reserved	-	-	-	-	
16. Fiber-optic 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.	17.7.3.6
-	(b) Sampling system piping and sampling ports	X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed.	17.7.3.6
-	(2) Duct detectors	-	-	-	-
-	(a) General	X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to	17.7.5.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				sample the airstream at the proper location in the duct.	
-	(b) Sampling tube	X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with system design.	17.7.5.5
-	(3) Electromechanical releasing devices	X	Semiannual	-	-
-	(4) Fire extinguishing system(s) or suppression system(s) switches	X	Semiannual	-	-
-	(5) Manual fire alarm boxes	X	Semiannual	-	-
-	(6) Heat detectors	X	Semiannual	-	-
-	(7) Radiant energy fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	17.8
-	(8) Video image smoke and fire detectors	X	Quarterly	Verify no point requiring detection is obstructed or outside the detector's field of view.	17.7.7; 17.11.5
-	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual	-	-
-	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	-
-	(11) Supervisory signal devices	X	Quarterly	-	-
(12) Waterflow devices	X	Quarterly	-	-	
18. Reserved	-	-	-	-	
19. Combination systems	-	-			Verify location and condition (all types).
-	(1) Fire extinguisher electronic	X	Semiannual	-	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
	monitoring devices/systems				
-	(2) Carbon monoxide detectors/systems	X	Semiannual	-	-
20. Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	-	
21. Guard's tour equipment	X	Semiannual	Verify location and condition.	-	
22. Notification appliances	-	-			Verify location and condition (all appliances).
-	(1) Audible appliances	X	Semiannual	-	-
(2) Loudspeakers	X	Semiannual	-	-	
-	(3) Visual appliances	-	-	-	-
-	(a) General	X	Semiannual	-	
-	(b) Candela rating	X	N/A	Verify the appliance candela rating marking or the 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	-	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
29. Reserved	-	-	-	-	
30. Mass notification system	-	-	-	-	
-	(1) Monitored for integrity	-	-		Ve sy no co
-	(a) Control equipment	-	-	-	-
-	(i) Fuses	X	Annual	-	-
(ii) Interfaces	X	Annual	-	-	
-	(iii) Lamps/LED	X	Annual	-	-
-	(iv) Primary (main) power supply	X	Annual	-	-
-	(b) Secondary power batteries	X	Annual	-	-
-	(c) Initiating devices	X	Annual	-	-
(d) Notification appliances	X	Annual	-	-	
-	(2) Not monitored for integrity; installed prior to adoption of the 2010 edition	-	-		Ve sy no co
-	(a) Control equipment	-	-	-	-
-	(i) Fuses	X	Semiannual	-	-
(ii) Interfaces	X	Semiannual	-	-	
-	(iii) Lamps/LED	X	Semiannual	-	-
-	(iv) Primary (main) power supply	X	Semiannual	-	-
-	(b) Secondary power batteries	X	Semiannual	-	-
-	(c) Initiating devices	X	Semiannual	-	-
(d) Notification appliances	X	Semiannual	-	-	
-	(3) Antenna	X	Annual	Verify location and condition.	-
(4) Transceivers	X	Annual	Verify location and condition.	-	

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	Part of a broader public input intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:16:46 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The Technical Committee requests the Correlating Committee to establish a Task Group with members from the affected Technical Committees to address all cyber security Public Inputs.

Public Input No. 69-NFPA 72-2019 [Section No. 14.3.1]

14.3.1*

Unless otherwise permitted by 14.3.2, visual inspections shall be performed in accordance with the schedules in Table 14.3.1 or more often if required by the authority having jurisdiction.

Table 14.3.1 Visual Inspection

Component	Initial Acceptance	Periodic Frequency	Method	Reference
1. All equipment	X	Annual	Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.	14.3.4
2. Control equipment:	-	-	-	-
- (1) Fire alarm systems monitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Annual	-	- -
(b) Interfaced equipment	X	Annual	-	-
- (c) Lamps and LEDs	X	Annual	-	-
- (d) Primary (main) power supply	X	Annual	-	-
- (e) Trouble signals	X	Semiannual	-	-
- (2) Fire alarm systems unmonitored for alarm, supervisory, and trouble signals	-	-	-	Verify a system normal condition.
- (a) Fuses	X	Weekly	-	- -
(b) Interfaced equipment	X	Weekly	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
	-	(c) Lamps and LEDs	X	Weekly	-	-	
	-	(d) Primary (main) power supply	X	Weekly	-	-	
	-	(e) Trouble signals	X	Weekly	-	-	
3.	Reserved	-	-	-	-		
4.	Supervising station alarm systems — transmitters	-	-		Verify location, physical condition, and a system normal condition.		-
	-	(1) Digital alarm communicator transmitter (DACT)	X	Annual	-	-	-
	(2) Digital alarm radio transmitter (DART)	X	Annual	-	-		
	-	(3) McCulloh	X	Annual	-	-	
	-	(4) Radio alarm transmitter (RAT)	X	Annual	-	-	
	-	(5) All other types of communicators	X	Annual	-	-	
5.	In-building fire emergency voice/alarm communications equipment	X	Semiannual	Verify location and condition.	-		
6.	Reserved	-	-	-	-		
7.	Reserved	-	-	-	-		
8.	Reserved	-	-	-	-		
9.*	Batteries	-	-	-			1
	-	(1) Valve-regulated lead-acid (VRLA) batteries	-	-	-	-	
	-	(a) General	X	N/A	Ensure month and year of manufacture is marked in the month/year format on each battery cell/unit. Verify tightness of battery connections. Inspect terminals for corrosion, excessive container/cover distortion, cracks	-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
				in cell/unit or leakage of electrolyte. Replace any battery cell/unit if corrosion, distortion, or leakage is observed.	
-	(b) Marking	N/A	Semiannual	Verify marking of the month/year of manufacture on each battery cell/unit. Replace any cell/unit if alarm equipment manufacturer's replacement date has been exceeded.	-
-	(2) Primary (dry cell)	X	Semiannual	Verify marking of the month/year of manufacture. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.	-
-	other than those used in low-power radio (wireless) systems in accordance with Chapter 23	-	-		-
10. Reserved	-	-	-	-	
11. Remote annunciators	X	Semiannual	Verify location and condition.	-	
12. Notification appliance circuit power extenders	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs indicate normal operating status of the equipment.	10.6	
13. Remote power supplies	X	Annual	Verify proper fuse ratings, if any. Verify that lamps and LEDs	10.6	

Component	Initial Acceptance	Periodic Frequency	Method	Reference	
			indicate normal operating status of the equipment.		
14. Transient suppressors	X	Semiannual	Verify location and condition.	-	
15. Reserved	-	-	-	-	
16. Fiber-optic 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.	17.7.3.6
- (b) Sampling system piping and sampling ports		X	N/A	Verify that sampling system piping and fittings are installed properly, appear airtight, and are permanently fixed. Confirm that sampling pipe is conspicuously identified. Verify that sample ports or points are not obstructed.	17.7.3.6
- (2) Duct detectors		-	-	-	-
- (a) General		X	Semiannual	Verify that detector is rigidly mounted. Confirm that no penetrations in a return air duct exist in the vicinity of the detector. Confirm the detector is installed so as to sample the airstream at the proper location in the duct.	17.7.5.5
- (b) Sampling tube		X	Annual	Verify proper orientation. Confirm the sampling tube protrudes into the duct in accordance with	17.7.5.5

Component	Initial Acceptance	Periodic Frequency	Method	Reference			
				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	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.	17.7.7; 17.11.5		
-	(9) Smoke detectors (excluding one- and two-family dwellings)	X	Semiannual	-	-		
-	(10) Projected beam smoke detectors	X	Semiannual	Verify beam path is unobstructed.	-		
-	(11) Supervisory signal devices	X	~~Quarterly~~	-	-	-	Ser
(12) Waterflow devices	X~~Quarterly~~	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	-	-		

	Component	Initial Acceptance	Periodic Frequency	Method	Reference		
20.	Alarm control interface and emergency control function interface	X	Semiannual	Verify location and condition.	-		
21.	Guard's tour equipment	X	Semiannual	Verify location and condition.	-		
22.	Notification appliances	-	-			Verify location and condition (all appliances).	-
	- (1) Audible appliances	X	Semiannual	-		-	-
	(2) Loudspeakers	X	Semiannual	-		-	
	- (3) Visual appliances	-	-	-		-	
	- (a) General	X	Semiannual	-			18.5.5
	- (b) Candela rating	X	N/A	Verify the appliance candela rating marking or the FACU controlled candela rating agrees with the approved drawings.		18.5.5	
23.	Exit marking audible notification appliances	X	Semiannual	Verify location and condition.	-		
24.	Reserved	-	-	-	-		
25.	Two-way emergency communications systems	X	Annual	Verify location and condition.	-		
26.	Reserved	-	-	-	-		
27.	Supervising station alarm systems — receivers	-	-	-	-		
	- (1) Signal receipt	X		Daily	Verify receipt of signal.	-	
	- (2) Receivers	X		Annual	Verify location and normal condition.	-	
28.	Public emergency alarm reporting system transmission equipment	-	-			Verify location and condition.	-
	- (1) Publicly accessible alarm box	X	Semiannual	-		-	

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
-	(2) Auxiliary box	X	Annual	-	-	-
(3) Master box	-	-	-	-		
-	(a) Manual operation	X	Semiannual	-	-	-
(b) Auxiliary operation	X	Annual	-	-		
29. Reserved	-	-	-	-		
30. Mass notification system	-	-	-	-		
-	(1) Monitored for integrity	-	-			Verify a system normal condition.
-	(a) Control equipment	-	-	-	-	
-	(i) Fuses	X	Annual	-	-	-
(ii) Interfaces	X	Annual	-	-		
-	(iii) Lamps/LED	X	Annual	-	-	
-	(iv) Primary (main) power supply	X	Annual	-	-	
-	(b) Secondary power batteries	X	Annual	-	-	
-	(c) Initiating devices	X	Annual	-	-	-
(d) Notification appliances	X	Annual	-	-		
-	(2) Not monitored for integrity; installed prior to adoption of the 2010 edition	-	-			Verify a system normal condition.
-	(a) Control equipment	-	-	-	-	
-	(i) Fuses	X	Semiannual	-	-	-
(ii) Interfaces	X	Semiannual	-	-		
-	(iii) Lamps/LED	X	Semiannual	-	-	
-	(iv) Primary (main) power supply	X	Semiannual	-	-	
-	(b) Secondary power batteries	X	Semiannual	-	-	
-	(c) Initiating devices	X	Semiannual	-	-	-

Component	Initial Acceptance	Periodic Frequency	Method	Reference		
(d) Notification appliances	X	Semiannual	-	-		
-	(3) Antenna	X	Annual	Verify location and condition.	-	-
(4) Transceivers	X	Annual	Verify location and condition.	-		

Note: N/A = not applicable, no minimum requirement established.

*For other than VRLA or primary (dry) cell batteries, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

Statement of Problem and Substantiation for Public Input

NFPA 25 requires a quarterly inspection of both components so it is not necessary for NFPA 72 to require it as well. It is not the intent that the NFPA 25 Committee change the inspection frequency to coincide with this change to NFPA 72.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 15:59:37 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5219-NFPA 72-2019

Statement: The Technical Committee revises the text in Table 14.3.1 Item (1) by adding a reference to 14.3.5, as it provides the criteria for periodic inspections.

The Technical Committee revises the text in Table 14.3.1 Item (2) from control equipment to control unit to clarify that the requirement applies to control units.

The Technical Committee revises the text in Table 14.3.1 Item (14) to change "transient suppressors" to "surge protective devices" in accordance with the terminology used in Chapter 27 and the NEC and the request of SIG-TMS (see CI-5187).

The Technical Committee revises the text in Table 14.3.1 Item (17)(11) and (17)(12) from "quarterly" to "semiannual." This aligns the frequency of inspection for condition and location of tamper switches and waterflow switches with the frequency for all other equipment, except for flame detectors and video smoke detectors.

Public Input No. 499-NFPA 72-2019 [Section No. 14.4.2.3]

14.4.2.3

When modifications or repairs to control equipment hardware are made, the control equipment shall be tested in accordance with Table 14.4.3.2, items 2(a 1) and 2(d 4).

Statement of Problem and Substantiation for Public Input

These are invalid references. The correct reference is Table 14.4.3.2, Item 2 with components 1 and 4 being applicable.

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 10:41:04 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5286-NFPA 72-2019
Statement: The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

The correct reference is Table 14.4.3.2, Item 2 with components 1 and 4 being applicable.

Public Input No. 542-NFPA 72-2019 [Section No. 14.4.2.3]

14.4.2.3

When modifications or repairs to control ~~equipment hardware~~ unit hardware are made, the control ~~equipment shall~~ unit shall be tested in accordance with Table 14.4.3.2, items 2(a) and 2(d).

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 10:20:44 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5286-NFPA 72-2019
Statement: The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

The correct reference is Table 14.4.3.2, Item 2 with components 1 and 4 being applicable.

Public Input No. 516-NFPA 72-2019 [Section No. 14.4.2.4]

14.4.2.4

When changes are made to site-specific software, the following shall apply:

(1) All functions known to be affected by the change, or identified by a means that indicates changes, shall be 100 percent tested.

(2) In addition, for other than customized descriptive location label changes, 10 percent of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, also shall be tested and correct system operation shall be verified.

(3) A revised record of completion in accordance with 7.5.6 shall be prepared to reflect these changes.

Statement of Problem and Substantiation for Public Input

When changing the custom descriptive location labeling of an input, output, zone or other custom description of a system element, it should be sufficient to test only the affected aspects of the system. Changing the text of a descriptive label should not cause any change in operation other than for the system to display the revised custom label text. Other changes like revising the input/output matrix attributes should continue to require the 10% up to 50 input device testing.

Submitter Information Verification

Submitter Full Name: Andrew Berezowski
Organization: Honeywell Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 16:32:37 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: Even where the only programming being changed is a descriptive label, there is a possibility of human or upload error that could have unexpected consequences.

Public Input No. 182-NFPA 72-2019 [New Section after 14.4.2.5]

TITLE OF NEW CONTENT

14.4.2.6 Where changes are made to system executive software or site-specific software for control equipment or transmitting equipment from a remote location not on the protectrive premises, such changes shall not be made without an individual, meeting the qualifications of 10.5.3.2, 10.5.3.3, or 10.5.3.5, being at the protected premises to verify that testing is accomplished in accordance with 14.4.2.

Statement of Problem and Substantiation for Public Input

Remote (off-site) programming of control equipment at a protected premises is being developed. Underwriters Laboratories is looking at making changes to UL864 through its STP process to address how this would work. Currently, NFPA 72 is silent on how remote programming should occur. In order to meet the requirements of 14.4.2 for reacceptance testing, language should be added as proposed to state that the code intends to have remote changes to a system verified by a qualified person in accordance with current code language in 14.4.2.

Submitter Information Verification

Submitter Full Name: Warren Olsen
Organization: Fire Safety Consultants, Inc.
Affiliation: Illinois Fire Inspectors Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 19 15:41:12 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5288-NFPA 72-2019
Statement: Remote (off-site) programming of control equipment at a protected premises is being developed. In order to meet the requirements of 14.4.2 for reacceptance testing, language is added to state that remote programming must be verified by a qualified person in accordance with 14.4.2.

Public Input No. 453-NFPA 72-2019 [Section No. 14.4.2.5]

14.4.2.5

Changes to the system executive software other than those required solely for cyber security purposes, shall require a 10 percent functional test of the system, including a test of at least one device on each input and output circuit to verify critical system functions such as notification appliances, control functions, and off-premises reporting.

14.4.2.6 Changes to the system executive software limited to cybersecurity enhancements shall not require system retest.

Statement of Problem and Substantiation for Public Input

Revisions made for cyber security reasons only are not related to the required system functions and should not require extensive testing to confirm operation.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 14:54:55 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: SIG-TMS requests that the Correlating Committee form a Task Group to study cyber security, including this public input.

Public Input No. 139-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-		Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily		Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(9) Carbon monoxide detectors/carbon monoxide alarms	-	-	-	
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating	

-	Component	Initial Acceptance	Periodic Frequency	Method
				device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge

-	Component	Initial Acceptance	Periodic Frequency	Method	
				systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th in th c
-			-	-		W in s c te in te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels ~~throughout the protected area to confirm that~~ to determine if they are in compliance with Chapter 18 and the required performance as documented per 7 .3.4. Set the sound level meter

-	Component	Initial Acceptance	Periodic Frequency	Method	
				in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	ʳFor periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to ~~confirm that~~ determine if they are in compliance with ~~Chapter 18.~~ Chapter 18and the required performance as documented per 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-			-	-	-
	-		-	N/A	Annually	[r]For periodic 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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-		-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device		

-	Component	Initial Acceptance	Periodic Frequency	Method
			is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
27. Supervising station alarm systems — receiving equipment					
	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	

	Component	Initial Acceptance	Periodic Frequency	Method	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.	
	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:	

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.	

		Component	Initial Acceptance	Periodic Frequency	Method
					Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
	-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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(a).	
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).	
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
30.	Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment 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.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F

	Component	Initial Acceptance	Periodic Frequency	Method	
				(FAST). Record the maximum output when the audible emergency evacuation signal is on.	
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table

14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q] ~~Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.~~

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Removed "throughout the protected area" as it is unenforceable and undefined. Added language referencing the actual required performance metric. Changed "confirm" to "determine" as being more reflective of the proper test reason.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Sun Apr 28 14:11:59 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 197-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

	Component	Initial Acceptance	Periodic Frequency	Method	
	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
	(2) Ground				

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-		Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			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	Annually	Do not perform heat tests. Test functionality mechanically and electrically.	
		See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	-	-

	Component	Initial Acceptance	Periodic Frequency	Method
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and electrically.
-	(e) 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.
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Smoke detectors — functional test	-	-	-	
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed	

-	Component	Initial Acceptance	Periodic Frequency	Method
				and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices	

-	Component	Initial Acceptance	Periodic Frequency	Method
				connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for

-	Component	Initial Acceptance	Periodic Frequency	Method	
				dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r e
		-		-	-

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th in th c
-			-	-		W in s c te in te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of	

-	Component	Initial Acceptance	Periodic Frequency	Method
				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[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire

-	Component	Initial Acceptance	Periodic Frequency	Method
				alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the

		Component	Initial Acceptance	Periodic Frequency	Method	
						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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-		N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	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		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26. Special procedures	-	-	-		
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-
			-	-	-

		Component	Initial Acceptance	Periodic Frequency	Method	
27.	Supervising station alarm systems — receiving equipment					
		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
		(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR,	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				station under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within	

-	Component	Initial Acceptance	Periodic Frequency	Method
				5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

This PI seeks to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors. Currently, it would appear that these detectors do not need to be tested electronically and mechanically but line item 17(4)(d) appears to contradict this as it requires all non-restorable heat detectors to have that test performed. Therefore, that wording has been copied over to line item 17(4)(c) and the information regarding the 15 year lab test or replace requirement has been moved to the next line. This hopefully makes it clearer that non-restorable, spot type heat detectors, while unique in requiring the 15 year lab test or replacement, still require the electronic/mechanical test as with other non-restorable heat detectors.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:

Submittal Date: Tue May 28 16:35:49 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good

guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 242-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
	-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
	-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
	-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

-	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating	

-	Component	Initial Acceptance	Periodic Frequency	Method
				device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge

-	Component	Initial Acceptance	Periodic Frequency	Method	
				systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th in th c
-			-	-		W in s c te in te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the notification

	Component	Initial Acceptance	Periodic Frequency	Method	
					appliances.
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
-	-	-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.	
24.	Emergency control functions[s]	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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X		Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X		Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
27. Supervising station alarm systems — receiving equipment					
	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for	

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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(a).	
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).	
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised. Add Two way emergency communcations systems and their components

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and

IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

72 needs to add inspection requirements for two way emergency communications systems, ie area of refuge, stairway communications etc. Terra would not allow me to easily add this new section. Ad the main control unit, remote call in units, off premise testing, supervision, batteries, etc.

If a task group is needed to create this count me in.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:

City:
State:
Zip:
Submittal Date: Tue Jun 04 17:15:39 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The submitter did not provide suggested text. The Technical Committee requests the Correlating Committee to assign this topic, along with visual inspection criteria for Table 14.3.1, to a Task Group to develop recommended text.

Public Input No. 270-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

	Component	Initial Acceptance	Periodic Frequency	Method	
	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
	(2) Ground				

	Component	Initial Acceptance	Periodic Frequency	Method	
			(2) Ground		
	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

	Component	Initial Acceptance	Periodic Frequency	Method	
					W c p u d b c p M ir a tr V p c a th w 2 o tr fa R c p
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	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
	-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
	-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
	-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m in v b c R te o o c R b th m o d th e b 3 fc c a m re in W b e m b v u th w c in v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating	

-	Component	Initial Acceptance	Periodic Frequency	Method
				device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge

-	Component	Initial Acceptance	Periodic Frequency	Method	
				systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th ir th c
-			-	-		W ir s c te ir te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuito	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the notification

	Component	Initial Acceptance	Periodic Frequency	Method	
					appliances.
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
-	-	-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.	
24.	Emergency control functions[s]	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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	- -
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-
			-	-	-

		Component	Initial Acceptance	Periodic Frequency	Method	
27.	Supervising station alarm systems — receiving equipment					
		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
		(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible	

	Component	Initial Acceptance	Periodic Frequency	Method	
				and visual annunciation of a trouble signal in the supervising station.	

	Component	Initial Acceptance	Periodic Frequency	Method	
				following conditions:	
	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for	

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e] ~~Example: 4000 mAh × 1/25 = 160 mA charging current at 77°F (25°C).~~

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

This pertains to footnote "e" at the end of the test methods table. This used to be footnote "d", as it existed in the 2016 edition, and pertained to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition but the footnote was mistakenly retained and re-designated as "e". Footnote "e " should, therefore, be deleted from the 2021 edition.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 09:45:15 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined.

Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 271-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

	Component	Initial Acceptance	Periodic Frequency	Method	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
-		(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure ~~and record~~ 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 ~~the~~ its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure .	
-		(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.	
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semiannually

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.

-	Component	Initial Acceptance	Periodic Frequency	Method	
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	

-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.
12.	Reserved	-	-	-
13.	Reserved	-	-	-
14.	Reserved	-	-	-
15.	Conductors — metallic	-	-	-
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	-	N/A	Annually	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.
16.	Conductors — nonmetallic	-	-	-		
	-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not	

		Component	Initial Acceptance	Periodic Frequency	Method	
					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, 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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.
-	(4) Heat detectors	-	-	-
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem

	Component	Initial Acceptance	Periodic Frequency	Method
				involving 1 or 2 defective detectors.
	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and electrically.
	(e) 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.
	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.
	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[I]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table

-	Component	Initial Acceptance	Periodic Frequency	Method
				14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
-	(9) Carbon monoxide detectors/carbon monoxide alarms	-	-	-	
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and

-	Component	Initial Acceptance	Periodic Frequency	Method	
				approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t e a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r e

		Component	Initial Acceptance	Periodic Frequency	Method	
						C re s th in th c
						W in s c te in te p s
						R te re
18.	Special hazard equipment					
		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the

-	Component	Initial Acceptance	Periodic Frequency	Method
				device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	ʳFor periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	

		Component	Initial Acceptance	Periodic Frequency	Method	
	-			-	-	-
	-		-	N/A	Annually	[r]For periodic 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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-		-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
27. Supervising station alarm systems — receiving equipment	-	-	-		
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.	
	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:	

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.	

		Component	Initial Acceptance	Periodic Frequency	Method
					Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
	-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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(a).	
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).	
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
30.	Mass notification systems	-	-	-	
-	(1) Functions		X	Annually	At a minimum, test control equipment 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.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F

	Component	Initial Acceptance	Periodic Frequency	Method	
				(FAST). Record the maximum output when the audible emergency evacuation signal is on.	
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table

14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

This PI proposes two changes to the battery test methods. Firstly, with the introduction of a test method for temperature testing of batteries, there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the

FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This PI proposes to clarify that language as well as provide clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement. Secondly, with regard to the semi-annual Ohmic Test, the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, it is proposed that reference to connection to the charger be deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized. This harmonizes more clearly with the related annex note, which is also the subject of a related PI.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 272-NFPA 72-2019 [Section No. A.14.4.3.2]	
Public Input No. 272-NFPA 72-2019 [Section No. A.14.4.3.2]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 09:54:00 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-

PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 4-NFPA 72-2018 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	-	Component	Initial Acceptance	Periodic Frequency	Method
1.	All equipment	X	-		See Table 14.3.1.
2.	Control equipment and transponder	-	-	-	
	-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
	-	(2) Fuses	X	Annually	Verify rating and supervision.
	-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
	-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
	-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

	-	Component	Initial Acceptance	Periodic Frequency	Method
					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.
				-	-
				-	-

	-	Component	Initial Acceptance	Periodic Frequency	Method
4.	Supervising station alarm systems — transmission equipment	-	-	-	
	-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
				-	-
				-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.
			-	-
			-	-

	Component	Initial Acceptance	Periodic Frequency	Method

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-
			(2) Ground	
			-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.

		Component	Initial Acceptance	Periodic Frequency	Method

	-	Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.~~	
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

	-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior t condu any ba testing by the condu test, th syster softwa stored volatil memo protec loss.
	-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
	-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
	-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.	
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semi

		Component	Initial Acceptance	Periodic Frequency	Method	
		(5) Replacement/Load test[h]			3 years	Repla batter condu test of batter capac test th based manuf specif for a c rate o or mo applyi curren indica the se hourly discha contin until th termin voltag decrea the en voltag specif the manuf Recor test du and ca the ba capac includ adjust ambie tempe Repla batter capac less th equal or at t sched interv batter capac less th
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at		

-	Component	Initial Acceptance	Periodic Frequency	Method
			least once during each 24-hour period. Such tests shall include the following:	
			-	-
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
			-	-
			-	-
			-	-

	-	Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.	
12.	Reserved	-	-	-	
13.	Reserved	-	-	-	
14.	Reserved	-	-	-	
15.	Conductors — metallic	-	-	-	
	-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
	-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
	-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For pe testing each i device

	-	Component	Initial Acceptance	Periodic Frequency	Method	
						notific applia circuit signal circuit correc indica the co unit. C all circ perfor indica Sectio 23.6, a 23.7.
16.	Conductors — nonmetallic	-	-	-		
	-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit,	

		Component	Initial Acceptance	Periodic Frequency	Method	
					notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
		-	-	N/A	Annually	For pe testing each i device notific applia circuit signal circuit correc indica the co unit. C all circ perfor indica Sectio 23.6, a 23.7.
17.	Initiating devices[j]	-	-	-		
	-	(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
	-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
	-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
	-	(4) Heat detectors	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
			-	-

	Component	Initial Acceptance	Periodic Frequency	Method
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and electrically.
-	(e) 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.
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	[I]Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed

-	Component	Initial Acceptance	Periodic Frequency	Method
				and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the

-	Component	Initial Acceptance	Periodic Frequency	Method
				airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(8) Smoke detectors — sensitivity testing	-	-	-
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:
			-	-
			-	-
			-	-
			-	-

		Component	Initial Acceptance	Periodic Frequency	Method
		(9) Carbon monoxide detectors/carbon monoxide alarms			
		(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
		(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
		(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
		(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices

-	Component	Initial Acceptance	Periodic Frequency	Method
				connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for

-	Component	Initial Acceptance	Periodic Frequency	Method
				dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.
-		-	-	
-		-	-	
			-	-

		Component	Initial Acceptance	Periodic Frequency	Method
18.	Special hazard equipment				
		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of

	-	Component	Initial Acceptance	Periodic Frequency	Method
					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[o]	X	Annually	Verify operation of solenoid.
	-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
	-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
	-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-	
	-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
	-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire

	-	Component	Initial Acceptance	Periodic Frequency	Method
					alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For p testing the op of the notific applia
-	(2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For p testing the op of the

	-	Component	Initial Acceptance	Periodic Frequency	Method	
						notific appli
	-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	-	N/A	Annually	For pe testing that ea appli flashe
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	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		

	-	Component	Initial Acceptance	Periodic Frequency	Method
				has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	

	-	Component	Initial Acceptance	Periodic Frequency	Method
				-	-
				-	-
26.	Special procedures	-	-	-	
	-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
	-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.
				-	-
				-	-
				-	-

		Component	Initial Acceptance	Periodic Frequency	Method
27.	Supervising station alarm systems — receiving equipment				
		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
		(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR,

-	Component	Initial Acceptance	Periodic Frequency	Method
				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:
			-	-
			-	-
			-	-
			-	-
			-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary

-	Component	Initial Acceptance	Periodic Frequency	Method
				station under the following conditions:
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:
			-	-
			-	-
			-	-
			-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within

	-	Component	Initial Acceptance	Periodic Frequency	Method
					5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
	-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
	-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected

	-	Component	Initial Acceptance	Periodic Frequency	Method
					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(a).
	-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
				-	-
				-	-

	-	Component	Initial Acceptance	Periodic Frequency	Method
				-	-
30.	Mass notification systems	-	-	-	
	-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
	-	(2) Fuses	X	Annually	Verify the rating and supervision.
	-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

As the 5/15 minute alarm operation process already takes place during acceptance testing per the Power Systems Supplement of the Record of Completion (Section 2.3.4 of that form), this should not be taking place every year thereafter. The drain on the battery as a result of this test being done every year and the time needed for the battery to recharge after that test presents a serious concern. What if there is a power outage during the time that the batteries are trying to recharge after the 5 minute or 15 minute alarm test on standby power has been performed and there is a fire event at the same time? The panel will likely not be able to perform adequately. Chapter 10 already mandates that standby power capacity be designed to perform the 5 or 15 minute alarm notification requirement on standby power following a 24-hour primary power outage. And, again, that is verified at acceptance. In order to do this test as currently outlined and verify that the panel is still capable of the 5/15 minute alarm notification per Chapter 10, primary power would need to be dropped for 24 hours prior to the periodic test. How often, realistically, is this being done annually? How often, realistically, can it be done? And yet, that is what this test method is calling for currently. There are new, more stringent semiannual test methods now for batteries to ensure better strength/integrity of secondary/standby power, making this 24 hour off-power test method requirement unnecessary and potentially dangerous.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Wed Oct 17 08:20:00 EDT 2018
Committee: SIG-TMS

Committee Statement

Resolution: Removal of this text would also affect initial acceptance testing. Testing of the system for the total alarm duration could identify performance issues.

Public Input No. 461-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-		Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors and alarms — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled	

-	Component	Initial Acceptance	Periodic Frequency	Method
				product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				duct using a method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Carbon monoxide detectors/carbon monoxide alarms	-	-	-
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the

-	Component	Initial Acceptance	Periodic Frequency	Method
				same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				action, or deluge systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th in th c
-			-	-		W in s c te in te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the notification

-	Component	Initial Acceptance	Periodic Frequency	Method	
					appliances.
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.	
24.	Emergency control functions[S]	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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	- -
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X		Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X		Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-	-
			-	-	-
			-	-	-

		Component	Initial Acceptance	Periodic Frequency	Method	
27.	Supervising station alarm systems — receiving equipment					
		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
		(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for	

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

This section of the table addresses both smoke detectors and smoke alarms.

Submitter Information Verification

Submitter Full Name: Jack Poole
Organization: Poole Fire Protection, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:49:56 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: Single- and multiple-station smoke alarms are inspected, tested, and maintained in accordance with 14.4.5.

Public Input No. 463-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

	Component	Initial Acceptance	Periodic Frequency	Method	
	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
	(2) Ground				

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-		Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily		Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke ~~alarms connected to protected premises systems~~ alarms	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms whether they are connected to a protected premises fire alarm system or not by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method
	(9) Carbon monoxide detectors/carbon monoxide alarms			
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices

-	Component	Initial Acceptance	Periodic Frequency	Method
				connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for

-	Component	Initial Acceptance	Periodic Frequency	Method	
				dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th in th c
-			-	-		W in s c te in te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of	

-	Component	Initial Acceptance	Periodic Frequency	Method
				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[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire

-	Component	Initial Acceptance	Periodic Frequency	Method
				alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the

		Component	Initial Acceptance	Periodic Frequency	Method	
						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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-		N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	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		

-	Component	Initial Acceptance	Periodic Frequency	Method
			has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X		Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X		Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
27. Supervising station alarm systems — receiving equipment					
	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR,	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				station under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within	

-	Component	Initial Acceptance	Periodic Frequency	Method
				5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Chapter 14 has no requirement to annually test a single- or multi-station smoke alarm that was not connected to a protected premises system. All smoke detectors or smoke alarms shall be tested annually. Chapter 29 refers to Chapter 14 and Chapter 14 pushes you to the manufacturer, but no all manufacturers clearly require in their literature to perform annual testing.

Submitter Information Verification

Submitter Full Name: Jack Poole
Organization: Poole Fire Protection, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:53:02 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: Single- and multiple-station smoke alarms are inspected, tested, and maintained in accordance with 14.4.5.

Public Input No. 474-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-		-	-		W c p u d b c p M ir a tr V p c a th w 2 o tr fa R c p
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	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-		Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m in v b c R te o o c R b th m o d th e b 3 fc c a m re in W b e m b v u th w c in v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2~~(g)(1) and Table 14.4.3.2(h)~~ , test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				duct using a method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method		
			-	-	-	
-	(9) Carbon monoxide detectors/carbon monoxide alarms	-	-	-	-	c p p
(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions			
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.		
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.		
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the		

-	Component	Initial Acceptance	Periodic Frequency	Method
				control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with manufacturer's published instructions for testing low air-pressure dry pipe systems .
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s to te a ir s re b
-		-	-		P a fo re d ir th p th c e e c (r a e s

		Component	Initial Acceptance	Periodic Frequency	Method	
						c th re
						C re s th in th c W in s c te in te p s R te re
18.	Special hazard equipment					
		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's	

-	Component	Initial Acceptance	Periodic Frequency	Method
				manual.
-	(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.

		Component	Initial Acceptance	Periodic Frequency	Method
-		(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements.

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	ᶠFor periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F	

		Component	Initial Acceptance	Periodic Frequency	Method	
					(FAST).	
				N/A	Annually	[r]For periodic 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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
				N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency		

-	Component	Initial Acceptance	Periodic Frequency	Method
			control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
		-	-	-
		-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
27.	Supervising station alarm systems — receiving equipment	-	-	-	
-		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.	
			-	-	-
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission	

		Component	Initial Acceptance	Periodic Frequency	Method
					technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment				
		(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

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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(a).	
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).	
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
30.	Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment 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.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F

	Component	Initial Acceptance	Periodic Frequency	Method	
				(FAST). Record the maximum output when the audible emergency evacuation signal is on.	
	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table

14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

1. For consideration as directed by the TCC.
2. Only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) technical committee.

3. Table 14.4.3.2(g)(1) and Table 14.4.3.2(h) are invalid references.
4. SIG-TMS needs to review Table 14.4.3.2 Item (10)(b) relative to10 PSI increase/decrease to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 17:28:57 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019
Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 5-NFPA 72-2018 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
	-				signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
	-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
	-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
	-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily		Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

		Component	Initial Acceptance	Periodic Frequency	Method	
						correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-		
	-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

-	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating	

-	Component	Initial Acceptance	Periodic Frequency	Method
				device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge

-	Component	Initial Acceptance	Periodic Frequency	Method	
				systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th ir th c
-			-	-		W ir s c te ir te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	ʳFor periodic 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 alert tone signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	ʳFor periodic testing, verify the operation of the

		Component	Initial Acceptance	Periodic Frequency	Method	
						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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-		N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	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		

-	Component	Initial Acceptance	Periodic Frequency	Method
			has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	- -
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26. Special procedures	-	-	-		
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
27. Supervising station alarm systems — receiving equipment					
	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR,	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				station under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within	

-	Component	Initial Acceptance	Periodic Frequency	Method
				5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
30.	Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.	
-	(2) Fuses	X	Annually	Verify the rating and supervision.	
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the	

-	Component	Initial Acceptance	Periodic Frequency	Method
				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 for alert tone signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
		-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Wed Oct 17 08:39:16 EDT 2018
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined.

Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 544-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control ~~equipment and transponder~~	-	-	-	- 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

	Component	Initial Acceptance	Periodic Frequency	Method	
				operation. 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.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			(2) Ground		
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-		Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating	

-	Component	Initial Acceptance	Periodic Frequency	Method
				device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge

-	Component	Initial Acceptance	Periodic Frequency	Method	
				systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th in th c
-			-	-		W in s c te in te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the notification

		Component	Initial Acceptance	Periodic Frequency	Method	
						appliances.
	-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance		X	Annually	Perform tests in accordance with manufacturer's published instructions.	
24.	Emergency control functions[S]		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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X		Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X		Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
27.	Supervising station alarm systems — receiving equipment				
	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				and subsidiary station under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the	

-	Component	Initial Acceptance	Periodic Frequency	Method
				failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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(a).	
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).	
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control ~~equipment~~ unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating

-	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
		-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control ~~equipment~~ unit . With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 10:30:43 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined.

Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 68-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

	Component	Initial Acceptance	Periodic Frequency	Method	
	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
	(2) Ground				

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
	-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
	-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
	-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

-	Component	Initial Acceptance	Periodic Frequency	Method	
					correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating	

-	Component	Initial Acceptance	Periodic Frequency	Method
				device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset ~~during full travel of the valve stem~~ .
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge

-	Component	Initial Acceptance	Periodic Frequency	Method	
				systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th ir th c
-			-	-		W ir s c te ir te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the notification

-	Component	Initial Acceptance	Periodic Frequency	Method	
					appliances.
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.	
24.	Emergency control functions[S]	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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	- -
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-
			-	-	-

		Component	Initial Acceptance	Periodic Frequency	Method	
27.	Supervising station alarm systems — receiving equipment					
		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
		(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for	

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Requiring that the test include travel for the full length of the stem causes the valve to be closed and that would then require a main drain test per NFPA 25.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 15:40:33 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The test is required to satisfy the requirement in 17.17.1.3, which says that the valve shall initiate a supervisory signal when it is not fully open. NFPA 25 only requires a valve status test, not a main drain test.

Public Input No. 70-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	
						W c p u d b c p M ir a tr V p c a th w 2 o tr fa R c p
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	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-		Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

		Component	Initial Acceptance	Periodic Frequency	Method	
						correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-		
	-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-		-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

-	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	~~(c) Duct type~~	~~X~~	~~Annually~~	~~Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.~~	~~(d)~~ CO detector with control output functions

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for

-	Component	Initial Acceptance	Periodic Frequency	Method	
				dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th in th c
-			-	-		W in s c te in te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of	

-	Component	Initial Acceptance	Periodic Frequency	Method
				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[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire

-	Component	Initial Acceptance	Periodic Frequency	Method
				alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the

		Component	Initial Acceptance	Periodic Frequency	Method	
						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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-		N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	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		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26. Special procedures	-	-	-		
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-
			-	-	-

		Component	Initial Acceptance	Periodic Frequency	Method	
27.	Supervising station alarm systems — receiving equipment					
		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
		(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR,	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				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:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary	

	Component	Initial Acceptance	Periodic Frequency	Method	
				station under the following conditions:	
	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within	

-	Component	Initial Acceptance	Periodic Frequency	Method
				5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the

-	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

There are no UL listed CO duct detectors or alarms.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 16:05:01 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: Although there are no listed CO duct detectors currently available, the table should address testing requirements in the event one is introduced.

Public Input No. 71-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	
						W c p u d b c p M ir a tr V p c a th w 2 o tr fa R c p
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	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
	-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
	-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
	-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X		Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

		Component	Initial Acceptance	Periodic Frequency	Method	
						correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-		
	-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method	
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.	
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.	
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				~~acceptable to the manufacturer or in accordance with their published instructions~~ . Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the

	Component	Initial Acceptance	Periodic Frequency	Method	
				duct using a method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(9) Carbon monoxide detectors/carbon monoxide alarms	-	-	-
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the

-	Component	Initial Acceptance	Periodic Frequency	Method
				same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-

-	Component	Initial Acceptance	Periodic Frequency	Method	
				action, or deluge systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th in th c
-			-	-		W in s c te in te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the notification

		Component	Initial Acceptance	Periodic Frequency	Method	
						appliances.
	-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance		X	Annually	Perform tests in accordance with manufacturer's published instructions.	
24.	Emergency control functions[S]		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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
27. Supervising station alarm systems — receiving equipment					
	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible	

	Component	Initial Acceptance	Periodic Frequency	Method	
				and visual annunciation of a trouble signal in the supervising station.	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for	

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
-		(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-		(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Some manufacturers and vendors are asserting that a magnet test, if specified in the manufacturer's instructions, meets the method requirement of Table 14.4.3.2.17(7)(a). While the keynote "l" clearly states otherwise, by deleting these words, it makes it clear that the test method is for smoke entry, which is the whole point of the paragraph.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 16:15:17 EDT 2019

Committee: SIG-TMS

Committee Statement

Resolution: Footnote I adequately clarifies that a magnet test is not an acceptable means of testing smoke entry.

Public Input No. 72-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

		Component	Initial Acceptance	Periodic Frequency	Method
1.	All equipment	X	-		See Table 14.3.1.
2.	Control equipment and transponder	-	-	-	
	-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
	-	(2) Fuses	X	Annually	Verify rating and supervision.
	-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
	-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
	-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.
3.	Alarm control unit trouble signals	-	-	-	

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.	
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.	
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.	
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.	
		-	-		-
		-	-		-

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method

	Component	Initial Acceptance	Periodic Frequency	Method
-			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
			(2) Ground		
	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in

-	Component	Initial Acceptance	Periodic Frequency	Method
			accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system in accordance with NFPA 111.
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

		Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]					Prior to conducting any battery testing, verify by the person conducting th test, that all system software stored in volatile memory is protected fror loss.
		(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
		(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.	
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semiannuall

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a loa test of the battery capacity. Loa test the batte based on the manufacturer specifications for a discharg rate of 3 hour or more by applying the current indicated for the selected hourly discharge rat continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer Record the test duration and calculate the battery capacity including adjustment fo ambient temperature. Replace the battery if capacity is less than or

-	Component	Initial Acceptance	Periodic Frequency	Method	
					equal to 80% or at the next scheduled tes interval if battery capacity is less than 85%
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	-
11. Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
-	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct

		Component	Initial Acceptance	Periodic Frequency	Method	
						indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-		
	-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
		-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance

-	Component	Initial Acceptance	Periodic Frequency	Method	
					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.
17.	Initiating devices[j]	-	-	-	
-	(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
-	(4) Heat detectors	-	-	-	
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	

	Component	Initial Acceptance	Periodic Frequency	Method
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and electrically.
-	(e) 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.
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both

-	Component	Initial Acceptance	Periodic Frequency	Method	
				key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through

	Component	Initial Acceptance	Periodic Frequency	Method	
				all other ports or points.	
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2.17 (~~g~~ 7)(~~1~~ a) and Table 14.4.3.2.17 (~~h~~ 8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
-	(9) Carbon monoxide detectors/carbon monoxide alarms	-	-	-	
-	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the	

-	Component	Initial Acceptance	Periodic Frequency	Method
				same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer’s published instructions.
-		-	-	

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-	(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-	(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire

-	Component	Initial Acceptance	Periodic Frequency	Method
				extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for

-	Component	Initial Acceptance	Periodic Frequency	Method	
				signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	⌜For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F	

		Component	Initial Acceptance	Periodic Frequency	Method	
					(FAST).	
				-	-	-
	-		-	N/A	Annually	[r]For periodic 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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-		-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	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		

-	Component	Initial Acceptance	Periodic Frequency	Method
			during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
27. Supervising station alarm systems — receiving equipment	-	-	-		
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.	
			-	-	-
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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;	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple	

		Component	Initial Acceptance	Periodic Frequency	Method
					communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28.	Public emergency alarm reporting system transmission equipment	-	-	-	
	-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
	-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
	-	(3) Master box	-	-	-
	-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(a).
	-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			verify wireless protection system operation:		
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(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 S1.4a, *Specifications for Sound Level Meters,*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.	
-		-	-	-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is	

-	Component	Initial Acceptance	Periodic Frequency	Method
				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 equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Editorial correction to references to other items in the Table.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)

Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 16:20:45 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 73-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately.
3. Alarm control unit trouble signals	-	-	-	

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(1) Audible and visual	X	Annually	Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting.	
-	(2) Disconnect switches	X	Annually	If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected.	
-	(3) Ground-fault monitoring circuit	X	Annually	If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded.	
-	(4) Transmission of signals to off-premises location	X	Annually	Actuate an initiating device and verify receipt of alarm signal at the off-premises location.	
		-	-		-
		-	-		-

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
			(2) Ground		
	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

-	Component	Initial Acceptance	Periodic Frequency	Method
5.	Emergency communications equipment	-	-	-
-	(1) Amplifier/tone generators	X	Annually	Verify correct switching and operation of backup equipment.
-	(2) Call-in signal silence	X	Annually	Operate/function and verify receipt of correct visual and audible signals at control unit.
-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in

-	Component	Initial Acceptance	Periodic Frequency	Method
			accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system in accordance with NFPA 111.
8.	Secondary (standby) power supply[C]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test.
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

		Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]					Prior to conducting any battery testing, verify by the person conducting th test, that all system software stored in volatile memory is protected fror loss.
		(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
		(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.	
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.	
		-	-	-	Semiannuall

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a loa test of the battery capacity. Loa test the batte based on the manufacturer specifications for a discharg rate of 3 hour or more by applying the current indicated for the selected hourly discharge rat continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer Record the test duration and calculate the battery capacity including adjustment fo ambient temperature. Replace the battery if capacity is less than or

-	Component	Initial Acceptance	Periodic Frequency	Method	
					equal to 80% or at the next scheduled tes interval if battery capacity is less than 85%
10. Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:		
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	- -
			-	- -
			-	- -

		Component	Initial Acceptance	Periodic Frequency	Method
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.	
12.	Reserved				
13.	Reserved				
14.	Reserved				
15.	Conductors — metallic				
		(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
		(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
-	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct

-	Component	Initial Acceptance	Periodic Frequency	Method	
					indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-	
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
-	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance

-	Component	Initial Acceptance	Periodic Frequency	Method	
					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.
17.	Initiating devices[j]	-	-	-	
-	(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
-	(4) Heat detectors	-	-	-	
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.	

	Component	Initial Acceptance	Periodic Frequency	Method
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and electrically.
-	(e) 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.
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both

-	Component	Initial Acceptance	Periodic Frequency	Method	
				key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Smoke detectors — functional test	-	-	-
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through

	Component	Initial Acceptance	Periodic Frequency	Method	
				all other ports or points.	
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2.17 (~~g~~ 7)(~~1~~ a) and Table 14.4.3.2.17 (~~h~~ 8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the	

-	Component	Initial Acceptance	Periodic Frequency	Method
				same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer’s published instructions.
-		-	-	

	Component	Initial Acceptance	Periodic Frequency	Method
18.	Special hazard equipment			

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-	(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-	(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19.	Combination systems	-	-	-
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire

-	Component	Initial Acceptance	Periodic Frequency	Method
				extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for

-	Component	Initial Acceptance	Periodic Frequency	Method	
				signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	⌜For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F	

		Component	Initial Acceptance	Periodic Frequency	Method	
					(FAST).	
	-		-	N/A	Annually	[r]For periodic 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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-		-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24.	Emergency control functions[s]	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		

-	Component	Initial Acceptance	Periodic Frequency	Method
			during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.	
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.
			-	- -
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
27. Supervising station alarm systems — receiving equipment	-	-	-		
-	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.	
			-	-	-
-	(3) Digital alarm radio receiver (DARR)	X	Monthly	Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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;	

	Component	Initial Acceptance	Periodic Frequency	Method	
				verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple	

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29. Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			verify wireless protection system operation:		
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(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 S1.4a, *Specifications for Sound Level Meters,*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.	
-		-	-	-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is	

-	Component	Initial Acceptance	Periodic Frequency	Method
				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 equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

Corrects the reference error in the 2019 Edition

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)

Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 16:28:01 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 80-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
		-	-		-
		-	-		-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
	-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
	-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
	-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a o re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

		Component	Initial Acceptance	Periodic Frequency	Method	
						correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-		
	-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
-	-	-	-	-
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and

-	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

-	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating	

-	Component	Initial Acceptance	Periodic Frequency	Method
				device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge

-	Component	Initial Acceptance	Periodic Frequency	Method	
				systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th ir th c
-			-	-		W ir s c te ir te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the notification

-	Component	Initial Acceptance	Periodic Frequency	Method	
					appliances.
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
	-	-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.	
24.	Emergency control functions[S]	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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X		Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.
-	(2) Multiplex systems	X		Annually	Verify communications between sending and receiving units under both primary and secondary power.
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
27. Supervising station alarm systems — receiving equipment					
	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible	

	Component	Initial Acceptance	Periodic Frequency	Method	
				and visual annunciation of a trouble signal in the supervising station.	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for	

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30. Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being

-	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.
		-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

This PI addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both. This is a seemingly minor change on the surface but considering that there is no economically feasible instrument for testing on the market currently for either conductance or resistance/impedance, it's very important that the intent be made clear that only one of these tests is required.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 01 08:58:03 EDT 2019

Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the

meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 89-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
4. Supervising station alarm systems — transmission equipment	-	-	-		
-	(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
-	(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
-	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
-	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	

		Component	Initial Acceptance	Periodic Frequency	Method
					signals at control unit.
	-	(3) Off-hook indicator (ring down)	X	Annually	Install phone set or remove phone from hook and verify receipt of signal at control unit.
	-	(4) Phone jacks	X	Annually	Visually inspect phone jack and initiate communications path through jack.
	-	(5) Phone set	X	Annually	Actuate each phone set and verify correct operation.
	-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.	
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
			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.	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	
- -	-	-	-	

	-	Component	Initial Acceptance	Periodic Frequency	Method	
9.	VRLA battery and charger[d]	-	-			Prior to conducting any battery testing, verify by the person conducting the test, that all system software stored in volatile memory is protected from loss.
	-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.	
	-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.	
	-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures	

-	Component	Initial Acceptance	Periodic Frequency	Method		
				a voltage less than 13.26 volts.		
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record the base line ohmic value on each battery cell/unit.		
		-	-	-	Semiannually	W b c c th m ir v b c R te o o c R b th m o d th e b 3 fc c a m re ir W b e m b v u th w c ir v

	Component	Initial Acceptance	Periodic Frequency	Method	
					o a ra
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10. Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			include the following:		
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If	

-	Component	Initial Acceptance	Periodic Frequency	Method
			provided, verify the correct operation of annunciator under a fault condition.	
12. Reserved	-	-	-	
13. Reserved	-	-	-	
14. Reserved	-	-	-	
15. Conductors — metallic	-	-	-	
-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the

-	Component	Initial Acceptance	Periodic Frequency	Method	
				installed equipment. Also test these same circuits conductor-to-ground.	
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	N/A	Annually	For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for

		Component	Initial Acceptance	Periodic Frequency	Method	
						correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.
16.	Conductors — nonmetallic	-	-	-		
	-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as	

		Component	Initial Acceptance	Periodic Frequency	Method	
					indicated in Sections 23.5, 23.6, and 23.7.	
				N/A	Annually	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.
17.	Initiating devices[j]					
		(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[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.	
		(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.	
		(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.	
		(4) Heat detectors				
		(a) Fixed-temperature, rate-of-rise, rate of compensation,	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in	

-	Component	Initial Acceptance	Periodic Frequency	Method
	restorable line, spot type (excluding pneumatic tube type)			accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and

	Component	Initial Acceptance	Periodic Frequency	Method	
				electrically.	
-	(e) 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.	
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative.	
		-	-		-
		-	-		-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Smoke detectors — functional test	-	-	-	
-	(a) In other than one- and two-family dwellings, system detectors	X	Annually	I 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.
-	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.
-	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.
-	(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. Test from the end sampling port or point on each pipe run. Verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2 (~~g~~ 7)(~~1~~ a) and Table 14.4.3.2 (~~h~~ 8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a

	Component	Initial Acceptance	Periodic Frequency	Method	
				method acceptable to the manufacturer or in accordance with their published instructions.	
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.	
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.	
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.	
-	(8) Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(9) Carbon monoxide detectors/carbon monoxide alarms				
	(a) CO entry test	X	Annually	Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions	
	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.	
	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.	
	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating	

-	Component	Initial Acceptance	Periodic Frequency	Method
				device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(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

-	Component	Initial Acceptance	Periodic Frequency	Method
				in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to required level.
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge

-	Component	Initial Acceptance	Periodic Frequency	Method	
				systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	Test each of the detection principles present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing. Also test each detector in accordance with the manufacturer's published instructions.	
-		-	-		T s t t a i s r b
-		-	-		P a f r d i t p t c e e c (r a e s c t r
		-	-	-	

		Component	Initial Acceptance	Periodic Frequency	Method	
-			-	-		C re s th ir th c
-			-	-		W ir s c te ir te p s
-			-	-		R te re
18.	Special hazard equipment	-	-	-		
-		(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.	
-		(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.	
-		(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.	
-		(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit

-	Component	Initial Acceptance	Periodic Frequency	Method
				and remote annunciator(s) if applicable.
20.	Interface equipment[p]	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[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible*

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI), using the time-weighted characteristic F (FAST).	
	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
	-	-	-	-	-
	-	-	N/A	Annually	[r]For periodic testing, verify the operation of the notification

	Component	Initial Acceptance	Periodic Frequency	Method	
					appliances.
-	(3) Visual	X	N/A	Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
-	-	-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23.	Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.	
24.	Emergency control functions[S]	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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25.	Two-way emergency communications systems	X	Annually	Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	
-	(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
27. Supervising station alarm systems — receiving equipment					
	(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
	(2) Digital alarm communicator receiver (DACR)	X	Monthly	Disconnect each transmission means in turn from the DACR, and verify audible	

	Component	Initial Acceptance	Periodic Frequency	Method	
				and visual annunciation of a trouble signal in the supervising station.	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for	

-	Component	Initial Acceptance	Periodic Frequency	Method
				communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.
28. Public emergency alarm reporting system transmission equipment	-	-	-	
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating

-	Component	Initial Acceptance	Periodic Frequency	Method
				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(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
		-	-	-
30.	Mass notification systems	-	-	-
-	(1) Functions	X	Annually	At a minimum, test control equipment to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being

	Component	Initial Acceptance	Periodic Frequency	Method
				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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents.
-	(9) Control unit reset	X	Annually	Power down the central control unit computer and restart it.
-	(10) Control unit security	X	Annually	If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access.
-	(11) Audible/visual functional test	X	Annually	Send out an alert to a diverse set of predesignated

-	Component	Initial Acceptance	Periodic Frequency	Method
				receiving devices and confirm receipt. Include at least one of each type of receiving device.
-	(12) Software backup	X	Annually	Make full system software backup. Rotate backups based on accepted practice at site.
-	(13) Secondary power test	X	Annually	Disconnect ac power. Verify the ac power failure alarm status on central control equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or

as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[s]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

This PI addresses the test method for duct type smoke detectors. No change in the method is proposed. However, the table references to the smoke detector test methods are incorrect due to the change in numbering/ordering that took place in the last edition.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 01 11:12:44 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined.

Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 94-NFPA 72-2019 [Section No. 14.4.3.2]

14.4.3.2*

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

-	Component	Initial Acceptance	Periodic Frequency	Method
1. All equipment	X	-		See Table 14.3.1.
2. Control equipment and transponder	-	-	-	
-	(1) Functions	X	Annually	Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power

-	Component	Initial Acceptance	Periodic Frequency	Method
				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.
			-	- -
			-	- -

		Component	Initial Acceptance	Periodic Frequency	Method	
4.	Supervising station alarm systems — transmission equipment					
		(1) All equipment	X	Annually	[a]Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.	
		(2) Digital alarm communicator transmitter (DACT)	X	Annually	Except for DACTs installed prior to adoption of the 2013 edition of NFPA 72 that are connected to a	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.	
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method
			-	- -
			-	- -

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(3) Digital alarm radio transmitter (DART)	X	Annually	Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes.	
-	(4) McCulloh transmitter	X	Annually	Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.	
			-	-	-
			-	-	-
			(2) Ground		
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
			(2) Ground		
	(5) Radio alarm transmitter (RAT)	X	Annually	Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station.	
	(6) Performance-based technologies	X	Annually	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path.Where shared communications equipment is used as permitted by 26.6.3.1.14, provided secondary (standby) power sources shall be tested in accordance with Table 14.4.3.2, item 7, 8, or 9, as applicable.	

		Component	Initial Acceptance	Periodic Frequency	Method	
						W c p u d b c p M ir a tr V p c a th w 2 o tr fa R c p
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.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(6) System performance	X	Annually	Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity.
6.	Engine-driven generator	X	Monthly	If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner.
7.	Energy storage systems (ESS)	X	Annually	If an ESS system dedicated to the system is used as a required power source, verify by the building owner operation of the ESS system in accordance with NFPA 111.
8.	Secondary (standby) power supply[c]	X	Annually	Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems a minimum of 5 minutes and

		Component	Initial Acceptance	Periodic Frequency	Method
				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 the test, that all system software stored in volatile memory is protected from loss.

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Temperature test	X	Semiannually	Upon initially opening the cabinet door, measure and record the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if the temperature is greater than 18°F (10°C) above ambient.
-	(2) Charger test[f]	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger.
-	(3) Cell/Unit voltage test	X	Semiannually	With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts.
-	(4) Ohmic test[g]	X	N/A	When the battery is installed, establish a baseline ohmic value for each battery cell/unit or where available use baseline ohmic values provided by the battery or test equipment manufacturer. In either case record

-	Component	Initial Acceptance	Periodic Frequency	Method	
				the base line ohmic value on each battery cell/unit.	
		-	-	-	Semiannually
-	(5) Replacement/Load test[h]	-		3 years	Replace the battery or conduct a load test of the battery capacity. Load test the battery based on the manufacturer's specifications for a discharge rate of 3 hours or more by

-	Component	Initial Acceptance	Periodic Frequency	Method	
					applying the current indicated for the selected hourly discharge rate continuously, until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80% or at the next scheduled test interval if battery capacity is less than 85%.
10.	Public emergency alarm reporting system — wired system	X	Daily	Manual tests of the power supply for public reporting circuits shall be made and recorded at least once during each 24-hour period. Such tests shall include the following:	
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
11.	Remote annunciators	X	Annually	Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciator under a fault condition.	
12.	Reserved	-	-	-	
13.	Reserved	-	-	-	
14.	Reserved	-	-	-	
15.	Conductors — metallic	-	-	-	
	-	(1) Stray voltage	X	N/A	Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the

-	Component	Initial Acceptance	Periodic Frequency	Method
				maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment.
-	(2) Ground faults	X	N/A	Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground per the installed equipment manufacturer's published instructions.
-	(3) Short-circuit faults	X	N/A	Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation per the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground.
-	(4) Loop resistance	X	N/A	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment.

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(5) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
-	-	-	N/A	Annually	For 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.
16. Conductors — nonmetallic	-	-	-		
-	(1) Fiber optics	X	N/A	Test the fiber-optic transmission line by the use of an optical power meter or by an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA	

		Component	Initial Acceptance	Periodic Frequency	Method	
					568-C.3, *Optical Fiber Cabling Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications.	
	-	(2) Circuit integrity	X	N/A	For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the fire alarm control unit. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7.	
	-	-	-	N/A	Annually	For 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.
17.	Initiating devices[j]	-	-	-		

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Electromechanical releasing device	-	-	-
-	(a) Nonrestorable-type link	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.
-	(b) Restorable-type link[k]	X	Annually	Verify correct operation by removal of the fusible link and operation of the associated device.
-	(2) Fire extinguishing system(s) or suppression system(s) alarm switch	X	Annually	Operate the switch mechanically or electrically and verify receipt of signal by the fire alarm control unit.
-	(3) Fire–gas and other detectors	X	Annually	Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application.
-	(4) Heat detectors	-	-	-
-	(a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type)	X	Annually (see 14.4.4.5)	Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector.
-	(b) Fixed-temperature, nonrestorable line type	X	Annually	Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance.

	Component	Initial Acceptance	Periodic Frequency	Method
				Investigate changes from acceptance test.
-	(c) Fixed-temperature, nonrestorable spot type	X	See Method	After 15 years from initial installation, replace all devices or have 2 detectors per 100 laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.
-	(d) Nonrestorable (general)	X	Annually	Do not perform heat tests. Test functionality mechanically and electrically.
-	(e) 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.
-	(f) Single- and multiple-station heat alarms	X	Annually	Conduct functional tests according to manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat.

-	Component	Initial Acceptance	Periodic Frequency	Method	
-	(5) Manual fire alarm boxes	X	Annually	Operate manual fire alarm boxes per the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes.	
-	(6) Radiant energy fire detectors	X	Semiannually	Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Smoke detectors — functional test				
	(a) In other than one- and two-family dwellings, system detectors	X	Annually	Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response. Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber can be used.	
	(b) Single- and multiple-station smoke alarms connected to protected premises systems	X	Annually	Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition.	
	(c) System smoke detectors used in one- and two-family dwellings	X	Annually	Conduct functional tests according to manufacturer’s published instructions.	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(d) Air sampling	X	Annually	Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. ~~Test~~ In the absense of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run . ~~Verify~~ and verify airflow through all other ports or points.
-	(e) Duct type	X	Annually	In addition to the testing required in Table 14.4.3.2(g)(1) and Table 14.4.3.2(h), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions.
-	(f) Projected beam type	X	Annually	Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path.
-	(g) Smoke detector with built-in thermal element	X	Annually	Operate both portions of the detector independently as described for the respective devices.
-	(h) Smoke detectors with control output functions	X	Annually	Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an

	Component	Initial Acceptance	Periodic Frequency	Method	
				alarm state.	
-	(8) Single Criteria Smoke detectors — sensitivity testing	-	-	-	
-	In other than one- and two-family dwellings, system detectors	N/A	See 14.4.4.3	[m]Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(9) Carbon monoxide detectors/carbon monoxide alarms	-	-	-	
-	(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	

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(b) Air sampling	X	Annually	Per test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well.
-	(c) Duct type	X	Annually	Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions.
-	(d) CO detector with control output functions	X	Annually	Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.
-	(10) Initiating devices, supervisory	-	-	-
-	(a) Control valve switch	X	Semiannual	Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or per the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem.
-	(b) High- or low-air pressure switch	X	Annually	Operate switch and verify receipt of signal is obtained where

-	Component	Initial Acceptance	Periodic Frequency	Method
				the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level.
-	(c) Steam pressure	X	Annually	Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment.
-	(d) Pressure supervisory devices for other sources	X	Annually	Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents.
-	(e) Room temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).
-	(f) Water level switch	X	Annually	Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoral to

	Component	Initial Acceptance	Periodic Frequency	Method	
				required level.	
-	(g) Water temperature switch	X	Annually	Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).	
-	(11) Mechanical, electrosonic, or pressure-type waterflow device	X	Semiannually	Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25.	
-	(12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector	X	Annually	1. Test each detector in accordance with the manufacturer's published instructions. Test each of the ~~detection principles~~ sensors present within the detector (e.g., smoke/heat/CO, etc.) independently for the specific detection principle, regardless of the configuration status at the time of testing ~~. Also test each detector in accordance with the manufacturer's published~~	-

	Component	Initial Acceptance	Periodic Frequency	Method	
				~~instructions.~~	
					2. Perform tests as described for the respective ~~devices~~ sensors by introduction of the physical phenomena to the sensing ~~chamber of~~ element. An electronic check (magnets, analog values, etc.) is not sufficient to comply with this requirement.
					4 re th te in th c
	~~Where individual sensors cannot be tested individually, test the primary sensor.~~ [n]				5. Record all tests and results.
18.	Special hazard equipment				

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Abort switch (dead-man type)	X	Annually	Operate abort switch and verify correct sequence and operation.
-	(2) Abort switch (recycle type)	X	Annually	Operate abort switch and verify development of correct matrix with each sensor operated.
-	(3) Abort switch (special type)	X	Annually	Operate abort switch and verify correct sequence and operation in accordance with authority having jurisdiction. Observe sequencing as specified on as-built drawings or in system owner's manual.
-	(4) Cross-zone detection circuit	X	Annually	Operate one sensor or detector on each zone. Verify occurrence of correct sequence with operation of first zone and then with operation of second zone.
-	(5) Matrix-type circuit	X	Annually	Operate all sensors in system. Verify development of correct matrix with each sensor operated.
-	(6) Release solenoid circuit[o]	X	Annually	Verify operation of solenoid.
-	(7) Squibb release circuit	X	Annually	Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light.
-	(8) Verified, sequential, or counting zone circuit	X	Annually	Operate required sensors at a minimum of four locations in circuit. Verify correct sequence with both the first and second detector in alarm.
-	(9) All above devices or circuits or combinations thereof	X	Annually	Verify supervision of circuits by creating an open circuit.

-	Component	Initial Acceptance	Periodic Frequency	Method
19. Combination systems	-	-	-	
-	(1) Fire extinguisher electronic monitoring device/system	X	Annually	Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
-	(2) Carbon monoxidedevice/system	X	Annually	Test communication between the device connecting the carbon monoxide device/system and the fire alarm control unit to ensure proper signals are received at the fire alarm control unit and remote annunciator(s) if applicable.
20. Interface equipment[p]	X	See 14.4.4.4	Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.	

-	Component	Initial Acceptance	Periodic Frequency	Method	
21.	Guard's tour equipment	X	Annually	Test the device in accordance with the manufacturer's published instructions.	
22.	Alarm notification appliances	-	-	-	
-	(1) Audible[q]	X	N/A	For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
-	-	-	N/A	Annually	[r]For periodic 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 S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements.	

-	Component	Initial Acceptance	Periodic Frequency	Method	
				Measure sound pressure levels throughout the protected area to confirm that they are in compliance with Chapter 18. Set the sound level meter in accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).	
		-		-	-
	-	-	N/A	Annually	[r]For periodic 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 per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	

-	Component	Initial Acceptance	Periodic Frequency	Method	
-		-	N/A	Annually	For periodic testing, verify that each appliance flashes.
23. Exit marking audible notification appliance	X	Annually	Perform tests in accordance with manufacturer's published instructions.		
24. Emergency control functions[s]	X	Annually	For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system.		
25. Two-way emergency communications systems	X	Annually	Use the manufacturer’s published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier’s designated representative.		

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
26.	Special procedures	-	-	-	
-	(1) Alarm verification	X	Annually	Verify time delay and alarm response for smoke detector circuits identified as having alarm verification.	

		Component	Initial Acceptance	Periodic Frequency	Method	
		(2) Multiplex systems	X	Annually	Verify communications between sending and receiving units under both primary and secondary power.	
27.	Supervising station alarm systems — receiving equipment					
		(1) All equipment	X	Monthly	Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable	

	Component	Initial Acceptance	Periodic Frequency	Method	
				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 equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:	

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(4) McCulloh systems	X	Monthly	Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:	
			-	-	-
			-	-	-
			-	-	-
			-	-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
			-	-	-
			-	-	-
-	(5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-
-	(6) Private microwave radio systems	X	Monthly	Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:	
			-	-	-
			-	-	-
			-	-	-

	Component	Initial Acceptance	Periodic Frequency	Method	
	(7) Performance-based technologies	X	Monthly	Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect both communication paths and confirm that failure of the path is annunciated at the supervising station within not more than 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore both communication paths.	
28.	Public emergency alarm reporting system transmission equipment				

-	Component	Initial Acceptance	Periodic Frequency	Method
-	(1) Publicly accessible alarm box	X	Semiannually	Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests.
-	(2) Auxiliary box	X	Annually	Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses.
-	(3) Master box	-	-	-
-	(a) Manual operation	X	Semiannually	Perform the tests prescribed for 28(a).
-	(b) Auxiliary operation	X	Annually	Perform the tests prescribed for 28(b).
29.	Low-power radio (wireless systems)	X	N/A	The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:
			-	-

-	Component	Initial Acceptance	Periodic Frequency	Method	
			-	-	-
			-	-	-
30.	Mass notification systems	-	-	-	
-	(1) Functions	X	Annually	At a minimum, test control equipment 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	

-	Component	Initial Acceptance	Periodic Frequency	Method
				circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
-	(2) Fuses	X	Annually	Verify the rating and supervision.
-	(3) Interfaced equipment	X	Annually	Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit.
-	(4) Lamps and LEDs	X	Annually	Illuminate lamps and LEDs.
-	(5) Primary (main) power supply	X	Annually	Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately.
-	(6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages)	X	Annually	Measure sound pressure level with a sound level meter meeting ANSI S1.4a, *Specifications for Sound Level Meters,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in

-	Component	Initial Acceptance	Periodic Frequency	Method	
				accordance with ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation Signal,* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.	
			-	-	-
-	(7) Visual	X	Annually	Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be per approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes.	
-	(8) Control unit functions and no diagnostic failures are indicated	X	Annually	Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is	

-	Component	Initial Acceptance	Periodic Frequency	Method
				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 equipment. With ac power disconnected, verify battery voltage under load.
-	(14) Wireless signals	X	Annually	Check forward/reflected radio power is within specifications.
-	(15) Antenna	X	Annually	Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion.
-	(16) Transceivers	X	Annually	Verify proper operation and mounting is not

-	Component	Initial Acceptance	Periodic Frequency	Method
				compromised.

[a]Some transmission equipment (such as, but not limited to, cable modems, fiber-optic interface nodes, and VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to Table 14.4.3.2, items 7 through 9, for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See Table 14.4.3.2, Item 4(1) for the testing of transmission equipment.

[d]The battery tests in Table 14.4.3.2 Item 9 are based on VRLA batteries and it is the intent that the tests specified in (1) through (4) be performed in order. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]Example: 4000 mAh × ⅕ = 160 mA charging current at 77°F (25°C).

[f]If the charger is adjustable, adjust the output voltage to 2.265 volts per cell ±0.015 volts at 77°F (25°C) or as specified by the alarm equipment manufacturer.

[g]See A.14.4.3.2 Item 9(4). A load test per Item 9(5) is permitted in lieu of an ohmic test.

[h]See A.14.4.3.2 Item 9(5).

[i]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[j]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see9.6.3 of NFPA 101)* to initiate supervisory signals at the fire alarm control unit (FACU) should be tested at the same frequency (annual) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU.

[k]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the fire alarm control unit. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[l]Note, it is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[m] There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[n]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[o]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See Test Plan of 14.2.10*.

[p]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the fire alarm control unit, it is not necessary to test for phase reversal four times a year.

[q]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device.

[r]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested per the initial acceptance testing criteria.

[S]See A.14.4.3.2 and Table 14.4.3.2, Item 24.

Statement of Problem and Substantiation for Public Input

There is a need to clarify that the entry in Table 14.4.3.2 for Smoke Detector Sensitivity Testing is for single criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria entry is confusing and needs to be re-written for clarity. No change in requirements is intended.

For the air sampling table entry: If an aspirated smoke detector has a listed feature that is capable of supervising airflow to each sampling port, then it should not be required to manually test from the end sampling port on each pipe run.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 05 11:32:15 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 473-NFPA 72-2019 [Section No. 14.4.3.5]

14.4.3.5 Testing of CO System Detectors.

For all carbon monoxide system detectors ~~installed after January 1~~ , ~~2012,~~ carbon monoxide tests shall be performed at initial acceptance and annually by the introduction of carbon monoxide into the sensing chamber or element.

Statement of Problem and Substantiation for Public Input

Should the TC consider removing this date as it is past?

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 17:14:25 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5329-NFPA 72-2019
Statement: The effectivity date is deleted as it is past.

Public Input No. 95-NFPA 72-2019 [Section No. 14.4.4.3.3 [Excluding any Sub-Sections]]

After the second required calibration test, if sensitivity tests indicate that the device has remained within its listed and marked sensitivity range ~~(or 4 percent obscuration light gray smoke , if not marked),~~ the length of time between calibration tests shall be permitted to be extended to a maximum of 5 years.

Statement of Problem and Substantiation for Public Input

Both UL 217 and UL 268 have been updated to eliminate the requirement of a minimum smoke box sensitivity of 4%/ft. The standard now merely requires that the smoke alarm/detector pass the fire tests at whatever sensitivity is it set to. This change will bring NPFA 72 into alignment with UL standards.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 05 13:44:55 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5330-NFPA 72-2019
Statement: Both UL 217 and UL 268 have been updated to eliminate the requirement of a minimum smoke box sensitivity of 4%/ft. The standard now merely requires that the smoke alarm/detector pass the fire tests at whatever sensitivity is it set to. This change will bring NFPA 72 into alignment with UL standards.

Public Input No. 601-NFPA 72-2019 [New Section after 14.4.4.5.5]

Heat detectors used in electronic sprinkler systems

14.4.4.5.X Where addressable, restorable, spot type heat detectors that communicate temperature values directly to the control panel are utilized within the same fire area as part of an approved electronic sprinkler system, the test frequency shall be in accordance with the manufacturers requirements and listings.

Statement of Problem and Substantiation for Public Input

Electronic sprinklers are a new technology in which the primary means of operation is through an electrical signal provided by an electronic control system using specialized detection and control algorithms. Commercially available systems utilize addressable heat detectors that use heat sensors to communicate temperature values back to the control panel. Often these systems will include many hundreds or thousands of heat sensors in a given fire area (e.g. warehouse) making it both practically and economically prohibitive to test these devices as the frequencies typically required by NFPA 72. Additionally, because of the complex nature of these systems, often utilizing custom logic to control the sprinkler systems themselves the current requirements would not necessarily provide adequate means of ensuring proper system operation. However, because these devices are constantly monitoring temperature within the fire area, the proper operation of these devices can be determined by analyzing reports from the panel to identify anomalies in their performance. The proposed change would place the burden of determining the ITM requirements on the manufacturers of these products and the listing agencies, and would help dispel confusion in the field regarding how these systems should be tested to prevent accidental system activation.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 607-NFPA 72-2019 [New Section after 3.3.86]	

Submitter Information Verification

Submitter Full Name: Zachary Magnone
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:19:55 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The Technical Committee requests the Correlating Committee to form a Task Group to address the requirements for electronic sprinkler systems throughout the Code to be addressed at the Second Draft stage.

Public Input No. 41-NFPA 72-2019 [Section No. 14.4.5.6]

14.4.5.6

Smoke alarms shall not remain in service longer than 10 years from the date of manufacture, unless otherwise provided by the manufacturer's published instructions._ Ten-year sealed battery-operated listed smoke alarms are an acceptable replacement for existing single station smoke alarms.

Statement of Problem and Substantiation for Public Input

10-yr smoke alarms were first allowed in the 2002 edition of NFPA 72, see Sec. 11.6.1(3) and continue to be allowed, see the 2019 edition of NFPA 72 Sec. 29.9.1(3) and 29.9.2.

This technology gained favor among both fire officials and the public as it precluded the removal of the battery (a known factor in residential fire deaths) and avoided the periodic replacement of such batteries, typically annually, for battery only powered smoke alarms or the back-up battery in 120vac powered smoke alarms (often ignored by property owners).

Since being introduced most major smoke alarm manufacturers have provided this optional 10-yr smoke alarm technology, see for example, Kidde Model i9010, https://www.kidde.com/home-safety/en/us/products/fire-safety/smoke-alarms/i9010/
and First Alert Model SA340CN, https://www.firstalertstore.com/store/products/sa340cn-tamperproof-10-year-smoke-alarm.htm.

There have been no reported recalls of 10-yr smoke alarms based on a review of the Consumer Product Safety Commission (CPSC) website, see https://cpsc.gov/search?site=cpsc_site&output=xml_no_dtd&getfields=*&tlen=120&client=ek_drupal_01&proxystylesheet=ek_drupal_01&filter=p&query=smoke+alarm+recalls. As such, 10-yr smoke alarms have a proven track record of reliability.

Further, NFPA studies, see for example https://www.nfpa.org/News-and-Research/Data-research-and-tools/Detection-and-Signaling/Smoke-Alarms-in-US-Home-Fires,
indicate the reason for smoke alarm failures and subsequent injuries and deaths in fires are most related to the failure to replace a battery for battery only smoke alarms, the failure of the replacement back-up battery for 120vac models when power failures occur and the removal of batteries for other purposes.

The 10yr battery powered smoke alarm removes these failure mode potentials, so is more reliable and is likely to save lives.

Cost impact - The retail price differential between a traditional smoke alarm (120vac powered with a 9vac battery backup) and 10-yr smoke alarms is about $13 ($35 for the former and $22 for the latter based on retail prices at Home Depot October 2018).

Given the number of commercial occupancies involved (hotels, apartments, condominiums, dormitories, board and care facilities, assistive living facilities and time-shares) the number of smoke alarms to be replaced in the near-term (2019-2022), as the 2018 IFC is adopted state-by-state, is estimated at more than 200 million based on the ten-year age replacement obligation and in such occupancies' sleeping accommodations where only one smoke alarm is required. The cost savings to those owner/operators is thus estimated at $2.6 billion, if 10-yr smoke alarms technology could replace traditional 120vac/9vac powered smoke alarms.

Submitter Information Verification

Submitter Full Name: Thomas Daly
Organization: Hospitality Sec Consulting Grp
Affiliation: American Hotel & Lodging Association (AH&LA)
Street Address:
City:
State:

Zip:
Submittal Date: Thu Feb 07 10:55:14 EST 2019
Committee: SIG-TMS

Committee Statement

Resolution: Chapter 29 already permits the installation of listed 10-year sealed battery-operated smoke alarms.

Public Input No. 464-NFPA 72-2019 [Section No. 14.4.5.9]

14.4.5.9

Where batteries are used as a secondary power source of energy for alarms, the batteries shall be replaced annually or in accordance with the alarm equipment manufacturer's published instructions.

Statement of Problem and Substantiation for Public Input

When single- or multi-station smoke utilize a battery as the secondary power source, these batteries shall be replaced annually, unless the manufacture has utilized a special battery that has been proven and tested to last longer than 1 year. If the manufacturer is willing to stand behind a battery, whether it is a standard 9 volt battery or some special battery, their literature should clearly state this. From my research, NFPA 72 does not require the single- or multi-station alarms, which have secondary power source batteries, to be tested or replaced. The testing requirements in Table 14.4.3.2, items 8 and 9, do not appear to apply to the batteries in single- or multi-station alarms, whether they are smoke alarm, CO alarms or heat alarms.

Submitter Information Verification

Submitter Full Name: Jack Poole
Organization: Poole Fire Protection, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 16:04:11 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The Code already requires following the manufacturer's instructions for battery replacement.

Public Input No. 273-NFPA 72-2019 [Section No. 14.4.8]

14.4.8 Household Carbon Monoxide Detection Systems. (SIG-HOU)

14.4.8.1 Testing of Household Carbon Monoxide Detection Systems.

14.4.8.1.1

Household carbon monoxide detection systems shall be tested by a qualified service technician at least every 3 years according to the methods in line 1 of Table 14.4.3.2.

14.4.8.1.2

Household carbon monoxide detection systems shall be tested in accordance with the manufacturer's published instructions.

14.4.8.1.3*

Notwithstanding other requirements of 14.2.3.6, the occupant of a dwelling unit shall be deemed qualified to perform inspection, testing, and maintenance on an alarm system protecting that dwelling unit when provided with information and training from the manufacturer or a manufacturer's certified representative.

Statement of Problem and Substantiation for Public Input

This section should be the responsibility of the SIG-HOU committee.

Submitter Information Verification

Submitter Full Name: Cory Ogle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 11:43:24 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5333-NFPA 72-2019
Statement: This section should be the responsibility of the SIG-HOU committee.

Public Input No. 497-NFPA 72-2019 [Section No. 14.4.8]

14.4.8 Household Carbon Monoxide Detection Systems. (SIG-HOU)

14.4.8.1 Testing of Household Carbon Monoxide Detection Systems.

14.4.8.1.1

Household carbon monoxide detection systems shall be tested by a qualified service technician at least every 3 years according to the methods in line 1 of Table 14.4.3.2.

14.4.8.1.2

Household carbon monoxide detection systems shall be tested in accordance with the manufacturer's published instructions.

14.4.8.1.3*

Notwithstanding other requirements of 14.2.3.6, the occupant of a dwelling unit shall be deemed qualified to perform inspection, testing, and maintenance on an alarm system protecting that dwelling unit when provided with information and training from the manufacturer or a manufacturer's certified representative.

Statement of Problem and Substantiation for Public Input

1. For consideration as directed by the TCC.
2. Inspection, testing, or maintenance requirements of household devices or systems are located in Chapter 14, but under the scope of the (SIG-HOU) technical comittee.

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 09:38:01 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5333-NFPA 72-2019
Statement: This section should be the responsibility of the SIG-HOU committee.

Public Input No. 500-NFPA 72-2019 [Sections 14.5.5, 14.5.6, 14.5.7]

Sections 14.5 4 .5 4.7 , ~~14~~ 14 .5 4 .6 4.8 , ~~14~~ 14 .5 4 ~~.7~~ 4.9

14.5.5 – 4.4.7

Unless otherwise permitted by 14.5 4 .6 4.8 , the retransmission means as defined in Section 26.3 shall be tested at intervals of not more than 12 hours.

14.5.6 – 4.4.8

When the retransmission means is the public-switched telephone network, testing shall be permitted at weekly intervals to confirm its operation to each communications center.

14.5.7 – 4.4.9

As a part of the testing required in 14.5 4 .5 4.7 , the retransmission signal and the time and date of the retransmission shall be recorded in the central station.

Statement of Problem and Substantiation for Public Input

The TC should consider moving these 3 sections to the Testing Section of Chapter 14 as they have to do with testing.

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 11:04:56 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5271-NFPA 72-2019
Statement: The revision moves these 3 sections to the Testing Section of Chapter 14, which is a more appropriate location.

Public Input No. 259-NFPA 72-2019 [New Section after 14.6]

Testing, Inspection, and Maintenance Labels and Tags

16.6.5.1 Testing, Inspection, and Maintenance Labels and Tags. The use of labels and or tags is to provide a quick and consistent means for building owners and emergency responders to understand the most current condition of the alarm system.

16.6.5.1.1 Service Labels.

16.6.5.1.1.1 After any service, a fire alarm service label must be completed in detail and affixed to the inside or outside of the control panel cover or, if the system has no panel, in a permanent location. The signature of the licensee on the service label certifies that the service performed complies with requirements of law.

16.6.5.1.1.2 If the service performed corrects all conditions noted on a yellow label or red label, the color and date of the label shall be marked on the service label and the respective yellow or r ed label removed.

16.6.5.1.1.3 If during any service it is observed that the system does not comply with applicable standards adopted at the time the system was installed, has a fault condition, or is impaired from normal operation, the owner or the owner's representative and the local authority having jurisdiction must be notified of the condition and the licensee must attach, in addition to the service label, the appropriate yellow or red label, following the procedures in this section.

16.6.5.1.1.4 Service labels shall remain in place for at least two years, after which time they may be removed by a licensed employee or agent of a registered firm. An employee of the State Fire Marshal's Office or an authorized representative of a governmental agency with appropriate regulatory authority may remove excess labels at any time.

16.6.5.1.1.5 The service label must be white in color with printed black lettering.

16.6.5.1.1.6 The service label must be approximately three inches in height and three inches in width and must have an adhesive on the back that allows for label removal.

16.6.5.1.1.7 Approximately 1/2 inch of the adhesive on the top back of the label should be used to attach the label over the previous service label to permit viewing of the previous label and the maintaining of a brief history.

16.6.5.1.1.8 Service labels must contain the following information in the format of the service label as set forth in 16.6.5.1.1.8:

16.6.5.1.1.8.1 DO NOT REMOVE BY ORDER OF STATE FIRE MARSHAL (all capital letters in at least 10-point bold face type);

16.6.5.1.1.8.2 SERVICE RECORD (all capital letters in at least 10-point bold face type);

16.6.5.1.1.8.3 the registered firm's name, address, telephone number (either main office or branch office) and certificate of registration number of the firm performing the service;

16.6.5.1.1.8.4 the date of service performed, the licensee's signature (a stamped signature is prohibited) and license number;

16.6.5.1.1.8.5 a list of services performed; and

16.6.5.1.1.8.6 the type of service performed, either general service or the correction of conditions that resulted in a red label or yellow label.

16.6.5.1.2 Inspection/Test Labels.

16.6.5.1.2.1 After the inspection and testing of a fire alarm system, a fire alarm inspection/test label must be completed in detail and affixed to either the inside or outside of the control panel cover or, if the system has no panel, in a permanent location. The signature of the licensee on the inspection/test label certifies that the inspection and tests performed comply with requirements of the adopted standards.

16.6.5.1.2.2 If any service or maintenance is performed under the inspection or test, a service label, in addition to the inspection/test label, must be completed and attached according to the procedures in this section.

16.6.5.1.2.3 For new installation, an inspection/test label may only be applied after the system has been accepted by the local AHJ.

16.6.5.1.2.4 If, during any inspection or test, the system does not comply with applicable standards adopted at the time the system was installed, has a fault condition, or is impaired from normal operation, the owner or the owner's representative and the local AHJ must be notified of the condition and the licensee must

attach, in addition to the inspection/test label, the appropriate yellow or red label, in accordance with the procedures in this section.

16.6.5.1.2.5 The local AHJ must be notified when the fault or impairment has been corrected.

16.6.5.1.2.6 Inspection/test labels must remain in place for at least five years, after which time they may be removed by a licensed employee or agent of a registered firm. An employee of the State Fire Marshal's Office or an authorized representative of a governmental agency with appropriate regulatory authority may remove excess labels at any time.

16.6.5.1.2.7 The inspection/test label must be blue with printed black lettering.

16.6.5.1.2.8 The inspection/test label must be approximately three inches high and three inches wide and must have an adhesive on the back that allows for label removal.

16.6.5.1.2.9 Approximately a half-inch of the adhesive on the top back of the label should be used to attach the label over the previous inspection/test label to permit viewing of the previous label and the maintaining of a brief history.

16.6.5.1.2.10 Inspection/test labels must contain the following information in the format of the inspection/test label as set forth in 16.6.5.1.2.10:

16.6.5.1.2.10.1 DO NOT REMOVE BY ORDER OF STATE FIRE MARSHAL (all capital letters in at least 10-point bold face type);

16.6.5.1.2.10.2 INSPECTION/TEST RECORD (all capital letters in at least 10 -point bold face type);

16.6.5.1.2.10.3 the registered firm's name, address, telephone number (either main office or branch office) and certificate of registration number of the firm performing the inspection/test;

16.6.5.1.2.10.4 the date of the inspection performed, the licensee's signature (a stamped signature is prohibited) and license number;

16.6.5.1.2.10.5 the type of inspection/test performed to be marked, new installation, semi-annual, quarterly or annual;

16.6.5.1.2.10.6 the last date of sensitivity test, if known; and

16.6.5.1.2.10.7 the status after the inspection/test if acceptable or if yellow label attached, or if red label attached.

16.6.5.1.3 Yellow Labels.

16.6.5.1.3.1 If, after any service, inspection, or test, a system does not comply with applicable codes and adopted standards or is not being tested or maintained according to those standards, a completed yellow label must be attached to the outside of the control panel cover or, if the system has no panel, in a permanent location to indicate that corrective action is necessary.

16.6.5.1.3.2 The signature of the licensee on a yellow label certifies that the conditions listed on the label cause the system to be out of compliance with applicable codes and standards.

16.6.5.1.3.3 After attaching a yellow label, the licensee or the registered firm must notify the property owner, occupant or their representative and the local AHJ in writing indicating the conditions with which the system does not comply with the applicable codes and standards. The notification must be postmarked, e -mailed, faxed or hand delivered within five business days of the attachment of the yellow label.

16.6.5.1.3.4 Yellow labels shall remain in place until the conditions are corrected and a service label is attached certifying that the corrections were made. The yellow label may be removed by a licensed employee or agent of a registered firm, an employee of the State Fire Marshal's Office or an authorized representative of a governmental agency with appropriate regulatory authority. The local AHJ must be notified when corrections are made, and a yellow label is removed or revised. The notification must be postmarked, emailed, faxed, or hand delivered within five business days of the removal of the yellow label.

16.6.5.1.3.5 Yellow labels must be approximately three inches high and three inches wide and must have an adhesive on the back that allows for label removal.

16.6.5.1.3.6 Labels must be yellow with printed black lettering.

16.6.5.1.3.7 Yellow labels must bear the following information in the format of the label, as set forth in subsection (h) of this section:

16.6.5.1.3.7.1 DO NOT REMOVE BY ORDER OF STATE FIRE MARSHAL (all capital letters in at least 10-point bold face type);

16.6.5.1.3.7.1 SYSTEM DOES NOT COMPLY WITH APPLICABLE CODES & STANDARDS (all capital letters in at least 10-point bold face type);

16.6.5.1.3.7.3 the registered firm's name, address, telephone number (either main office or branch office) and certificate of registration number of the firm attaching the yellow label;

16.6.5.1.3.7.4 the date the label was attached, the licensee's signature (a stamped signature is prohibited)

and license number; and

16.6.5.1.3.7.5 a list of conditions resulting in the yellow label.

16.6.5.1.4 Red Labels.

16.6.5.1.4.1 If, after any service, inspection or test, a system or any part thereof is inoperable, has a fault condition, or is impaired from normal operation, excluding the area(s) of a building under construction, a completed red label must be attached to the outside of the control panel cover or, if the system has no panel, in a permanent location, to indicate that corrective action is necessary.

16.6.5.1.4.2 The signature of the licensee on a red label certifies that the conditions listed on the label have caused the system to be inoperable, have a fault condition, or be impaired from normal operation.

16.6.5.1.4.3 If the system is inoperable, immediately after attaching a red label the licensee or the registered firm must orally notify the property owner, occupant or their representative, and the local AHJ where available, of all impairments and provide a written notification, emailed, faxed or hand delivered within the next Summer 2016 TIC Chapter 6002 and Fire A larm R ules State Fire Marshal's Office business day of the attachment of the red label. If the system has a fault condition or is impaired fr om normal operation, after attaching a red label, the licensee or the registered firm must notify the property owner, occupant or their representative, and the local AHJ in writing indicating the condition(s). The written notification must be postmarked, emailed, faxed or hand delivered within three business days of the attachment of the red label.

16.6.5.1.4.4 Red labels must remain in place until the conditions are corrected and a service label is attached certifying that the corrections were made. The red label may be removed by a licensed employee or agent of a registered firm, an employee of the State Fire Marshal's Office, or an authorized representative of a governmental agency with appropriate regulatory authority. The local AHJ must be notified when corrections are made and a red label is removed or revised. The notification must be postmarked, emailed, faxed, or hand delivered within five business days of the removal of the red label.

16.6.5.1.4.5 Red labels must be approximately three inches high and three inches wide and must have an adhesive on the back that allows for label removal.

16.6.5.1.4.6 Labels must be red with printed black lettering.

16.6.5.1.4.7 Red labels must bear the following information in the format of the label as shown in subsection (h) of this section:

16.6.5.1.4.7.1 DO NOT REMOVE BY ORDER OF STATE FIRE MARSHAL (all in capital letters, at least 10-point bold face type);

16.6.5.1.4.7.2 status of the system to be marked, inoperable or impaired or fault;

16.6.5.1.4.7.3 the registered firm's name, address, telephone number (either main office or branch office) and certificate of registration number of the firm attaching the red label;

16.6.5.1.4.7.4 the date the label was attached, the licensee's signature (a stamped signature is prohibited) and license number; and

16.6.5.1.4.7.5 a list of conditions resulting in the red label.

Additional Proposed Changes

File Name	Description	Approved
Service_Tag.jpg	Service Tag	
Inspection_Tag.jpg	Inspection Tag	
Red_Tag.jpg	Red Tag	
Yellow_Tag.jpg	Yellow Tag	

Statement of Problem and Substantiation for Public Input

Although some NFPA chapters, such as NFPA 10 and 25, and some states have required impairment and service tagging, NFPA has yet to require this valuable feature on all fire alarm systems. Building owners and emergency responding agents need a quick and reliable method to understand the condition of the system as it was last observed by qualified personnel. This information can be invaluable during an emergency and aid as a constant reminder when a system is impaired or does not meet minimum code requirements.
The source of the language was the Texas Insurance Code Chapter 6002 and modified for use in NFPA 72, Chapter 14.

Submitter Information Verification

Submitter Full Name: Anthony Bloodworth
Organization: Siemens Industries, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 12:36:09 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The proposed text should be reformatted similar to Annex G of NFPA 25 for reconsideration at the Second Draft.

Public Input No. 87-NFPA 72-2019 [Section No. 14.6.1.1]

14.6.1.1*

A set of reproducible as-built installation drawings, operation and maintenance manuals, and a written sequence of operation shall be provided to the building owner or the owner's designated representative.

Statement of Problem and Substantiation for Public Input

The addition of an asterisk is in tandem with related PI 86 proposing the relocation of the annex note and associated figure for Section 14.6.2.4 to this section instead.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 86-NFPA 72-2019 [Section No. A.14.6.2.4]	
Public Input No. 88-NFPA 72-2019 [New Section after A.14.6.1.2]	
Public Input No. 86-NFPA 72-2019 [Section No. A.14.6.2.4]	
Public Input No. 88-NFPA 72-2019 [New Section after A.14.6.1.2]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 01 10:56:54 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5255-NFPA 72-2019
Statement: Section 7.6.6 currently refers the reader to this section of Chapter 14. However, this same section in Chapter 14 does not reference back to 7.6.6 reciprocally.

Public Input No. 85-NFPA 72-2019 [Section No. 14.6.2.4]

14.6.2.4*

A record of all inspections, testing, and maintenance shall be provided in accordance with 7.~~8~~6.~~2~~6.

Statement of Problem and Substantiation for Public Input

Section 7.6.6 currently refers the reader to this section of Chapter 14. However, this same section in Chapter 14 does not reference back to 7.6.6 reciprocally. Additionally, another PI is calling for the relocation of Inspection and Testing forms to the annex from 7.8.2 to the annex note for 7.6.6. Additionally, the sequence of operation annex note, which has no relevance to this particular section has been deleted so that the sequence of operation annex note can be relocated to a more appropriate section.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]	
Public Input No. 86-NFPA 72-2019 [Section No. A.14.6.2.4]	
Public Input No. 88-NFPA 72-2019 [New Section after A.14.6.1.2]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 01 10:40:31 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5255-NFPA 72-2019
Statement: Section 7.6.6 currently refers the reader to this section of Chapter 14. However, this same section in Chapter 14 does not reference back to 7.6.6 reciprocally.

Public Input No. 571-NFPA 72-2019 [Section No. 17.1.7]

17.1.7

The interconnection of initiating devices with control ~~equipment configurations~~ units configurations and power supplies, or with output systems responding to external actuation, shall be as detailed elsewhere in this Code or in other governing laws, codes, or standards.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:46:40 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5206-NFPA 72-2019
Statement: The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Public Input No. 248-NFPA 72-2019 [New Section after 17.4.3]

TITLE OF NEW CONTENT

Initiating devices shall be supported independently of their attachment to the circuit conductors.

Statement of Problem and Substantiation for Public Input

The proposed text was deleted from the 2016 edition of the code by SR 2009. It was not requested by either of the associated Public Comments, and the topic is not addressed in the committee statement.SR 2009, PC 96, PC 97 only speak to mechanical guards. The text should be added back into the code.

Submitter Information Verification

Submitter Full Name: Laurence Dallaire
Organization: Architect of the Capitol
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 05 15:47:59 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5211-NFPA 72-2019
Statement: The text was deleted during the 2019 revision cycle. The text has been added back into the Code.

Public Input No. 274-NFPA 72-2019 [Section No. 17.4.6]

17.4.6

~~Where detectors are installed in concealed locations more than 10 ft (3.0 m~~ Remote indication for alarm and supervisory signals shall be provided in accordance with this section where each detector's alarm and supervisory signals along with a description of the location and function is not uniquely identified or annunciated at the control unit and the detector is installed in the following locations:

(1) Locations more than 10 ft (3.0 m) above the finished floor

~~or in arrangements where the detector's~~

(1) where view of the detector's alarm or supervisory indicator is obstructed.

(2) Concealed locations 10 ft (3.0 m) or less above the finished floor where view of the detector's alarm or supervisory indicator is

~~not visible to responding personnel, the detectors shall be provided with remote alarm or supervisory indication in a location acceptable to the authority having jurisdiction~~

(1) obstructed by objects not readily movable by responding personnel.

(2) Locations where the detector is oriented such that it's alarm or supervisory indicator is not visible to responding personnel .

17.4.6.1 *

~~If a remote alarm indicator is provided, the~~ The location of the detector and the area protected by the detector shall be prominently indicated at the remote ~~alarm~~ indicator by a permanently attached placard or by other approved means.

17.4.6.2 –

Remote alarm ~~or~~ and supervisory indicators shall be installed in an accessible location acceptable to the authority having jurisdiction.

17.4.6.3 _

Remote alarm and supervisory indicators shall be clearly labeled to indicate both ~~their~~ the function and any device or equipment associated with each detector.

~~**17.4.6.3** –~~

~~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 functions) shall not be required to be provided with remote alarm indicators as specified in 17.4.6 .~~

Additional Proposed Changes

File Name	Description	Approved
Revised_17.4.6.JPG	Correct wording and format for proposed 17.4.6. TerraView version incorrectly formatted	

Statement of Problem and Substantiation for Public Input

Section 17.4.6 was edited during a past revision cycle and commas were removed. At the time neither the Report of Proposals nor the Report on Comments included committee action to delete the commas. As a result, the existing wording of Section 17.4.6 could be interpreted as two or three conditions. This ambiguity as well as some ambiguity between the intent of the section and the 2019 Handbook commentary was identified by the Correlating Committee and NFPA Staff. The proposed revisions are intended to clarify the intent of the requirement and address some potential MOS issues.

The conditions which were originally separated by commas have been reformatted into a list and revised to clarify intent. The existing section 17.4.6.3 language was in effect an exception to 17.4.6. 17.4.6 revisions include incorporating that language to remove the need for the exception. The existing 17.4.6.2 contained two requirements. These were split into two distinct requirements significant change in the content of the requirements.

Minor grammatical changes in multiple sections are also suggested for clarity and readability. New appendix sections are proposed for 17.4.6 and 17.4.6.2 and will be added as separate PI's.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 278-NFPA 72-2019 [New Section after A.17.4.5]	New appendix section for revised 17.4.6
Public Input No. 279-NFPA 72-2019 [New Section after A.17.4.6.1]	New appendix section for revised 17.4.6.2
Public Input No. 278-NFPA 72-2019 [New Section after A.17.4.5]	
Public Input No. 279-NFPA 72-2019 [New Section after A.17.4.6.1]	

Submitter Information Verification

Submitter Full Name: Samuel Miller
Organization: BP
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 11:44:30 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5222-NFPA 72-2019
Statement: Remote indication is needed for whenever the indicator is not visible. The section was reformatted for clarity. Annex material was added to clarify revised Sections 17.4.6 and 17.4.6.2.

Public Input No. 100-NFPA 72-2019 [Section No. 17.4.6 [Excluding any Sub-Sections]]

Where detectors are installed in concealed locations ~~more than 10 ft (3.0 m) above the finished floor or in arrangements~~ where the detector's alarm or supervisory indicator is not visible to responding personnel, the detectors shall be provided with remote alarm or supervisory indication in a location acceptable to the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

As noted in the existing second clause, remote indication is needed for whenever the indicator is not visible. Therefore, the 10 ft ceiling height is arbitrary and might be used to justify not installing a remote indicator. What difference does it make if the concealed detector is below 10 ft?

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 08 09:43:43 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5222-NFPA 72-2019
Statement: Remote indication is needed for whenever the indicator is not visible. The section was reformatted for clarity. Annex material was added to clarify revised Sections 17.4.6 and 17.4.6.2.

Public Input No. 98-NFPA 72-2019 [Section No. 17.6.2.2.1.1]

17.6.2.2.1.1

~~Heat~~ Non -field programmable heat- sensing fire detectors of the fixed-temperature or rate-compensated, spot type shall be marked with a color code in accordance with Table 17.6.2.1.

Statement of Problem and Substantiation for Public Input

NFPA 72 is currently silent on the marking requirements for heat detectors that are capable of field programmable set points or fixed/ROR function. This proposal clarifies current practice.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 05 13:53:16 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5230-NFPA 72-2019
Statement: NFPA 72 is currently silent on the marking requirements for heat detectors that are capable of field programmable set points or fixed/ROR function. This revision clarifies current practice.

Public Input No. 39-NFPA 72-2019 [Section No. 17.6.3.1.1]

17.6.3.1.1* Spacing.

One of the following requirements shall apply:

(1) The distance between detectors shall not exceed their listed spacing, and there shall be detectors within a distance of one-half the listed spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height.

(2) All points on the ceiling shall have a detector within a distance equal to or less than "1/2 the Square Root of 2" (0.~~7~~ 707106781) times the listed spacing (0 ~0 .~~7~~ ~~S~~ 7S).

Additional Proposed Changes

File Name	Description	Approved
Smoke_Spacing_in_Corridor.jpg		

Statement of Problem and Substantiation for Public Input

When placing a smoke detector in a 10' wide corridor in the center and 20'6" from the end, the device ends up 21.1009" from the corner.
I assume the 0.7 times spacing is an approximation of the math used to determine the radius of a circle passing through the 4 corners of a 30' square. The actual mathematical radius of a circle is 21.2132' (~21' 2-9/16"). Using the mathematical radius allows the 20' 6" distance from the end of the corridor to be within the circle. Note - using this actual radius also works with 39' for 15', 37' for 20' & 34" for 25' corridors.

Submitter Information Verification

Submitter Full Name: Alan Henderson
Organization: Design Alarms
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jan 25 10:36:02 EST 2019
Committee: SIG-IDS

Committee Statement

Resolution: The 0.7 is within the level of precision necessary for practical application of the Code.

Public Input No. 310-NFPA 72-2019 [Section No. 17.6.3.5.3]

17.6.3.5.3* Spacing Minimum.

~~The minimum spacing~~ The spacing of heat detectors shall not be required to be less than 0.4 times the height of the ceiling.

Statement of Problem and Substantiation for Public Input

Use of the term "minimum spacing" is incorrect. The "minimum spacing" is the distance in which detectors are too close to each other. For example, there is a minimum spacing rule for ESFR sprinklers of 64 sq ft. This means that we are not allowed to install these sprinklers at 50 sq ft spacing.

The purpose of this section has nothing to do with minimum spacing of detectors. You can put detectors as close together as you want. The issue here is that requiring the maximum allowable spacing to be less than 40% of the ceiling height is not logical.

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 19 13:13:15 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5214-NFPA 72-2019
Statement: The deleted text is redundant to the title of the section.

Public Input No. 595-NFPA 72-2019 [Section No. 17.7.1.11]

17.7.1.11*

The effect of stratification below the ceiling shall be taken into account. The guidelines in Annex B shall be permitted to be used. Spot type smoke detectors shall not be installed on ceilings above 30 feet in height.

Statement of Problem and Substantiation for Public Input

Many practitioners have cautioned against installing spot detectors above 30 feet due in part to stratification. A recent situation occurred and in polling many experts they all concur with the 30 foot exclusion. Typically insufficient energy is produced by smaller fires to raise generated smoke above the 30 foot plateau. We are suggesting that this requirement be stipulated in the standard.

Submitter Information Verification

Submitter Full Name: James Mundy
Organization: Asset Protection Associates, L
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:54:21 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: Stratification variables such as fire intensity, compartment size, and airflow/ventilation cannot justify the omission of spot-type smoke detectors from all 30 ft and above applications.

Public Input No. 253-NFPA 72-2019 [Section No. 17.7.3.2.4.2]

17.7.3.2.4.2

For level ceilings, the following shall apply:

(1) For ceilings with beam depths of less than 10 percent of the ceiling height (0.1 *H*), the following shall apply:

(a) Smooth ceiling spacing shall be permitted.

(b) Spot-type smoke detectors shall be permitted to be located on ceilings or on the bottom of beams.

(2) For ceilings with beam depths equal to or greater than 10 percent of the ceiling height (0.1 *H*), the following shall apply:

(3) Where beam spacing is equal to or greater than 40 percent of the ceiling height (0.4 *H*), spot-type detectors shall be located on the ceiling in each beam pocket.

(4) Where beam spacing is less than 40 percent of the ceiling height (0.4 *H*), the following shall be permitted for spot detectors:

(5) Smooth ceiling spacing in the direction parallel to the beams and at one-half smooth ceiling spacing in the direction perpendicular to the beams

(6) Location of detectors either on the ceiling or on the bottom of the beams

(7)* For beam pockets formed by intersecting beams, including waffle or pan-type ceilings, the following shall apply:

(8) For beam depths less than 10 percent of the ceiling height (0.1 *H*), spacing shall be in accordance with 17.7.3.2.4.2 (1).

(9) For beam depths greater than or equal to 10 percent of the ceiling height (0.1 *H*), spacing shall be in accordance with 17.7.3.2.4.2 (2).

(10) Where beam depth varies from less than to more than 10 percent of the ceiling height (0.1 H) within the same pocket, spacing within the portion where the beam depth is less than 10 percent of the ceiling height (0.1 H) may be in accordance with 17.7.3.2.4.2(1).

(11)* For corridors 15 ft (4.6 m) in width or less having ceiling beams or solid joists perpendicular to the corridor length, the following shall apply:

(12) Smooth ceiling spacing shall be permitted.

(13) Location of spot-type smoke detectors shall be permitted on ceilings, sidewalls, or the bottom of beams or solid joists.

(14) For rooms of 900 ft^2 (84 m^2) or less, the following shall apply:

(15) Use of smooth ceiling spacing shall be permitted.

(16) Location of spot-type smoke detectors shall be permitted on ceilings or on the bottom of beams.

Statement of Problem and Substantiation for Public Input

This revision proposes adding a third option for beam pocket spacing, to account for situations where the beam depth within the same pocket varies from less than to more than 10 percent of the ceiling height. On a recent project, we encountered this situation in an octagonal shaped building area constructed of tapered preengineered building frames. In the corners, there were small triangular areas that required additional smoke detection to meet the allowable spacing. Because some of the beam depth was more than 10 percent of the ceiling height, the AHJ

insisted that each pocket had to be treated individually, resulting in additional smoke detectors that were covering approximately 20 square feet each. Had this allowance been in the standard, a single detector could have covered two adjacent areas, resulting in material and labor savings as well as decreased ITM costs to the owner over the life of the facility.

Submitter Information Verification

Submitter Full Name: Christopher Born
Organization: Clark Nexsen, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 10 14:32:51 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The requested change is not in the best interest of life safety and good engineering practice. Insufficient technical data has been provided to justify the change for reduced protection.

Public Input No. 105-NFPA 72-2019 [Section No. 17.7.3.7.4]

17.7.3.7.4

If ~~mirrors~~ reflectors are used with projected beams, the ~~mirrors~~ reflectors shall be installed in accordance with the manufacturer's published instructions.

Statement of Problem and Substantiation for Public Input

While it is possible to use mirrors with dual ended (transmitter and receiver) projected beam smoke detectors, it is not common or recommended. However, single ended beam detectors that use reflectors are frequently used and when they are they should be used in accordance with manufacturer's published instructions.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 09 12:53:35 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5209-NFPA 72-2019
Statement: While it is possible to use mirrors with dual ended (transmitter and receiver) projected beam smoke detectors, it is not common or recommended. However, single ended beam detectors that use reflectors are frequently used and when they are they should be used in accordance with manufacturer's published instructions. Mirrors are considered to be a type of reflector.

Public Input No. 106-NFPA 72-2019 [Section No. 17.7.3.7.6]

17.7.3.7.6

Projected beam–type detectors and ~~mirrors~~ reflectors shall be mounted on stable surfaces to prevent false or erratic operation due to movement.

Statement of Problem and Substantiation for Public Input

While it is possible to use mirrors with dual ended (transmitter and receiver) projected beam smoke detectors, it is not common or recommended. However, single ended beam detectors that use reflectors are frequently used and when they are they should be mounted to stable surfaces.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 09 12:57:45 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5210-NFPA 72-2019
Statement: While it is possible to use mirrors with dual ended (transmitter and receiver) projected beam smoke detectors, it is not common or recommended. However, single ended beam detectors that use reflectors are frequently used and when they are they should be used in accordance with manufacturer's published instructions. Mirrors are considered to be a type of reflector.

Public Input No. 107-NFPA 72-2019 [Section No. 17.7.3.7.8]

17.7.3.7.8*

The light path of projected beam–type detectors shall be kept clear of ~~opaque obstacles~~ objects at all times.

Statement of Problem and Substantiation for Public Input

Both opaque and non-opaque objects in or near the path of the beam can potentially cause problems. Manufacturer's guidelines for clear space should be followed.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 09 12:59:58 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5207-NFPA 72-2019
Statement: Both opaque and non-opaque objects in or near the path of the beam can potentially cause problems. Manufacturer's guidelines for clear space should be followed.

Public Input No. 641-NFPA 72-2019 [Section No. 17.7.4.4 [Excluding any Sub-Sections]]

Detectors placed in environmental air ducts or plenums shall not be used as a substitute for open area detectors ***and shall apply to both required smoke and carbon monoxide detection*** **.**

Statement of Problem and Substantiation for Public Input

The majority of air handlers do not run continuously and the capacity of a duct mounted carbon monoxide detector/sensor to adequately saturate under all conditions to serve a useful life safety purpose is debatable. Duct mounted carbon monoxide detector/sensors can be part of an effective overall performance based design, but should not be considered a replacement for required area spot type carbon monoxide detection. Reference experience of early adapter states NY (Nelson's Law) and NJ (Korman-Parks)

Submitter Information Verification

Submitter Full Name: E. J. Kleintop
Organization: Johnson Controls/Tyco/SimplexG
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 17:43:38 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: Section 17.7.4 does not apply to CO detection. See 17.12.

Public Input No. 99-NFPA 72-2019 [Section No. 17.7.5.3.1]

17.7.5.3.1

To prevent the recirculation of dangerous quantities of smoke, a detector approved for air duct use shall be installed ~~on the supply side of air-handling systems~~ as required by NFPA 90A and 17.7.5.4.2. ~~1.~~

Statement of Problem and Substantiation for Public Input

The existing text is limited to supply side detection. Strike the text and edit the paragraph reference to make the paragraph generic and point to NFPA 90A for all duct smoke detection.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 08 09:29:31 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5233-NFPA 72-2019
Statement: The text is edited to make the paragraph generic and point to NFPA 90A for the requirements for all duct smoke detection.

Public Input No. 52-NFPA 72-2019 [Section No. 17.7.5.4.2.2 [Excluding any Sub-Sections]]

Unless otherwise modified by 17.7.5.4.2.2(A) or 17.7.5.4.2.2(B), if the detection of smoke in the return air system is required by other NFPA standards, a detector(s) listed for the air velocity present shall be located where the air leaves each smoke compartment, or in the duct system before the air enters the return air system common to more than one smoke compartment.

Exception - If the common return turns horizontal on the last floor housing the Return AHU , only one detector is required on that floor at the unit after the last local return from the floor to the common return in addition to the returns at each level entering the common return .

Statement of Problem and Substantiation for Public Input

duct detectors at each return inlet on the floor of the AHU will not be required by the definition of " prior to the common return" .

Submitter Information Verification

Submitter Full Name: donald duplechian
Organization: Wilson fire equipment
Street Address:
City:
State:
Zip:
Submittal Date: Mon Mar 25 12:52:38 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Public Input does not meet the Manual of Style and does not provide sufficient justification to clearly describe the intent of the specific changes.

Public Input No. 581-NFPA 72-2019 [Section No. 17.7.5.6.4]

~~17.7.5.6.4~~ –

~~Smoke detectors shall be of the photoelectric, ionization, or other approved type.~~

Statement of Problem and Substantiation for Public Input

We are proposing to delete many of the references to specific technology with the next edition of NFPA 72 to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268. End product safety standards such as UL 217 and UL 268 are technology independent. In addition, the performance requirements for detecting fire types and cooking nuisance mitigation are independent of technology. Calling out technology requirements in an installation standard does not consider innovative technology solutions that could otherwise be used to comply with these end product standards. As an example, UL cooking nuisance research demonstrated that independent of smoke detection technology, and placement, all smoke alarms produced an alarm signal during normal cooking. Placement of the alarms in reference to the broiling hamburger cooking source and by 1.5% OBS/ft, resulted in an increased or delayed response, based on location, in almost all smoke alarms with many different types of technologies being tested.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 583-NFPA 72-2019 [Section No. 29.11.3.4]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:44:47 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5234-NFPA 72-2019
Statement: The Technical Committee deletes the text as Section 17.7.5.6.1 adequately address the contents of this section.

Public Input No. 123-NFPA 72-2019 [New Section after 17.8]

17.9 Spectral-Sensing Gas Detector.

17.9.1 *General

Section 17.9 provides background, requirements for the selection, installation and maintenance of spectral-sensing gas detectors. These detectors detect gases based on spectrum signatures of the gases, and can cover an area defined by the visibility region of the device. These detectors are often camera-type detectors.

17.9.1.1 *Background. In general, each gas has its distinct absorption signatures, which can be leveraged for the purpose of gas detection [see Figure A.17.9.1]. The type of gas is identified based on the wavelength dependence of the absorption. The concentration of the gases being detected is related to the strength of the absorption through the laws of physics.

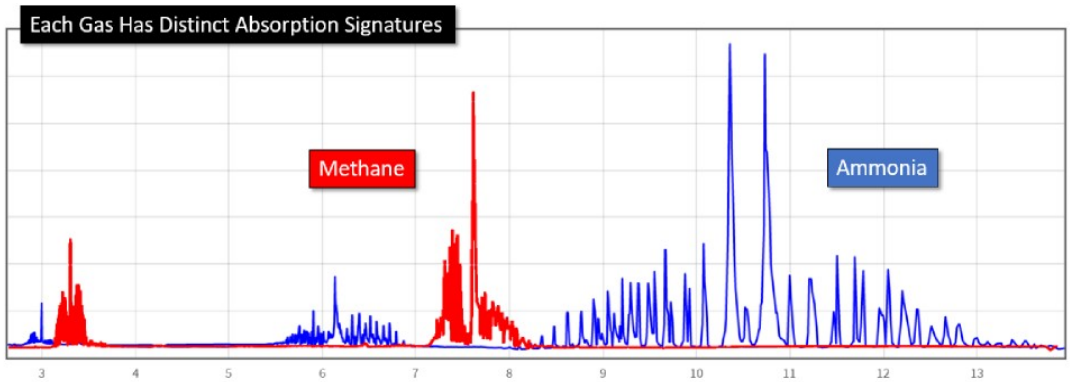


FIGURE A.17.9.1.1. Gas Absorption Signatures

17.9.1.2. *Detector Classes.

17.9.1.2.1. *Detector Classes Based on Energy.

17.9.1.2.1.1 *Active Detectors. The device has a radiant energy emitting source, where detection is only possible when it is activated.

17.9.1.2.1.1 *Passive Detectors. The device is able to detect based on radiant energy from the visibility region, and does not require additional energy emitting sources.

17.9.1.2.2. *Detector Classes Based on Spectral Bands.

17.9.1.2.2.1 *Multispectral Detectors. A type of Multispectral-Sensing gas detector which detects the concentration of multiple gases in the visibility region of the device based on the absorption spectrum of the gases being monitored. The sensor senses multiple, non-overlapping bands of the spectrum of radiation.

17.9.1.2.2.2 *Hyperspectral Detectors. A type of Hyperspectral-Sensing gas detector system which detects the concentration of multiple gases in the visibility region of the device based on the absorption spectrum of the gases being monitored. The sensor senses multiple, overlapping bands of the spectrum of radiation.

17.9.2. Gas Detection and Detector Selection.

17.9.2.1. General Rules

17.9.2.1.1. Spectral-Sensing gas detector shall be employed consistent with the listing or approval of the manufacturer and other approval agencies.

17.9.2.1.2. Detectors shall be positioned such that at any given time the region to be monitored has line-of-sight visibility with at least one detector, and that the entire

region is covered by the combined visibility regions of all the detectors.

17.9.2.1.3. In the case where the detectors visibility region contains objects which can partially obscure the visibility region, user shall consult with system provider.

17.9.2.2. Detector Selection.

17.9.2.2.1. The system location and spacing design shall be the result of an engineering evaluation that includes, but not limited to, the following:

(1) The type of the gas or gases that are to be detected

(2) The sensitivity of the detector

(3) The regions where the gas or gases are expected to be detected

(4) The distance between the detection region and the detector

(5) The response time required

(6) The presence of any radiation sources or sinks that can affect detection

(7) The ambient environmental conditions, such as humidity and temperature

17.9.2.2.2. The system design shall specify the types and concentration levels of gases that are to be detected.

17.9.2.2.3. The system design shall specify the distance from the sensor to the gases that are to be detected.

17.9.2.2.4. The system design shall specify the environmental conditions, such as temperature and humidity, in which the detector is expected to operate.

17.9.3. Inspection, Testing and Maintenance Considerations. Inspection, Testing and Maintenance of spectral-sensing gas detection device shall comply with Chapter 14.

17.9.4. Other Considerations.

17.9.4.1. Spectral-Sensing gas detection systems shall not be installed in a location where the environmental conditions exceed the extremes for which the detector has been listed.

17.9.4.2. Data generated by spectral-sensing gas detection devices shall be permitted to be transmitted to other systems for other uses only through output connections provided specifically for that purpose by the system manufacturer.

17.9.4.3. The control and software components of the spectral-sensing gas detector shall be protected from unauthorized changes. All changes to the software components shall be tested in accordance with Chapter 14.

17.9.4.4. If necessary, the spectral-sensing gas detector shall be located away from sources or sinks of radiation which provide unwanted changes to the radiant energy in the visibility region of the detector.

17.10 Gas & Fire Detector.

17.10.1 *General

Section 17.10 provides background, requirements for the selection, installation and maintenance of gas & fire detectors. These detectors detect gases and flame based on spectrum signatures of gases, as well as the visual appearance and temperature of the flames, and can cover an area defined by the visibility region of the device. These detectors are often camera-type detectors.

17.10.1.1 *Background. In general, flame has unique visual features. By combining a spectral-sensing device with a visual camera, it is possible to detect gas and fire with the same device. The detection of gas follows the same principles described in section 17.9.Spectral-Sensing Gas Detector., while fire detection is based on the inferred temperature from the spectral sensing as well as visual features of flames. The visual features from flames can be either engineered by a person, or directly learned from flame images using machine learning techniques.

17.10.2. Gas and Fire Detection and Detector Selection.

17.10.2.1. General Rules

17.10.2.1.1. Gas & fire detector shall be employed consistent with the listing or approval of the manufacturer and other approval agencies.

17.10.2.1.2. Detectors shall be positioned such that at any given time the region to be monitored has line-of-sight visibility with at least one detector, and that the entire region is covered by the combined visibility regions of all the detectors.

17.10.2.1.3. In the case where the detectors visibility region contains objects which can partially obscure the visibility region, user shall consult with system provider.

17.10.2.2. Detector Selection.

17.10.2.2.1. The system location and spacing design shall be the result of an engineering evaluation that includes, but not limited to, the following:

(1) The type of the gas or gases that are to be detected

(2) The visual appearance of flames that are to be detected

(2) The sensitivity of the detector

(3) The regions where the gas or fire are expected to be detected

(4) The distance between the detection region and the detector

(5) The response time required

(6) The presence of any radiation sources or sinks that can affect detection

(7) The ambient environmental conditions, such as humidity and temperature

17.10.2.2.2. The system design shall specify the types and concentration levels of gases that are to be detected.

17.10.2.2.3. The system design shall specify the visual appearance and size of flame that are to be detected.

17.10.2.2.4. The system design shall specify the distance from the sensor to the gases that are to be detected.

17.10.2.2.5. The system design shall specify the environmental conditions, such as temperature and humidity, in which the detector is expected to operate.

17.10.3. Inspection, Testing and Maintenance Considerations. Inspection, Testing and Maintenance of gas & fire detection device shall comply with Chapter 14.

17.10.4. Other Considerations.

17.10.4.1. Gas & fire detection systems shall not be installed in a location where the environmental conditions exceed the extremes for which the detector has been listed.

17.10.4.2. Data generated by gas & fire detection devices shall be permitted to be

transmitted to other systems for other uses only through output connections provided specifically for that purpose by the system manufacturer.

17.10.4.3. The control and software components of the gas & fire detector shall be protected from unauthorized changes. All changes to the software components shall be tested in accordance with Chapter 14.

17.10.4.4. If necessary, the gas & fire detector shall be located away from sources or sinks of radiation which provide unwanted changes to the radiant energy in the visibility region of the detector.

Statement of Problem and Substantiation for Public Input

In order to include Spectral-Sensing gas detectors, a new section after section 17.8 Radiant Energy-Sensing Fire Detectors. is added.
In order to include gas and fire detectors, a new section after section 17.8 Radiant Energy-Sensing Fire Detectors. is added.

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 15:54:09 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: This technology is adequately addressed in existing Section 17.10.

Public Input No. 125-NFPA 72-2019 [New Section after 17.8.5]

17.8.6. Multivariate Flame Detection.

17.8.6.1. Multivariate flame detection systems and all of the components thereof, including hardware and software, shall be listed for the purpose of flame detection.

17.8.6.2. Multivariate flame detection systems shall comply with all of the applicable requirements of Chapters 1, 10, 14, 17, and 23 of this Code.

17.8.6.3. Sensory signals generated by a multivariate flame detection system shall be permitted to be transmitted to other systems for other uses only through output connections specified by the system manufacturer.

17.8.6.4. All software and other components of a multivariate flame detection system shall be protected from unauthorized changes. All changes to the software or component settings shall be tested in accordance with Chapter 14.

Statement of Problem and Substantiation for Public Input

In order to incorporate a broader class of gas and fire detectors using spectral-sensing gas detection, additional content is added after section 17.8.5. Video Image Flame Detection. In addition, definition sections are added to expand the class of flame detection systems.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 124-NFPA 72-2019 [New Section after 3.3.172]	

Submitter Information Verification

Submitter Full Name: Bo Fu
Organization: Rebellion Photonics
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 11 16:00:19 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: This technology is adequately addressed in existing Code sections such as 17.8.3.2.1, 17.8.5, 17.9.3.2, and 17.11. Additional repetitious language is unnecessary.

Public Input No. 376-NFPA 72-2019 [New Section after 17.12.1]

Delete existing Section 17.2.1 and add the following in its place:

17.2.1 Where required by other governing laws, codes, or standards, carbon monoxide detectors shall be installed based on these and the following requirements when there is any production of carbon monoxide in the building:

(1) On the ceiling in the immediate vicinity, and throughout the entire room, of all permanent and all temporarily installed carbon monoxide producing sources including all fuel burning appliances and equipment, including vehicles, generators, machinery, engines, fireplaces and any other permanent and/or transient type equipment, appliances, or sources of carbon monoxide.

(2) Along the entire path of exhaust of any carbon monoxide producing equipment, appliances, etc. including extending from the source of the carbon monoxide through the entire building to the termination of the exhaust at an exterior wall or roof. This shall include along any branchlines and interconnections to any ductwork, piping etc used in the exhaust system so as to be able to detect gas that may exist outside the exhaust path.

(3) Within each bedroom, dwelling unit and sleeping area, including multiple sensors in multi-room suites.

(4) Outside of each separate dwelling unit sleeping area in the immediate vicinity of the bedrooms, but no further than 10 feet (3m) from each entrance to the space.

(5) All other locations where required by applicable laws, codes or standards.

(6) Carbon monoxide detectors shall additionally be located in the following locations unless a detailed engineering analysis has been undertaken and approved by local authorities to prove otherwise and where carbon monoxide detectors should be located to address the hazard.

(7) On each habitable and occupiable level of all buildings regardless of occupancy type, including basements/cellars and levels below grade, unless a detailed engineering analysis has been undertaken and approved by local authorities to prove otherwise.

(8) Within every HVAC Zone.

(9) On each habitable and occupiable level of all buildings regardless of occupancy type, including basements/cellars and levels below grade, unless a detailed engineering analysis has been undertaken and approved by local authorities to prove otherwise.

(10) As required by manufacturer's requirements, including specific requirements for spacing between detectors, minimum/maxiumum spacings to walls/obstructions, minimum/maximum height of detector in a space, minimum/maximum distances to HVAC vents, reductions in spacing required for high ceilings, and other pertinent information required to help properly design, assess and install detectors to help achieve their intent.

(11) At locations where carbon monoxide could enter the building.

(12) A detailed engineering evaluation shall include carbon monoxide detectors being selected, designed, sited, located and spaced based on a detailed engineering assessment, including receiving approval of the detailed assessment by local authorities. This evaluation shall include, but not be limited to:

(13) An evaluation of all potential carbon monoxide sources.

(14) Quantity of carbon monoxide able to be produced, and including its potential movement patterns, including throughout spaces, floors, exhaust/HVAC equipment, shafts, etc. and throughout the overall building.

(15) Impacts of both buoyant or non-buoyant carbon monoxide on selection, location, placement of the detector.

(16) Occupant characteristics including their sensitivity to carbon monoxide, specific medical conditions, their ability to detect and respond to activation of a detector, etc.

(17) Room/space characteristics – area, height, ceiling configurations (height, slopes, beams, obstructions, etc.), separations, HVAC, heat sources, drapes/curtains/walls/windows/vents /ceiling fans and other sources potentially obstructing or impacting air movement, dead air spaces, etc.

(18) Building characteristics (e.g. walls, doors, HVAC, openings, stack effect, stratification, exhaust ductwork, etc.) and the existing conditions of these characteristics in existing buildings including conditions of existing systems, appliances, ductwork, exhaust ducting, separations, blockages, ambient noise levels, etc.

(19) External conditions including weather (e. wind, humidity, temperature, etc.), idling vehicles nearby/adjacent to the building, utility entrances, etc.)

(20) Performance characteristics of the detector and the areas into which the detectors are to be installed to prevent nuisance and unintentional alarms or improper operation after installation, including moisture, temperature, dust, or fumes and of electrical or mechanical influences to minimize nuisance alarms.

Statement of Problem and Substantiation for Public Input

This proposed new text assists in providing guidance to designers as to where CO detectors should be located. Note also some of the previous requirements may not be fully in line with the findings within the Fire Protection Research Foundation report entitled “Development of a Technical Basis for Carbon Monoxide Detector Siting Research Project”. This is the document referenced in the Annex herein as to where these previous requirements came from.

Submitter Information Verification

Submitter Full Name: Chris Marrion
Organization: Marrion Fire & Risk Consulting
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 18:13:19 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee refers the submitter to CI-5316 for information.
Statement: This proposed new text assists in providing guidance to designers as to where CO detectors should be located.

Elements of items (1) through (11) of PI-376 are outside the scope of NFPA 72.

Public Input No. 225-NFPA 72-2019 [Section No. 17.12.1]

17.12.1*

Where required by other governing laws, codes, or standards, carbon monoxide detectors shall be installed in accordance with the following:

(1) * On the ceiling in the same room as permanently installed fuel-burning appliances, and

(2) * Centrally located on every habitable level and in every HVAC zone of the building, and

(3) Outside of each separate dwelling unit, guest room, and guest suite sleeping area within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel, and

(4) Other locations where required by applicable laws, codes, or standards, or

(5) A performance-based design in accordance with Section 17.3

Statement of Problem and Substantiation for Public Input

Annex material is only provided for sub parentheses (1) and (2), and not base section, so asterisk should be deleted. This is a TG input for SIG-IDS.

Submitter Information Verification

Submitter Full Name: Laurence Dallaire
Organization: Architect of the Capitol
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 14:49:01 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5311-NFPA 72-2019

Statement: In accordance with the Manual of Style, the use of “and” and “or” at the end of each list item is not the proper way to indicate that items (1) through (4) are grouped as a single requirement. Item (5) was incorporated into the main paragraph.

There is no annex material for 17.12.1.

Public Input No. 249-NFPA 72-2019 [Section No. 17.12.1]

17.12.1*

Where ~~required by other governing laws, codes, or standards,~~ a total (complete) carbon monixide protection of a building is required, carbon monoxide detectors shall be installed in accordance with the following, unless a performance-based design in accordance with Seciton 17.3 is used :

(1) * On the ceiling in the same room as permanently installed fuel-burning appliances, and

(2) * Centrally located on every habitable level and in every HVAC zone of the building, and

(3) Outside of each separate dwelling unit, guest room, and guest suite sleeping area within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel, and

(4) Other locations where required by applicable laws, codes, or standards~~, or~~
~~A performance-based design in accordance with Section 17~~

(5) .
~~3~~

(6)

Statement of Problem and Substantiation for Public Input

Per the MOS, the use of “and” and “or” at the end of each list item is not the proper way to indicate that items (1) through (4) are grouped as a single requirement and that item (5) is a separate alternative. Also, the section should make use of the term “total (complete) carbon monoxide protection” to be consistent with 17.5.3.1 (for smoke and heat detectors) and with the way that other codes and standards have adopted CO protection.

Submitter Information Verification

Submitter Full Name: Laurence Dallaire
Organization: Architect of the Capitol
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 05 15:53:55 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5311-NFPA 72-2019
Statement: In accordance with the Manual of Style, the use of “and” and “or” at the end of each list item is not the proper way to indicate that items (1) through (4) are grouped as a single requirement. Item (5) was incorporated into the main paragraph.

There is no annex material for 17.12.1.

Public Input No. 654-NFPA 72-2019 [Section No. 17.12.1]

~~17.12.1 * –~~

~~Where required by other governing laws, codes, or standards, carbon~~
Action: Delete the current text in this section and replace with the following:

Carbon monoxide detectors shall be

installed as specified in

~~accordance with the following:~~
the manufacturer's published instructions in accordance with 17.12.2(1) and 17.12.2(2), or 17.12.2(3):

(1) * On the ceiling in the same room as permanently installed fuel-burning appliances

~~, an*~~
(2)* Centrally located on every habitable level and in every HVAC zone of the building

~~, and~~

- ~~Outside of each separate dwelling unit, guest room, and guest suite sleeping area within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel, and~~

~~Other~~

(3) A performance-based design in accordance with Section 17.3

installed based on all of the following requirements when there is any production of carbon monoxide in the building:

(1) On the ceiling in the immediate vicinity, and throughout the entire space, of all temporary and all permanently installed carbon monoxide producing sources including all fuel burning appliances and equipment, including vehicles, machinery, engines and any other transient type equipment, appliances, or sources.

(2) Along the entire path of exhaust of any carbon monoxide producing equipment, appliances, etc. including extending from the source of the carbon monoxide through the entire building to the termination of the exhaust at an exterior wall or roof. This shall include along any branchlines and interconnections to any ductwork, piping etc used in the exhaust system.

(3) On each habitable and occupiable level of all buildings regardless of occupancy type, including basements/cellars and levels below grade.

(4) Within every HVAC Zone.

(5) Outside of each separate dwelling unit sleeping area in the immediate vicinity of the bedrooms, but no further than 10 feet (3m) from each entrance to the space.

(6) Within each bedroom, dwelling unit and sleeping area, including multiple sensors in multi-room suites.

(7) All other locations where required by applicable laws, codes

~~, or standards, or~~

- ~~A performance-based design in accordance with Section 17.3~~

or standards.

(8) As required by manufacturer's requirements. Manufacturer's requirements shall include specific information on the spacing and location of carbon monoxide detectors specific to each type each manufacturer produces including providing specific requirements for spacing between detectors, minimum/maxiumum spacings to walls/obstructions, minimum/maximum height of detector in a space, minimum/maximum distances to walls, minimum/maximum distances to HVAC vents, reductions in spacing required for high ceilings, and other pertinent information required to properly design, assess and install these detectors appropriately to achieve their intent.

(9) Carbon monoxide detectors shall then be selected, designed, sited, located and spaced based on a detailed engineering evaluation, including providing carbon monoxide detectors in all the above spaces. This evaluation shall include, but not be limited to:

(10) An evaluation of all potential carbon monoxide sources.

(11) Quantity of carbon monoxide produced and its potential movement patterns, including throughout spaces, floors, exhaust/HVAC equipment, etc. and throughout the overall building.

(12) Impacts of both buoyant or non-buoyant carbon monoxide on selection, location, placement of the detector.

(13) Occupant characteristics including their sensitivity to carbon monoxide, specific medical conditions, their ability to detect and respond to activation of a detector, etc.

(14) Room/space characteristics – area, height, ceiling configurations (height, slopes, beams, obstructions, etc.), separations, HVAC, heat sources, drapes/curtains/walls/windows/vents/ceiling fans and other sources potentially obstructing or impacting air movement, dead air spaces, etc.

(15) Building characteristics (e.g. walls, doors, HVAC, openings, stack effect, stratification, exhaust ductwork, etc.) and the existing conditions of these characteristics in existing buildings including conditions of existing systems, appliances, ductwork, exhaust ducting, separations, blockages, ambient noise levels, etc.

(16) External conditions including weather (e.g. wind, humidity, temperature, etc.), idling vehicles nearby/adjacent to the building, etc.

(17) Performance characteristics of the detector and the areas into which the detectors are to be installed to prevent nuisance and unintentional alarms or improper operation after installation, including moisture, temperature, dust, or fumes and of electrical or mechanical influences to minimize nuisance alarms.

Additional Proposed Changes

File Name	Description	Approved
72_HELD_PC_517_SIG-IDS.pdf	NFPA 72 HELD Public Comment No. 517 (SIG-IDS)	

Statement of Problem and Substantiation for Public Input

NOTE: This Public Input appeared as “Rejected but Held” in Public Comment No. 517 of the (A2018) Second Draft Report for NFPA 72 and per the Regs. at 4.4.8.3.1.

Comment: Additional requirements are needed to properly design, locate, space, etc. carbon monoxide detectors in addition to what is currently in this section. Please also note that these previous requirements do not appear to be fully in line with the conclusions within the Fire Protection Research Foundation report entitled “Development of a Technical Basis for Carbon Monoxide Detector Siting Research Project” by Gottuk and Beyler. This is the document referenced in the Annex herein – Section A.17.12.2(2) as to where these previous requirements came from.

Additionally, there does not appear to be an extensive amount of manufacturer’s information at the moment regarding siting, spacing, locating CO detectors that is readily available. These requirements/recommendations appear also to often refer back to NFPA 72/720 and hence a circular set of references with limited input/requirements from either this section of NFPA 72 or manufacturers requirements exist stating where they need to be located, spacing, etc.

Submitter Information Verification

Submitter Full Name: TC on SIG-IDS
Organization: NFPA
Street Address:
City:
State:

Zip:
Submittal Date: Thu Jun 27 16:28:37 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The Technical Committee refers the submitter to CI-5316 for information.

Statement: This proposed new text assists in providing guidance to designers as to where CO detectors should be located.

Elements of items (1) through (11) of PI-376 are outside the scope of NFPA 72.

Public Input No. 156-NFPA 72-2019 [New Section after 17.12.2]

17.12.3*

Carbon monoxide detectors that sample from forced air HVAC ducts shall be listed to alarm thresholds specifically for duct application.

A.17.12.3

At present there is no product performance listing for duct mounted CO detectors because there is no peer reviewed research to determine what the alarm thresholds for duct mounted carbon monoxide detectors should be. There are considerable differences between the operation of a spot CO detector and a duct mounted CO detector. The environment in ducts can be very harsh and will impact the CO sensing element. Several examples are the impact of air velocity on the CO sensor and the dilution of CO within the duct.

Statement of Problem and Substantiation for Public Input

There have been proposals to various codes to include control functions actuated by carbon monoxide duct detectors (fan shutdown, damper operation, etc.). It is essential that NFPA 72 provides some guidance for AHJ's related to these proposed applications.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 13:29:19 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The proposed language is not necessary. Section 10.3.1 requires products to be listed for the purpose for which it is installed.

Public Input No. 377-NFPA 72-2019 [Section No. 17.12.6]

17.12.6

~~Relative humidity outside the range of 10 percent to 95 percent~~

~~Unless specifically designed and listed for the expected conditions, carbon~~
Delete existing text and replace with the following:

17.12.7 Carbon monoxide detectors shall

~~not be installed where any of the following ambient conditions exist:~~

- ~~Temperature below 32°F (0°C)~~
- ~~Temperature above 100°F (38°C)~~

be installed as per their listings. If carbon monoxide detectors are not provided in a required space due to conditions that may adversely impact its listing (temperature, humidity, environmental conditions, etc.) the designer shall inform the owner and AHJs that the code requirement cannot be met and that alternate prevention and mitigation measures need to be developed, approved by local authorities and implemented to address the inherent hazards and associated risks carbon monoxide presents to occupants. The alternate prevention/mitigation strategy shall meet the intent of providing automatic detection and notification to the occupants due to unsafe levels of carbon monoxide, as a minimum, and that are acceptable to and approved by the local authorities

Statement of Problem and Substantiation for Public Input

This section currently appears to allow not providing CO detectors if the environment is adverse (garage in wintertime) however, this section doesn't indicate that other alternate measures should be undertaken or anyone notified of this so for instance an alternate can be provided to at least meeting the intent of providing one. In the northeast for instance, this section appears to allow people to not put carbon monoxide detectors in garages due to the low temperatures achieved and with no requirements for alternate means to address the hazard that exists or notify anyone.

Submitter Information Verification

Submitter Full Name: Chris Marrion
Organization: Marrion Fire & Risk Consulting
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 18:23:56 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5319-NFPA 72-2019
Statement: The requirement is already included in Section 10.3.1 and 10.3.2.

Public Input No. 655-NFPA 72-2019 [New Section after 17.12.7]

17.12.11 System Action Upon Activation of Carbon Monoxide Detector

17.12.11.1 Activation of a carbon monoxide signal shall generate an alarm throughout the building.

17.12.11.2 If there is an approved building response plan, evacuation plan, fire safety plan, or similar documentation detailing what is to be done upon activation of the various types of initiating devices and other equipment, developed by a qualified engineer and approved by the local authorities, then the fire alarm system processing for and occupant response to carbon monoxide alarm signals shall be in accordance with this approved building response plan, evacuation plan, fire safety plan, or similar documentation. The design professional shall include this information in the design drawings and documents, including those submitted to the local authorities. If not such plans exist, then activation of a carbon monoxide signal shall be generated throughout the building.

17.12.11.3 Multiple interconnected carbon monoxide detectors shall activate each other upon activation of one of them.

Additional Proposed Changes

File Name	Description	Approved
72_HELD_PC_528_SIG-IDS.pdf	NFPA 72 HELD Public Comments No. 528	

Statement of Problem and Substantiation for Public Input

NOTE: This Public Input appeared as “Rejected but Held” in Public Comment No. 528 of the (A2018) Second Draft Report for NFPA 72 and per the Regs. at 4.4.8.3.1.

it would be beneficial to provide additional information as to what the response is to activation of a carbon monoxide detector.

Furthermore, it is not defined in the current text what is to be done should there not be such a plan. See also Section 23.8.4.8.2

Submitter Information Verification

Submitter Full Name: TC on SIG-IDS
Organization: NFPA
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 27 16:33:18 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: This is currently addressed in 23.8.6.1. (SIG-FUN) The following committees also reviewed this Public Input: SIG-PRO: Agrees with the action, as 23.8.6.1.2 and 23.8.6.1.3 already address notification of occupants for carbon monoxide detectors. SIG-IDS: Agrees with the action, as the recommended text does not belong in Chapter 17.

Public Input No. 378-NFPA 72-2019 [Section No. 17.12.8]

17.12.8 ~~Protection~~ Detection of Carbon Monoxide During Construction.

17.12.8.1

Where detectors are installed for signal initiation during construction, they shall be replaced prior to the final commissioning of the system. During the construction period detectors shall be tested regularly, not less than once a week, and more if deemed necessary, to ensure that construction and construction related materials, debris, etc have not adversely impacted their ability to operate correctly.

17.12.8.2

Where detection is not required during construction, detectors shall not be installed until after all other construction trades have completed cleanup.

Statement of Problem and Substantiation for Public Input

Detectors need to be checked during construction that they remain operational. Helps address the intent of the section.

Submitter Information Verification

Submitter Full Name: Chris Marrion
Organization: Marrion Fire & Risk Consulting
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 18:29:54 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: Protection of construction activities is not within the scope of Chapter 17. The proposed change appears to insert requirements that ensure system operation during the construction activities.

Public Input No. 381-NFPA 72-2019 [New Section after 17.12.9]

TITLE OF NEW CONTENT

Type your content here ...

17.12.10 Action upon Activation of Carbon Monoxide detector

Activation of a carbon monoxide detector shall generate an alarm at the detector activated, as well as throughout the building if a fire alarm system is provided.

If there is an approved building response plan, evacuation plan, fire safety plan, or similar documentation, developed by a qualified engineer and approved by the local authorities then the fire alarm system processing for and occupant response to carbon monoxide alarm signals shall be in accordance with this approved building response plan, evacuation plan, fire safety plan, or similar documentation. The design professional shall include this information in the design drawings and documents, including those submitted to the local authorities.

Multiple interconnected carbon monoxide detectors shall activate each other upon activation of one of them.

Statement of Problem and Substantiation for Public Input

It would help to clarify what the response is to a CO detector activating, including if there is/is not an evacuation plan.

Submitter Information Verification

Submitter Full Name: Chris Marrion
Organization: Marrion Fire & Risk Consulting
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 18:43:04 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: This is currently addressed in 23.8.6.1. (SIG-FUN) The following committees also reviewed this Public Input: SIG-PRO: Agrees with the action, as 23.8.6.1.2 and 23.8.6.1.3 already address notification of occupants for carbon monoxide detectors. SIG-IDS: Agrees with the action, as the recommended text does not belong in Chapter 17.

Public Input No. 379-NFPA 72-2019 [Section No. 17.12.9]

17.12.9 Carbon Monoxide Detectors for Control of Carbon Monoxide Spread.

17.12.9.1

System designers shall consider the spread of carbon monoxide ~~through an occupancy through the HVAC system.~~ throughout the entire building via all pathways and the means that are provided to help control it. This shall include spread through the HVAC system, exhaust ductwork used for exhausting fuel fired appliances, openings, open doors, normally open fire/smoke dampers, concealed spaces, shafts, etc. The system designer shall incorporate the use of carbon monoxide detectors and shall also incorporate other prevention and mitigation measures as part of the overall integrated means to control the spread of carbon monoxide.

17.12.9.2

Interaction with smoke control systems, if such is provided, shall be coordinated.

Statement of Problem and Substantiation for Public Input

Helps clarify intent of the section

Submitter Information Verification

Submitter Full Name: Chris Marrion
Organization: Marrion Fire & Risk Consulting
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 18:33:04 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: CI-5334-NFPA 72-2019
Statement: This is performance based design guidance and belongs in Annex B.

Public Input No. 380-NFPA 72-2019 [Section No. 17.12.9.2]

17.12.9.2

Interaction with smoke control systems, if such is provided, shall be ~~coordinated~~ coordinated by the system designer with all other disciplines that are involved with the design of the smoke control system to ensure it does not adversely impact the ability of the carbon monoxide detector to achieve its design intent and detecting carbon monoxide, and if the smoke control system is being used to manage/control the carbon monoxide in a space as well, that it has been designed, installed, programmed and tested to do this .

Statement of Problem and Substantiation for Public Input

The added text is intended to help clarify section.

Submitter Information Verification

Submitter Full Name: Chris Marrion
Organization: Marrion Fire & Risk Consulting
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 18:37:57 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: CI-5334-NFPA 72-2019
Statement: This is performance based design guidance and belongs in Annex B.

Public Input No. 21-NFPA 72-2018 [New Section after 17.13.2]

TITLE OF NEW CONTENT

Type your content here ...

17.13.3.3 When remotely activated electical sprinkler test valves are used to flow water for the test, the wiring to operate them shall be electically supervised. Programming of the fire alarm control that has an operation to do this can include a timer to limited the operation of the valve open time.

17.13.3.4 When multiple occupancy residental buildings share a common water main that services both the domestic and sprinkler systems and requires that the domestic water be shut down to insure a sucificent amount of water to be available for the sprinkler system, the fire alarm system may be used to operate that electrically supervised valve to perform this operation.

Statement of Problem and Substantiation for Public Input

For item # 17.13.3.3 The code does not presently address remote sprinkler test valves and their operation as well as the wiring requirements.

For item # 17.13.3.4 The code does not address what is acceptable to insure enough water to the sprinkler system when it also feed the domestic needs of a residential building and how to do this.

Submitter Information Verification

Submitter Full Name: Stuart Gilbert
Organization: Superior Prot Svcs
Street Address:
City:
State:
Zip:
Submittal Date: Thu Nov 08 16:46:08 EST 2018
Committee: SIG-IDS

Committee Statement

Resolution: 17.13.3.3 – There is no technical justification or life-safety reason to mandate the supervision of the operation of a test valve. Furthermore nothing in NFPA 72 precludes the use of the Fire Alarm system to control water.

Public Input No. 596-NFPA 72-2019 [Section No. 17.13.2]

17.13.2*

Activation of the initiating device shall occur within 90 seconds of waterflow at the alarm-initiating device when flow occurs that is equal to or greater than that from a single sprinkler of the smallest orifice size installed in the system.

Statement of Problem and Substantiation for Public Input

In coinjucton with the Annex material this asterisk has been added.

Submitter Information Verification

Submitter Full Name: James Mundy
Organization: Asset Protection Associates, L
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:59:49 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: An asterisk is already present in the printed document.

Public Input No. 598-NFPA 72-2019 [New Section after 17.17.1.4]

TITLE OF NEW CONTENT

*17.17.1.5 The required initiating operation in section 17.17.1.2 makes no provision for valve stem wear. Wheel slippage shall not be considered in the two revolution requirement.

Add Annex A note: Commonly older outside screw and yoke valve stems wear over time due to material of which the stem is fabricated. These stems typically are mode of brass and become a bit loose prior to driving the stem. It is not uncommon on loder isntalled valves to affect as mujch as one half to three quarters turning of the handwheel before the stem is engaged. Becasue of this condition the two turns of the handwheel should only be counted after stem/handwheel engagement.

Statement of Problem and Substantiation for Public Input

Valve wear is a common issue. Some AHJ's count the wheel slippage and this obviates the intent of this section. Slippage from wear should always be excluded since not valve stem movement occurs until the stem is engaged.

Submitter Information Verification

Submitter Full Name: James Mundy
Organization: Asset Protection Associates, L
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:10:22 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: This information exists in NFPA 25, Section 13.3.3.2.

Public Input No. 612-NFPA 72-2019 [New Section after 17.17.1.4]

TITLE OF NEW CONTENT

17.7.1.6 Post and Wall Control Valves shall be tested for operationm conistent with requirments of section 17.17.1.1 using a requiement for two revolutions of the valve handle.

Statement of Problem and Substantiation for Public Input

There does not appear to be any requirement for testing PIV and wall mounted valves. I have used the two revolution requirement successfully on many projects. The two revolution has consistent provided protection and often times lead to either repair or replacement of the barrel and actuating mechanism.

Submitter Information Verification

Submitter Full Name: James Mundy
Organization: Asset Protection Associates, L
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:54:46 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: All valves are addressed by 17.17.1.

Public Input No. 10-NFPA 72-2018 [New Section after 17.17.2.2.2(C)]

TITLE OF NEW CONTENT

Type your content here ...

17.17.2.2.2.1 Pre-Action Air Or Nitrogen Level Supervision:

(A) The air or nitrogen pressure in pre-action sprinkler systems shall be electrically supervised at levels determinded by the manufacturer of the pre-action system for low and high air or nitrogen conditions by the associated releasing fire alarm control or fire alarm system.

Statement of Problem and Substantiation for Public Input

This is to insure that the proper air or nitrogen levels are present in order to insure that the sprinkler piping for the pre-action sprinkler system is intact and will not delay the water entering the system due to excessive air or nitrogen being present..

Submitter Information Verification

Submitter Full Name: Stuart Gilbert
Organization: Superior Prot Svcs
Street Address:
City:
State:
Zip:
Submittal Date: Fri Oct 26 12:49:22 EDT 2018
Committee: SIG-IDS

Committee Statement

Resolution: Section 17.17.2.2.2 covers the supervision of dry pipe sprinkler systems.

Public Input No. 252-NFPA 72-2019 [Section No. 17.17.5]

17.17.5 Room Temperature Supervisory Signal–Initiating Device.

A room temperature supervisory device shall indicate a decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).

New Paragraph Emergency Action Notification Signal for emergency action on stove top or range alert.

New Paragraph 17.17.6

All monitoring devices for stove top or raange attendance or rise in temperture shall have a uniform aufible sound pattern that is unique to alert end users in both residential and commerical settings that a emergency action or attention is need for the cooking surface. The sound pattern shall be the Morse Code letters "S" and "O: spaced unit unit time and repeated until shut off.

Statement of Problem and Substantiation for Public Input

UL 858 for ranges has an established task group reviewing requirements for devices monitoring cooking top or stove top surfaces for notifying the residential users or a student in a college dormitory setting that an emergency situation needs immediate attention. There are a number of listed and non-listed after market products for this and a unique sound would have a better response to an emergency. Also some of the products can turn off the energy source to the stove top.

Submitter Information Verification

Submitter Full Name: Vic Humm
Organization: Vic Humm ; Associates
Affiliation: Member UO Standrad Task Goup on UL 858
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 07 10:25:52 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: Audible annunciation is outside the purview of Chapter 17.

Public Input No. 518-NFPA 72-2019 [Section No. 17.17.5]

17.17.5 Room Temperature Supervisory Signal–Initiating Device.

A room temperature supervisory device shall indicate a decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C).

New Paragraph 15.18 Cook Top Monitoring Equip[ment

17.18.1 The stove top, monitoring rquipment shall sound a uniform tone as determined by Chapter 18.

17.18.2 The actuation of the disengaging of the energy source to the stove trop shall require mechanicql amnual reset of the interface shut dwon equipment.

17.18.3 If interfaced with a fire alarmystem or off-premise monitoring supervisory signal to the off-premise monitori ng company shall require the monitoring company to immediately try to contact the premise occupants. If no response is recieved than Chapter 26 shall direct the response to first resonders.

Statement of Problem and Substantiation for Public Input

Products some listed are now available on the market.
Some uniks recognize the presence of the premise occupant(s). In the event of un-attendance of the contents cooking on the stove an alarm isd sounded and some units interface with the stove's energy source and upon actuation will interrupt the energy source thus shutting down the stove. . Some units have auto rest if the premise occupants return with an adjustable time limit.In this case auto reset of the energy source occurs.

Submitter Information Verification

Submitter Full Name: Vic Humm
Organization: Vic Humm; Associates
Affiliation: BFPA 72 Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 17:25:38 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: 17.18.1 - Audible Notification is outside the purview of Chapter 17. 17.18.2 – Resetting of energy cutoff switches is outside the purview of Chapter 17. 17.18.3 – Mandating monitoring company processes is outside purview of Chapter 17.

Public Input No. 338-NFPA 72-2019 [New Section after 18.3.2]

Voltage Drop Calculations

18.3.2.4 Voltage drop calculations shall be performed using one of the following methods:

(1) The lump sum calculation method, which shall be calculated as follows:

(2) Calculate the voltage drop using one of these formulas:

(3) $V_D = I * ((R * 2 * L)/1{,}000)$, OR

(4) $V_D = (2 * K * I * L)/CM$.

(5) Subtract this calculated voltage drop from 20.4 volts (V_S) in order to get the voltage value at the end of the circuit ($V_S - V_D = V_{EOL}$). The value for V_{EOL} shall be a minimum of 16 volts (the minimum operating voltage required for a listed 24 vdc notification device).

(6) The point-to point method, which requires a math-intensive approach where the voltage drop between each notification appliance is reiterated. This method is best done by utilizing a spreadsheet program. The calculated voltage at the last device on the circuit shall be a minimum of 16 volts (the minimum operating voltage required for a listed 24 vdc notification device).

Where:

V_D = Voltage Drop

V_S = Starting voltage (20.4vdc, or the end of useful battery life)

V_{EOL} = Voltage at the end-of-line resistor

I =Total load of the circuit in amperes utilizing current draws for each notification appliance @ 16vdc (the UL maximum draws at the minimum listed voltage).

R = Resistance in ohms per 1,000 feet, with respect to conductor

K = 10.64 ohms (the constant representing the mil-foot resistance of copper wire)

L = length of circuit in feet (distance from panel to end-of-line resistor for class B circuits)

CM = circular mill of wire, with respect to conductor.

V_{SOURCE} = voltage calculated at the previous device

Statement of Problem and Substantiation for Public Input

This amendment is intended to standardize the way in which designers calculate voltage drops for notification circuits. The methods shown on this proposal in calculating voltage drops are consistent with the methods described in the narrative of the NFPA 72 Fire Alarm Code Handbook. The base code for NFPA 72 does not provide guidance with regards to the methods to use when calculating voltage drops.

Submitter Information Verification

Submitter Full Name: Lynn Nielson

Organization: City Of Henderson
Affiliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 12:53:55 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: CI-5036-NFPA 72-2019

Statement: Many NACs are not designed, installed, tested or maintained properly. This new section is intended to provide the designer guidance on proven and repeatable methodologies that can be applied to systems. This work is part of the NFPA 72 Task Group on Notification Appliance Circuits. The Task Group will continue to work on this material before the Second Draft Meeting. This CI incorporates PI 338 and PI 586.

Public Input No. 566-NFPA 72-2019 [Section No. 18.3.3]

18.3.3 Physical Construction.

18.3.3.1

Appliances intended for use in special environments, such as outdoors versus indoors, high or low temperatures, high humidity, dusty conditions, and hazardous locations, or where subject to tampering, shall be listed for the intended application.

18.3.3.2*

Notification appliances used for signaling other than fire shall not have the word FIRE, or any fire symbol, in any form (i.e., stamped, imprinted, etc.) on the appliance visible to the public.

18.3.3.3

Notification appliances with multiple visible elementsused for signaling other than fire shall be permitted to have fire markings only on those visible elements used for fire signaling.

18.3.3.4

Visual notification appliances used solely for carbon monoxide signaling shall be marked with the word "ALERT".

18.3.3.5

Audible notification appliances used for carbon monoxide signaling shall have no markings or shall be marked with the word "ALERT".

18.3.3.6

In situations where existing notification appliances previously used exclusively for fire alarm signaling, and marked with the word "FIRE", are to be used for carbon monoxide signaling, field modification to the marking shall be permitted, provided that it is accomplished by one of the following methods:

(1) Replacement of the manufacturer's approved escutcheon or trim plate

(2) Covering of, or removal of, the word "FIRE" using a manufacturer's approved method

(3) Installation of a permanent sign directly adjacent or below the notification appliance indicating that it is multipurpose and will operate for fire and other emergency conditions

Statement of Problem and Substantiation for Public Input

NFPA 72 SIG PRO Carbon Monoxide Task Group submitted this change to clarify marking requirements for notification appliances used for carbon monoxide signaling. Initially, addition of these requirements to 23.8.4 was considered, but we elected to propose the revisions within Chapter 18 so as to be applicable to stand-alone carbon monoxide detection systems and combination systems. The provisions for mass notification appliance marking (24.5.17) were used as the framework for this proposed change.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 536-NFPA 72-2019 [Section No. A.23.8.4.9]	
Public Input No. 537-NFPA 72-2019 [Section No. 23.8.4.9]	
Public Input No. 251-NFPA 72-2019 [Section No. 21.1 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Brandon Wilkerson
Organization: Poole Fire Protection
Affiliation: NFPA 72 SIG PRO Carbon Monoxide Task Group
Street Address:

City:
State:
Zip:
Submittal Date: Wed Jun 26 12:36:55 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5005-NFPA 72-2019

Statement: The Technical Committee recognizes that it may be necessary to perform field modifications to use existing appliances, and wants to ensure that any modifications have first been investigated and listed.

The Technical Committee does not add specific language for carbon monoxide, but instead leaves it generic for all signaling other than fire.

Public Input No. 317-NFPA 72-2019 [New Section after 18.3.3.3]

Notification Device Color

To aid in locating notification devies all notification devices shall be either nominal red or white in color and not be painted in the field.

Statement of Problem and Substantiation for Public Input

Notification devices require periodic test and inspection activities. Standardizing the colors, much like we have in this code for manual stations, will aid in the locating these devices as more and more devices are being mounted on the ceilings. Most manufacturers already state not to paint the devices in the installation instructions but this would codify this requirement as well so that it can be more readily enforced.

Submitter Information Verification

Submitter Full Name: Thomas Parrish
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 12:30:46 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: Notification appliances are made to be seen and heard upon activation. The Technical Committee is of the opinion that if the appliance is audible and visible it meets the intended purpose of the appliance and it is not useful to require a specific color.

Public Input No. 528-NFPA 72-2019 [Section No. 18.4.2]

18.4.2 Distinctive Evacuation Signal.

18.4.2.1*

To meet the requirements of Section 10.10, the alarm audible signal pattern used to notify building occupants of the need to evacuate (leave the building) or relocate (from one area to another) shall be the standard alarm evacuation signal consisting of a three-pulse temporal pattern ~~. The pattern shall be~~ in accordance with ~~Figure~~ ANSI/ASA S3.41.

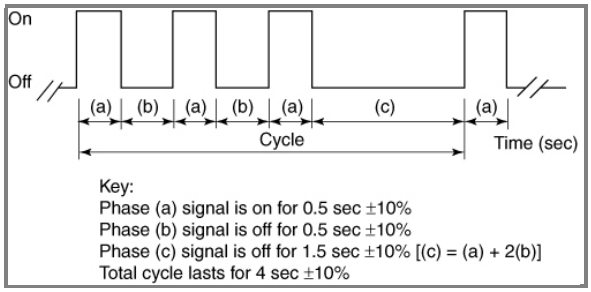
18.4.2. ~~1 and shall consist of the following in this order:~~

(1) ~~"On" phase lasting 0.5 second ±10 percent~~

(2) ~~"Off" phase lasting 0.5 second ±10 percent for three successive "on" periods~~

(3) ~~"Off" phase lasting 1.5 seconds ±10 percent~~

~~Figure 18.4.2.1 Temporal Pattern Parameters.~~



~~Exception: Where~~

2* The signal shall be repeated for a period appropriate for the purposes of evacuation of the building, but for not less than 180 seconds unless otherwise set forth in an emergency plan approved by the authority having jurisdiction

~~, continued use of the existing consistent evacuation signaling scheme shall be permitted~~

.

18.4.2.2~~–~~

~~A single-stroke bell or chime sounded at "on" intervals lasting 1 second ±10 percent, with a 2-second ±10 percent "off" interval after each third "on" stroke, shall be permitted~~

~~.~~

~~18.4.2.2. 1~~ ~~–~~

~~The minimum repetition time shall be permitted to be manually interrupted where approved by the authority having jurisdiction .~~

18.4.2.2.2

The minimum repetition time shall be permitted to be automatically interrupted for the transmission of mass notification messages in accordance with Chapter 24.

18.4.2.3*

The standard evacuation signal shall be synchronized within a notification zone.

Statement of Problem and Substantiation for Public Input

Terra had a tough time with this one – it did not show Errata 72-19-2 which, in part, reinstated "The signal shall be repeated for…". So, I put it in this PI for continuity.

These changes are intended to return the text to the version following the 2019 edition 1st draft. The final 2019 edition does not reflect the 1st draft changes. Those changes were unchanged in the 2nd draft. However, a floor CAM was passed but failed final Standards Council (SC) approval. When that occurs, the text does not stay as approved by the technical committee (TC). Instead, the directive is to ignore 1st and 2nd drafts and CAMs and to revert the text to the previous edition. Thus, the 2019 edition was returned to 2016 text, undoing the 1st draft changes. The ANSI standard for the signal had been updated to allow greater flexibility with T3 (and T4) and to allow T3 to be used for relocation or partial evacuation instead of only TOTAL building evacuation. To correlate with the ANSI standard and to make NFPA 72 work with MNS/EVACS the figure and reference to the figure was deleted. The text regarding single stroke bells was also deleted as not being needed in NFPA 72 body.

The first printing of 2019 NFPA 72 has 18.4.2.2.1 and 18.4.2.2.2 incorrectly under the paragraph 18.4.2.2 for single stroke bells. Those two paragraphs belong under the paragraph for minimum ring time that was inadvertently left out of the printing and that was reinstated by Errata 72-19-2.

See related Annex text added to explain the minimum ring time and how it might be used as suggested by the NITMAM/CAM that failed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 531-NFPA 72-2019 [New Section after A.18.4.2.1]	
Public Input No. 531-NFPA 72-2019 [New Section after A.18.4.2.1]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 07:27:19 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5013-NFPA 72-2019

Statement: These changes are intended to return the text to the version following the 2019 edition 1st draft. The final 2019 edition does not reflect the 1st draft changes. Those changes were unchanged in the 2nd draft. However, a floor CAM was passed but failed final Standards Council (SC) approval. When that occurs, the text does not stay as approved by the Technical Committee (TC). Instead, the directive is to ignore 1st and 2nd drafts and CAMs and to revert the text to the previous edition. Thus, the 2019 edition was returned to 2016 text, undoing the 1st draft changes. The ANSI standard for the signal had been updated to allow greater flexibility with T3 (and T4) and to allow T3 to be used for relocation or partial evacuation instead of only TOTAL building evacuation. To correlate with the ANSI standard and to make NFPA 72 work with MNS/EVACS the figure and reference to the figure was deleted. The text regarding single stroke bells was also deleted as not being needed in NFPA 72 body.

The first printing of 2019 NFPA 72 has 18.4.2.2.1 and 18.4.2.2.2 incorrectly under the paragraph 18.4.2.2 for single stroke bells. Those two paragraphs belong under the paragraph for minimum ring time that was inadvertently left out of the printing and that was reinstated by Errata 72-19-2.

Annex text has been added to explain the minimum ring time and how it might be used as suggested by the NITMAM/CAM that failed.

Public Input No. 167-NFPA 72-2019 [New Section after 18.4.2.1]

18.4.2.1.1

In occupancies where relocation of occupants (from one area to another within the building) is performed by trained staff, the alarm audible signal shall be permitted to consist of three-pulse temporal pattern in accordance with Figure 18.4.2.1, when approved by the authority having jurisdiction

Statement of Problem and Substantiation for Public Input

This new section is intended the address the concern for hospitals and other protective-care facilities where occupants are incapable of self preservation and require assistance by trained staff to relocate from one area to another within the building. In these facilities, the alarm tone should be permitted to be a Temp-3, if approved by the AHJ since the relocation is performed by trained staff.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 166-NFPA 72-2019 [Section No. 18.4.2.1]	To address specific occupancies with trained staff
Public Input No. 166-NFPA 72-2019 [Section No. 18.4.2.1]	
Public Input No. 168-NFPA 72-2019 [New Section after 18.4.2.1]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 12 14:18:34 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: The Technical Committee has revised 18.4.2 to clarify that a 3-pulse temporal code is permitted for relocation. See First Revision 5013.

Public Input No. 168-NFPA 72-2019 [New Section after 18.4.2.1]

18.4.2.1.2

The alarm audible signal required in 18.4.2.1 shall be continued until the fire alarm system is silensed or reset by emergency personnel. If approved by the autority having jurisdication, the alarm audible signal shall be permitted to have an automatic cut-off time programmed into the fire alarm control unit.

Statement of Problem and Substantiation for Public Input

This PI is to address the current Exception to 18.4.2.1 which is irrelevant to the intent of 18.4.2.1 and should be deleted (Exceptions should not be in the code as well). It is also based on CAM 72-2 which Passed the 2018 Tech-Session by an overwhelming majority of 396-42. It should not be allowed for a Fire Alarm system Evacuation or Relocation signal to have an automatic cut-off time in the body of the code. It could be permissible only if specifically approved by the AHJ for specific facilities on a case-by-case basis. The Code should only allow, as a default, for Emergency Personnel (See PI for proposed definition) to silence or reset the alarm audible tone.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 166-NFPA 72-2019 [Section No. 18.4.2.1]	
Public Input No. 167-NFPA 72-2019 [New Section after 18.4.2.1]	
Public Input No. 165-NFPA 72-2019 [New Section after 3.3.94]	Emergency personnel definition
Public Input No. 166-NFPA 72-2019 [Section No. 18.4.2.1]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 12 14:29:25 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: The Technical Committee has revised 18.4.2 to clarify that it is permissible to interrupt an alarm with AHJ approval, and added annex text to further explain this. See First Revision 5013.

Public Input No. 166-NFPA 72-2019 [Section No. 18.4.2.1]

18.4.2.1*

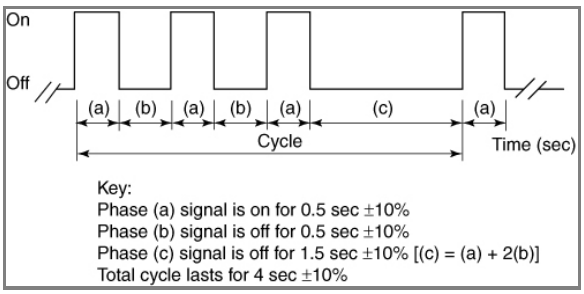
To meet the requirements of Section 10.10, the alarm audible signal pattern used to notify building occupants of the need to evacuate (leave the building) ~~or relocate (from one area to another)~~ shall be the standard alarm evacuation signal consisting of a three-pulse temporal pattern. The pattern shall be in accordance with Figure 18.4.2.1 and shall consist of the following in this order:

(1) "On" phase lasting 0.5 second ±10 percent

(2) "Off" phase lasting 0.5 second ±10 percent for three successive "on" periods

(3) "Off" phase lasting 1.5 seconds ±10 percent

Figure 18.4.2.1 Temporal Pattern Parameters.



~~*Exception: Where approved by the authority having jurisdiction, continued use of the existing consistent evacuation signaling scheme shall be permitted.*~~

Additional Proposed Changes

File Name	Description	Approved
A2018_Floor_Actions_Tech_Session.pdf	NFPA 2018 Tech-Session results	

Statement of Problem and Substantiation for Public Input

This proposal has passed the Tech-Session CAM 72-1 with a large majority (262-176 Pass) to accept Public comments 386 and 387.
Based on the Tech-Session debate (see available script on the NFPA 72 online page) it was clear to most NFPA members that "Evacuation Signal" means to alert occupants to "Leave the building", While "Relocation signal" means to alert occupants to Move from one area to another area within the building.
The definition for "Relocation" in section 3.3.242 clearly states this intent:

3.3.242 Relocation. The directed movement of occupants from one area to another area within the same building

The definition for "Evacuation" is:

3.3.100* Evacuation. The withdrawal of occupants from a building. (SIG-PRO)

It is specifically explained in the Annex as:
A.3.3.100 Evacuation. Evacuation does not include the relocation of occupants within a building.

Also, the definition of an Evacuation Signal is:

3.3.263.4 Evacuation Signal. A distinctive alarm signal intended to be recognized by the occupants as requiring evacuation of the building. (SIG-PRO)

Therefore it is clear that an Evacuation Signal should be different than a Relocation signal

It is specifically indicated in Chapter 24 that a "Relocation Signal" is Not an Evacuation signal and therefore it requires different alert tone than the Temp-3 Tone. Chapter 24 requires a 1-3 Tone for relocation (non-evacuation) messages.
It is acknowledged that some occupancies such as hospitals and protective-care facilities, etc, where trained staff is responsible for the relocation of occupants, may be using the Temp-3 Tone via chimes to indicate an alarm signal. Therefore, the Code should include a specific provision for those occupancies rather to conflict with Chapter 24. See proposed provision is other related Public Input (PI # 167) .
The Exception is deleted since the Code intends to eliminate Exceptions in general, and since this Exception is not specifically related to the Temp-3 Tone requirement in this section. A new related Public Input (PI #168) will address the Exception intent.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 167-NFPA 72-2019 [New Section after 18.4.2.1]	addresses specific facilities
Public Input No. 168-NFPA 72-2019 [New Section after 18.4.2.1]	automatic cut-off should only be permitted if specifically approved by AHJ
Public Input No. 167-NFPA 72-2019 [New Section after 18.4.2.1]	
Public Input No. 168-NFPA 72-2019 [New Section after 18.4.2.1]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 12 13:30:49 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: The Technical Committee disagrees and revised 18.4.2 to permit T3 to be used for relocation. This correlates and agrees with ANSI/ASA S3.41. See First Revision 5013.

Public Input No. 14-NFPA 72-2018 [Section No. 18.4.3.2]

18.4.3.2

Where an audible signal is required, the carbon monoxide signal shall be a four-pulse temporal pattern and comply with the following:

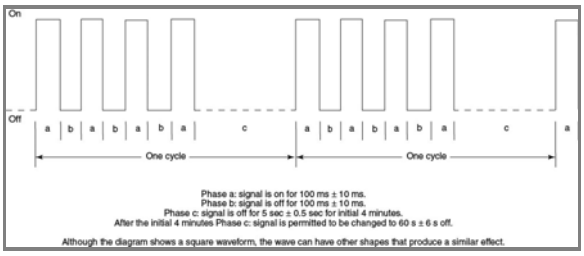
(1) Signals shall be a pattern consisting of four cycles of 100 milliseconds ± 10 percent “on” and 100 milliseconds ± 10 percent “off,” followed by 5 seconds ± 10 percent “off,” as demonstrated in Figure 18.4.3.2.

(2) After the initial 4 minutes of the carbon monoxide signal, the 5-second “off” time shall be permitted to be changed to 60 seconds ± 10 percent.

(3) The alarm signal shall be repeated in compliance with 18.4.3.2(1) and 18.4.3.2(2) until the alarm resets or the alarm signal is manually silenced.

(4) When hearing impared occupants are regularly present (employed or in regular attendance) the visual indication appliances shall have the capability to operate at the four-pulse rate in order to clearly show the distinction of a carbon monoxide alarm as opposed to a fire alarm condition. Set responsible parties are required to educate those who are hearing impared of the different visual pulse rate as to meaning of each.

Figure 18.4.3.2 Temporal Pattern Parameters — Carbon Monoxide Signal.



Statement of Problem and Substantiation for Public Input

In hearing impaired schools or work places those with this disability must have the same rights and consideration as those who are not. New visual devices that are LED driven as opposed to strobes can have this capability designed into them (a temporal four flash rate). This suggested change is not intended to apply to all locations but those specifically set to cater to such impairments like a school for the deaf. A designated person on staff (hearing imparted or not) must also be part of the processes for educational purposes or what is intended here will not succeed. As far as went this applies, that will have to be up to the system designer as to that determination as when this applies based upon facts related to the persons to be in those spaces.. We are only prescribing the method here when this is to be done.

Submitter Information Verification

Submitter Full Name: Stuart Gilbert
Organization: Superior Prot Svcs
Street Address:
City:
State:
Zip:
Submittal Date: Sat Oct 27 14:48:33 EDT 2018
Committee: SIG-NAS

Committee Statement

Resolution: This requirement would be limiting because visual notification appliances cannot produce more than a

simple, steady temporal pulse. This change would be in conflict with the listing standards that require 2 Hz maximum frequency for the flash. In addition, synchronization would be a technological challenge.

Public Input No. 200-NFPA 72-2019 [Section No. 18.4.3.4]

~~**18.4.3.4** –~~

~~The audible signal of carbon monoxide alarms and systems installed to meet the requirements of Chapter 29 shall not be required to be synchronized.~~

Statement of Problem and Substantiation for Public Input

This section as added in the second draft of the last cycle. It does not belong in Chapter 18, it belong in Chapter 29 under section 29.5.3. I have submitted a proposal to Chapter 29 to relocate this section

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 201-NFPA 72-2019 [New Section after 29.5.3]	

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 29 18:48:51 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5018-NFPA 72-2019
Statement: This section was added in the second draft of the last cycle. It does not belong in Chapter 18, it exists in Chapter 29 (29.5.11).

Public Input No. 9-NFPA 72-2018 [Section No. 18.4.4.1]

18.4.4.1 *

To ensure that audible public mode signals are clearly heard, unless otherwise permitted by 18.4.4.2 through 18.4.4.5, they shall have a sound level at least 15 dB ~~above~~ , but not exceed 35 dB, above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 ft (1.5 m) above the floor in the area required to be served by the system using the A-weighted scale (dBA).

Statement of Problem and Substantiation for Public Input

Many fire alarm systems installed in buildings are over-designed and excessively loud for the building occupants. The intent of this proposal is to encourage designers to evaluate the placement of audible fire alarm devices to ensure the decibel level is not excessive. This proposal will give code officials a clear code cite when they encounter a fire alarm system that is too loud, but under the maximum allowed of 110 dB.

Submitter Information Verification

Submitter Full Name: John Swanson
Organization: Minnesota State Fire Marshal Division
Street Address:
City:
State:
Zip:
Submittal Date: Thu Oct 18 19:14:07 EDT 2018
Committee: SIG-NAS

Committee Statement

Resolution: CI-5041-NFPA 72-2019

Statement: Many fire alarm systems installed in buildings are over-designed and excessively loud for the building occupants. The intent of this Committee Input is to encourage designers to evaluate the operation of audible fire alarm appliances to ensure the decibel level is not excessive. This proposed change will give code officials a clear code section to cite when they encounter a fire alarm system that is too loud, but under the maximum allowed of 110 dB. The Task Group on Amplification will continue to review this topic and will present at the Second Draft Meeting.

Public Input No. 195-NFPA 72-2019 [Section No. 18.4.4.3]

~~**18.4.4.3** –~~

~~Audible notification appliances installed in elevator cars shall be permitted to use the audibility criteria for private mode appliances detailed in 18.4.5.1 .~~

Statement of Problem and Substantiation for Public Input

There is no building code (IBC / NFPA 5000) or elevator code (ASME A17.1) requirement to install fire alarm system horns or chimes inside elevator cars producing an automatic alarm tone upon fire alarm signal initiation in the building.

The only Fire Alarm system audible appliances that are installed in elevator cars are Voice Fire Alarm system (EVACS) loudspeakers. They could potentially be used by emergency personnel to provide live voice notification for traveling or entrapped passengers inside elevator cars. However, Section 24.4.8.5 specifically indicates that only manual paging is permitted for these loudspeakers. Therefore, this section which allows the use of an automatic private mode per Section 18.4.5.1 is confusing and in conflict with Section 24.4.8.5 and should be deleted.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 27 00:42:22 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: This provision allows a slightly reduced sound pressure level where appliances are installed in elevator cars. It does not require appliances to be installed.

Public Input No. 196-NFPA 72-2019 [Section No. 18.4.4.5 [Excluding any Sub-Sections]]

A signaling system arranged to stop or reduce ambient noise shall comply with 18.4.4.5.1 through 18.4.4.5.3. When ambient amplified sound is provided in the same areas or spaces where audible notification applainces of a signaling system are provided, it shall be requied to automatically shut down upon activation of the signaling system audible notification appliances in the affected areas or spaces.

Statement of Problem and Substantiation for Public Input

In many facilities having performances, live music, shows, movies, etc. with an amplified sound system, it should be required to provide an automatic shutdown (via a fire alarm system control relay, etc.) to be activated upon initiation of the required signaling system audible notification initiation in those areas. This specific requirement will help fire AHJs to enforce automatic shutdown of loud music or other amplified sound when the fire alarm or signaling system is activated. This specific automatic shutdown requirement might be currently included in the code but it is not clear and obvious. It is also important to distinguish between ambient noise and an amplified sound produced by a sound system that could be automatically shutdown via a control signal from the fire alarm or signaling system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 247-NFPA 72-2019 [Section No. 18.4.4.5.3]	same intent
Public Input No. 247-NFPA 72-2019 [Section No. 18.4.4.5.3]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 27 00:54:43 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: The Technical Committee chooses to allow, but not require, the ambient sound level to be reduced to meet the code's specific performance requirements. The Technical Committee notes that requirements directed at amplified sound may lead to confusion, as telephones, portable radios, and stadium sound systems all use amplified sound. If certain jurisdictions choose to impose greater requirements, they may do so.

Public Input No. 247-NFPA 72-2019 [Section No. 18.4.4.5.3]

18.4.4.5.3

Relays, circuits, or interfaces necessary to ~~stop or reduce ambient noise~~ comply with 18.4.4.5 shall meet the requirements of Chapters 10, 12, 21, and 23.

Statement of Problem and Substantiation for Public Input

The relays and circuits are required to be provided in order to comply with the requirement of reducing or stopping the ambient noise or amplified sound required in section 18.4.4.5 - there is no need to repeat the 18.4.4.5 in this section. Also per a related PI the relays and circuits are required to stop amplified sound in the same area where the FA audible signal is provided.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 196-NFPA 72-2019 [Section No. 18.4.4.5 [Excluding any Sub-Sections]]	same intent
Public Input No. 196-NFPA 72-2019 [Section No. 18.4.4.5 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 05 05:26:12 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: Adding this reference to 18.4.4.5 would create a circular reference because this requirement is a subsection of 18.4.4.5. Also see response to Public Input 196, which was resolved.

Public Input No. 421-NFPA 72-2019 [Section No. 18.5.4]

18.5.4* Appliance Photometrics.

The light output shall comply with the polar dispersion requirements for public mode signaling as described ~~in ANSI/UL 1971,~~ ~~*Standard for Signaling Devices for the Hearing Impaired* , ANSI/~~ in ANSI/ UL 1638, *Standard for Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*, or equivalent.

Statement of Problem and Substantiation for Public Input

All visual signal requirements have been moved into UL1638. UL 1638 contains both public and private mode signaling requirements for visual signals. The Listing category for public mode visual signals still remains as UUKC, Signaling Appliances for the Hearing Impaired.

Submitter Information Verification

Submitter Full Name: Daniel Grosch
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 08:13:55 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5021-NFPA 72-2019
Statement: This revision changes "strobe" to "visual notification appliance" in two locations in the figure to be consistent with terminology.

All visual signal requirements have been moved into UL 1638. UL 1638 contains both public and private mode signaling requirements for visual signals. The Listing category for public mode visual signals still remains as UUKC, Signaling Appliances for the Hearing Impaired.

Public Input No. 126-NFPA 72-2019 [Section No. 18.5.5.5.1]

18.5.5.5.1*

Spacing shall be in accordance with either Table 18.5.5.5.1(a) and Figure 18.5.5.5.1 or Table 18.5.5.5.1(b).

Table 18.5.5.5.1(a) Room Spacing for Wall-Mounted Visual Notification Appliances

Maximum Room Size			
Minimum Required Light Output [Effective Intensity (cd)]			
ft	One Visual Notification Appliance per Room	Four Visual Notification Appliances per Room (One per Wall)	m
20 × 20		6.10 × 6.10	
	15		NA
28 × 28		8.53 × 8.53	
	30		NA
30 × 30		9.14 × 9.14	
	34		NA
40 × 40		12.2 × 12.2	
	60		15
45 × 45		13.7 × 13.7	
	75		19
50 × 50		15.2 × 15.2	
	94		30
54 × 54		16.5 × 16.5	
	110		30
55 × 55		16.8 × 16.8	
	115		30
60 × 60		18.3 × 18.3	
	135		30
63 × 63		19.2 × 19.2	
	150		37
68 × 68		20.7 × 20.7	
	177		43
70 × 70		21.3 × 21.3	
	184		60

80 × 80	24.4 × 24.4		
-			
	240		60
90 × 90	27.4 × 27.4		
-			
	304		95
100 × 100	30.5 × 30.5		
-			
	375		95
110 × 110	33.5 × 33.5		
-			
	455		135
120 × 120	36.6 × 36.6		
-			
	540		135
130 × 130	39.6 × 39.6		
-			
635		185	

NA: Not allowable.

Table 18.5.5.5.1(b) Room Spacing for Ceiling-Mounted Visual Notification Appliances

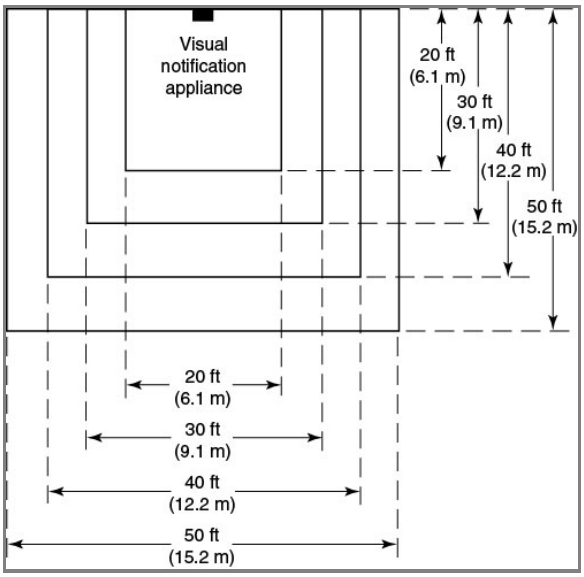
Maximum Room Size			
-			
Maximum Lens Height* **		Minimum Required Light Output (Effective Intensity); One Visual Notification Appliance (cd)	
ft	m		
-			
		ft	m
20 × 20	6.1 × 6.1		
-			
	10	3.0	15
30 × 30	9.1 × 9.1		
-			
	10	3.0	30
40 × 40	12.2 × 12.2		
-			
	10	3.0	60
44 × 44	13.4 × 13.4		
-			
	10	3.0	75
20 × 20	6.1 × 6.1		
-			
	20	6.1	30
30 × 30	9.1 × 9.1		
-			
	20	6.1	45
44 × 44	13.4 × 13.4		
-			

46 × 46	20 14.0 × 14.0	6.1	75
20 × 20	20 6.1 × 6.1	6.1	80
30 × 30	30 9.1 × 9.1	9.1	55
50 × 50	30 15.2 × 15.2	9.1	75
53 × 53	30 16.2 × 16.2	9.1	95
55 × 55	30 16.8 × 16.8	9.1	110
59 × 59	30 18.0 × 18.0	9.1	115
63 × 63	30 19.2 × 19.2	9.1	135
68 × 68	30 20.7 × 20.7	9.1	150
70 × 70	30 21.3 × 21.3	9.1	177
30	9.1		185

*This does not preclude mounting lens at lower heights.

** No minimum lens height established.

Figure 18.5.5.5.1 Room Spacing for Wall-Mounted Visual Notification Appliances.



Statement of Problem and Substantiation for Public Input

Clarification requested (Table 18.5.5.5.1(b):
Is there a minimum permissible ceiling height/maximum candela for visual notification devices?
The table could suggest that the maximum candela in an occupied space with a lens height of 10 ft is 75.
Alternatively, it could simply indicate that the minimum candela in and occupied space with a lens height of 30 ft is 55.
"*This does not preclude mounting lens at lower heights" is somewhat ambiguous.
Would it be permissible to put a 185cd ceiling mounted strobe in a 70'x70' room with a 10' ceiling?
If so, may I suggest the following note:
"**No minimum lens height established."

Submitter Information Verification

Submitter Full Name: Hugh Patterson
Organization: American Alarm Co Inc
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 18 15:55:44 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: The proposed informational text is captured in the existing footnote. The Technical Committee recognizes that the Code does not establish a minimum height at this time, but see Committee Input 5024 for language that will be considered at the Second Draft stage. The submitter is encouraged to review and provide Public Comment to CI 5024.

Public Input No. 45-NFPA 72-2019 [Section No. 18.5.5.6.3]

18.5.5.6.3*

In a corridor application, visual notification appliances shall be ~~rated not less than 15 cd.~~ permitted to be rated a minimum of 15 cd to meet the spacing requirements of 18.5.5.5.5.

Statement of Problem and Substantiation for Public Input

The required section is not 100% clear in the allowance of 15 cd in a corridor application. It doesn't become clear to users until they read previous annex material of A.18.5.5.5. Some jurisdictions do not look at or recognize the annex material and base enforcement/interpretation on the mandatory language only, all it states is that the strobes cannot be less than 15 cd, not that 15 cd strobes are permitted to be used for corridors based on the spacing requirements (less than 20 ft wide). The mandatory statement of the strobes cannot be rated than less than 15 cd, leaves it open to the AHJ to enforce typical room spacing requirements thus limiting 15 cd to 20x20 spacing, even though that is not the intent of that section as clearly indicated in the annex material.

Submitter Information Verification

Submitter Full Name: Derek Duval
Organization: Tk1sc
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 07 12:20:26 EST 2019
Committee: SIG-NAS

Committee Statement

Resolution: The existing terminology is clear as it is currently stated. Using terminology of "not less than" rather than "minimum of" is consistent with other locations in the Code. Section 18.5.5.6.1 already addresses the application of the room tables for corridors.

Public Input No. 135-NFPA 72-2019 [Section No. 18.5.5.6.5]

18.5.5.6.5*

Visual notification appliances shall be located not more than 15 ft (4.6.m) from the end of the corridor with a separation not greater than 100 ft (30.5 m) between appliances.

Exception: Visual notification appliances that meet the requirements of 18.5.5.7 shall be allowed to be located greater than 15ft (4.6m) from the end of the corridor with a

seperation not greater than 100ft (30.5 m) between appliances.

Statement of Problem and Substantiation for Public Input

The only reference that visual notification appliances can be located greater than 15 ft from the end of the corridor is under 18.5.5.7. 18.5.5.7.1 states that performance-based alternatives "shall be permitted in lieu of the requirements of 18.5.5, excluding 18.5.5.7" Some authorities feel that the requirements of 18.5.5.6.5 still apply even when using the performance-based alternative.

Having this exception or further clarification included directly in section 18.5.5.6.5 will help when issues like this arise.

Submitter Information Verification

Submitter Full Name: Charles Miller
Organization:
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 26 05:51:15 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5028-NFPA 72-2019
Statement: Some authorities believe that the requirements of 18.5.5.6.5 still apply even when using the performance-based alternative.

The intent of the Technical Committee is to permit the use of corridor rules, room rules, and performance-based options, or some combination thereof. The Committee reworded the existing text to incorporate the proposed exception by citing the room and performance sections.

Public Input No. 219-NFPA 72-2019 [Section No. 18.5.5.6.8]

18.5.5.6.8

~~Wall-mounted visual~~ Visual notification appliances in corridors shall be permitted to be mounted on either the ceiling, end wall or the side wall of the corridor in accordance with spacing requirements of 18.5.5.6.5.

Statement of Problem and Substantiation for Public Input

Nothing prohibits a design in corridors from using ceiling mount devices. Section 18.5.5.6.8 gives the impression that only wall mount is allowed. Adding "ceiling" to the section will add clarity for the designer that ceiling mount devices are allowed when installed in accordance with 18.5.5.6.5. Cd would be based on Table 18.5.5.5.1(b) for ceiling height.

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 03 13:02:05 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5029-NFPA 72-2019
Statement: The Technical Committee acknowledges that ceiling mount appliances are allowed in corridors. There is annex material which explains the committee's intent.

Public Input No. 423-NFPA 72-2019 [Section No. 18.5.5.7.1]

18.5.5.7.1

Any design that provides a minimum of 0.0375 lumens/ft^2 (0.4036 lumens/m^2) of illumination at any point within the covered area at all angles specified by the polar dispersion planes for wall- or ceiling-mounted public mode visual notification appliances in ANSI/~~UL 1971, *Standard for Signaling Devices for the Hearing Impaired* , ANSI/~~ UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories,* or equivalent, as calculated for the maximum distance from the nearest visual notification appliance, shall be permitted in lieu of the requirements of 18.5.5, excluding 18.5.5.8.

Statement of Problem and Substantiation for Public Input

All visual signal requirements have been moved into UL1638.

Submitter Information Verification

Submitter Full Name: Daniel Grosch
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 08:22:37 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5128-NFPA 72-2019
Statement: All visual signal requirements have been moved into UL 1638. UL 1638 contains both public and private mode signaling requirements for visual signals. The Listing category for public mode visual signals still remains as UUKC, Signaling Appliances for the Hearing Impaired.

Public Input No. 427-NFPA 72-2019 [Section No. 18.5.5.7.2]

18.5.5.7.2

Documentation provided to the authority having jurisdiction shall include the following:

(1) Inverse Square Law calculations using each of the vertical and horizontal polar distribution angles in ANSI/~~UL 1971, *Standard for Signaling Devices for the Hearing Impaired* ,~~ UL 1638 Visual Signaling Appliances for Fire Alarm and Signaling Systems, Including Accessories, or equivalent.

(2) The calculations shall account for the effects of polar distribution using one of the following:

(3) The percentages from the applicable table(s) in ANSI/

~~UL 1971, *Standard for Signaling Devices for the Hearing Impaired* ,~~

(a) UL 1638 Visual Signaling Appliances for Fire Alarm and Signaling Systems, Including Accessories, or equivalent

(b) The actual results of laboratory tests of the specific appliance to be used as recorded by the listing organization

Statement of Problem and Substantiation for Public Input

All visual signaling requirements have been moved into UL 1638.

Submitter Information Verification

Submitter Full Name: Daniel Grosch
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 08:31:58 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5128-NFPA 72-2019
Statement: All visual signal requirements have been moved into UL 1638. UL 1638 contains both public and private mode signaling requirements for visual signals. The Listing category for public mode visual signals still remains as UUKC, Signaling Appliances for the Hearing Impaired.

Public Input No. 245-NFPA 72-2019 [Section No. 18.11]

~~**18.11 *** – Standard Emergency Service Interface.~~

~~Where required by the enforcing authority; governing laws, codes, or standards; or other parts of this Code, annunciators, information display systems, and controls for portions of a system provided for use by emergency service personnel shall be designed, arranged, and located in accordance with the requirements of the organizations intended to use the equipment.~~

Additional Proposed Changes

File Name	Description	Approved
A2018_Floor_Actions_Tech_Session.pdf	2018 Tech Session Results CAM 72-4	

Statement of Problem and Substantiation for Public Input

This proposal was discussed in the 2018 Tech Meeting in Vegas under CAM 72-4
It was overwhelmingly supported by the NFPA membership with a 357-70 Pass vote.
This section should be deleted from NFPA 72 since the pointer to this section that used to be in NFPA 72-2016 Section 21.5 was deleted from section 21.5 in the 2019 edition. Since there is no longer any pointer to this section in NFPA 72 and there is no requirement for such "Standard Emergency Service Interface" in any other code - this section and its associated annex should be removed from NFPA 72 as it confusing and not required. It was clear to most NFPA membership during the 2018 tech session that section is confusing, not-required by any code and should be removed from NFPA 72.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 246-NFPA 72-2019 [Section No. A.18.11]	annex for same section
Public Input No. 246-NFPA 72-2019 [Section No. A.18.11]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 05 04:39:05 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: CI-5035-NFPA 72-2019
Statement: Note to the Correlating Committee: The SIG-NAS Technical Committee believes this requirement and its associated annex material has value and should remain in NFPA 72. Because it includes more than just notification appliances such as annunciators, it should be under the jurisdiction of the Fundamentals committee.

Public Input No. 251-NFPA 72-2019 [Section No. 21.1 [Excluding any Sub-Sections]]

The provisions of Chapter 21 shall cover the minimum requirements and methods for emergency control function interfaces to fire alarm systems ~~and emergency~~ , emergency communications systems, and carbon monoxide detection systems in accordance with this chapter.

Statement of Problem and Substantiation for Public Input

SIG PRO Carbon Monoxide task group proposed this change to expand the scope of Chapter 21 to include emergency control function interfaces associated with carbon monoxide detection systems.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 536-NFPA 72-2019 [Section No. A.23.8.4.9]	
Public Input No. 537-NFPA 72-2019 [Section No. 23.8.4.9]	
Public Input No. 566-NFPA 72-2019 [Section No. 18.3.3]	

Submitter Information Verification

Submitter Full Name: Brandon Wilkerson
Organization: Poole Fire Protection
Affiliation: NFPA 72 SIG PRO Carbon Monoxide task group
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 07 10:02:48 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5016-NFPA 72-2019

Statement: The term: “Fire Alarm and Signaling Systems” appears numerous times within the Code and it is inclusive of emergency communications systems and carbon monoxide detection systems, therefore, there is no need to deviate from the Code’s language and indicate specific systems.

The Definition in 3.3.93 which pertains to Section 21.1 “Emergency Control Function Interfaces” specifically indicates: “Fire Alarm or Signaling System”

The Annex for Section 21.1 also indicates the term: “Signaling Systems.”

Public Input No. 326-NFPA 72-2019 [Section No. 21.1.1]

21.1.1

The requirements of Chapters 7, 10, 12, 14, 17, 18, 23, 24, and 26 shall apply, unless otherwise noted in this chapter.

Statement of Problem and Substantiation for Public Input

This section does not include the Circuit and Pathway requirements of Chapter 12 which contains important requirements for Circuits and Pathways that may be applicable to be referenced and included in this section.

Submitter Information Verification

Submitter Full Name: Jack Poole
Organization: Poole Fire Protection, Inc.
Affiliation: Poole Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 16:43:35 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5017-NFPA 72-2019
Statement: The requirements of Chapter 12, Circuits and Pathways, should also apply for Chapter 21 as it may include Circuits and Pathways provisions.

Public Input No. 170-NFPA 72-2019 [Section No. 21.2.4]

21.2.4*

Emergency control function interface devices shall be ~~located within 3 ft (0.9 m) of the component controlling the emergency control function where the control circuit is not configured as a Class D circuit~~ connected with a Class A, B, C, D, N or X circuit to supervise the connection .

Statement of Problem and Substantiation for Public Input

The current language referencing a location of 3' doesn't make any sense, and the annex information to explain it doesn't really clarify anything. If the intent is to supervise the interconnecting wiring, it would be better stated to require the connection via a class of wiring that is supervised. The 3' reference can create enforcement problems in the field and it is unclear what is being referred to. A supervised relay tied to a control circuit is inherently within 3' of the circuit it is connected to, and the annex goes to great detail that the device being controlled can be elsewhere, so the 3' requirement simply confuses things. I believe this is a relic from the days of unsupervised relays being utilized to control fire safety functions, and today almost every manufacturer has the capability of supervising an output relay.

Submitter Information Verification

Submitter Full Name: Daniel Decker
Organization: Safety Systems, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 12 18:20:46 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The intent of this requirement is to minimize the length of unsupervised wiring in the system. It is not the intent of this section to address the wiring between the control unit and the emergency control function interface device.

Public Input No. 603-NFPA 72-2019 [Section No. 21.2.11]

21.2.11

If a fire alarm system, or an emergency communications system (ECS) is a component of a life safety network and it communicates data to other systems providing life safety functions, or it receives data from such systems, the following shall apply:

(1) The path used for communicating data shall be monitored for integrity. This shall include monitoring the physical communications media and the ability to maintain intelligible communications.

(2) Data received from the network shall not affect the operation of the fire alarm system or ECS in any way other than to display the status of life safety network components, unless otherwise permitted in chapter 24 .

(3) Where non-fire alarm or non-emergency copmmunications systems are interconnected to the fire alarm or emergency communications system using a network or other digital communications technique, a signal (e.g., heartbeat, poll, ping, query) shall be generated between the fire alarm system and ECS, and the non-fire alarm system and non-ECS . ~~Failure~~ Failure of the fire alarm system or ECS to receive confirmation of the transmission shall cause a trouble signal to indicate within 200 seconds.

(4) Fire alarm systems, and emergency communications systems that receive data from any other system, life safety or otherwise, shall perform a risk analysis to determine cybersecurity classification and certifications requirements acceptable to the AHJ in accordance with 10.4.8.

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together. Emergency Control Functions have applications for emergencies other then fire. The addition of the ECS into the language is intended to recognize that MNS systems often have interfaces intended for other systems. For example, access control systems which depending on the type of emergency may be required to lock or unlock certain doors automatically or disable certain card readers from unlocking certain doors.

21.2.11 already recognizes the increased risk for systems that can receive data from outside, by prohibiting the ability for that to affect the fire or emergency communications system. In today's age of cyberattacks, where cyberattack capabilities are always evolving, that may not be enough. Part 4 is intended to initiate risk analysis where appropriate to determine if the specific risks posed by a particular connection, and the consequences of a breach, are high enough on a risk matrix to warrant the additional cost of formal cybersecurity certification.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	These PIs intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:22:29 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee requests the Correlating Committee to form a Task Group to address cyber security issues throughout the Code, with representatives from each affected Technical Committee. Action on this topic will be considered at the Second Draft stage in accordance with the recommendations of that Task Group.

Public Input No. 190-NFPA 72-2019 [Section No. 21.3.6]

21.3.6

Smoke detectors or other automatic fire detection as permitted in 21.3.10 shall not be installed in unsprinklered elevator hoistways unless they are required by ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, ~~for actuation of the elevator hoistway smoke relief equipment and/or~~ to initiate Elevator Phase I Emergency Recall Operation as specified in 21.3.14.1(2) and 21.3.14.2(2) for either of the following:

(1) Hoistway machinery spaces containing a motor controller or driving machine

(2) Control spaces located in the hoistway

Smoke detectors or other automatic fire detection as permitted in 21.3.10 shall be permitted to be installed in unsperinklered elevator hoistways if required by other governing codes or standards for the actuation of the elevator hoistway smoke relief equipment. These detectors shall also be required to initiate Elevator Phase I Emergency Recall Opeartion as specified in 21.3.14.1(2) and 21.3.14.2(2)

Statement of Problem and Substantiation for Public Input

There are two conflicts between the current section and the elevator code ASME A17.1 that this public input proposal is intended to resolve:
First Conflict: The ASME A 17.1 Code does not require "Actuation of elevator smoke relief equipment"
Second conflict: The current section includes the term "and/or to initiate..." This may be interpreted that smoke detectors or other fire detection could be installed in unsprinklered hoistways to actuate smoke relief equipment without being required to also initiate Phase I recall.

Therefore, this proposal clarifies that it will be permitted by NFPA 72 to install smoke detectors or other fire detection inside elevator hoistways even if they are not containing the machinery space with the driving machine or motor controller or control spaces - but they are required by other codes or standards to actuate the elevator hoistway smoke relief equipment. However, in any case, if provided in the hoistway, these detectors shall be required to initiate Phase I emergency recall operation

This proposal was discussed in the JUNE 2019 meetings of the ASME A17.1 Emergency Operation Technical committee and it was agreed by the EOC members that it was a good proposal and should be moved forward. A related proposal was proposed to be included in the next A17.1 edition - It is in the balloting process now.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 26 15:11:36 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5026-NFPA 72-2019
Statement: This revision prevents conflicts between NFPA 72 and ASME A17.1.

Public Input No. 358-NFPA 72-2019 [Section No. 21.3.7]

21.3.7 * Fire Alarm Initiating Device(s) Inside Elevator Hoistways.

Fire alarm initiating device(s) required to be installed inside an elevator hoistway by other sections of this Code or by other governing laws, codes, or standards shall be required to be accessible for service, testing, and maintenance from outside the elevator hoistway.

EXCEPTION: Fire alarm initiating device(s) installed in the elevator pit are not required to be accessed from outside the elevator hoistway.

Statement of Problem and Substantiation for Public Input

In most elevator installations it is physically impossible to access pit detectors from outside the hoistway.

Submitter Information Verification

Submitter Full Name: Art Black
Organization: Carmel Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 08:10:03 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: Ongoing NFPA 13 modifications may eventually remove the requirement for the pit sprinklers for hydraulic elevators. Until this occurs, the intent of NFPA 72 is to not require fire alarm technicians to enter the hoistway to service fire alarm devices. The Technical Committee acknowledges the intent of the original PI and agrees that NFPA 72 should address how to provide pit sprinkler associated detection without requiring fire alarm devices to be installed in the pit. However, the initial proposed change does not address the risk of fire alarm technicians entering the hoistway. The revisions in 21.3.3.2 (FR-5032) and A.21.3.7 (FR-5027) address the submitter's concern, and maintain the intent of NFPA 72 to prevent fire alarm technicians from entering elevator pits. The revisions include a time delay feature option for the waterflow switch associated with the pit sprinkler, which provides flexibility to the installer, owner, and AHJ to ensure water supply pressure fluctuations do not cause false Elevator Phase I Emergency Recall Operation.

Public Input No. 79-NFPA 72-2019 [Section No. 21.3.8]

21.3.8*

When sprinklers are required in elevator hoistways by other codes and standards, fire alarm initiating devices shall be installed to initiate Elevator Phase I Emergency Recall Operation in accordance with ANSI/ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators,* and the following shall apply:

(1) Where sprinklers are located at the top of the hoistway, ~~the~~ fire detection device(s) shall be located at the top of the hoistway.

(2) Where sprinklers are located at the bottom of the hoistway (the pit), fire detection device(s) shall be installed in the pit in accordance with Chapter 17.

(3) Outputs from the fire alarm system to the elevator system shall comply with 21.3.14.

(4) The fire alarm initiating device(s) shall be installed in accordance with Chapter 17.

Statement of Problem and Substantiation for Public Input

If the intent is to have detection at the top and bottom of the shaft to recall the elevator to an appropriate floor, I suggest removing the word “the” before ”fire detection devices”. This makes (1) consistent with (2) and makes it harder to interpret (1) as meaning that detection at the top of the shaft would supersede detection in the pit when sprinklers were installed in both locations.

Submitter Information Verification

Submitter Full Name: Larry Rietz
Organization: JENSEN HUGHES
Affiliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 19:46:42 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5034-NFPA 72-2019
Statement: The revised text specifies the fire detection devices as devices specifically associated with the hoistway’s sprinkler(s) and not just FAIDs. This will be consistent with the ASME A17.1 Code Section 2.27.3.2 requiring FAIDs where sprinklers are installed in those hoistways.

Public Input No. 12-NFPA 72-2018 [New Section after 21.4.6]

TITLE OF NEW CONTENT

Type your content here ...

21.4.7 Elevator shut down operation must be made by the confirmation form the elevator controller that the cab has returned to the designate floor/level before shuting down the power. The use of timers to do this is prohibited.

Statement of Problem and Substantiation for Public Input

Timers that do this are very subjective to the use of the elevator at the time this happens such as the doors of the elevator being held open if someone or something is being removed thus delaying the process. If for some reasons the elevator is held when this action occurs there is a chance that the power may be shut off between floors trapping the occupants. Additionally who determines the time necessary to do this. What is being suggested takes out all the guess work and avoids accidents. It is necessary to state timers cannot be used other wise they will be.

Submitter Information Verification

Submitter Full Name: Stuart Gilbert
Organization: Superior Prot Svcs
Street Address:
City:
State:
Zip:
Submittal Date: Fri Oct 26 13:27:44 EDT 2018
Committee: SIG-PRO

Committee Statement

Resolution: This proposal creates a direct conflict with ASME A17.1, Section 2.8.3.3.2, which prohibits the use of any inputs from the elevator controller (which may be the source of the fire) to initiate the shunt trip function. Also, ASME A17.1 requires to disconnect the main line power to the elevator upon or prior to the application of water. This proposal creates a conflict with this requirement, as the signal from the controller could occur after the application of water.

Public Input No. 255-NFPA 72-2019 [Section No. 21.5]

21.5* Fire Service Access Elevators.

Where one or more elevators are specifically designated and marked as fire service access elevators, ~~temperature and~~ presence of smoke in elevator lobbies, machine rooms, control rooms, machinery spaces, or control spaces shall be continuously monitored and displayed on a building fire alarm system annunciator(s), or other annunciator(s) as approved by the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

The monitoring of temperature in the FSAE and elevator equipment areas is unnecessary. All of these areas are required to be provided with smoke detection. In the event of smoke detection in those areas, the fire fighters warning indicator in the car activates. If the lobbies, shaft or elevator equipment is threatened by smoke, the fire service should not be using the elevators. If here isn't smoke, the areas will not be threatened by fire. This requirement is being misinterpreted to require a totally separate temperature sensing system for compliance.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 256-NFPA 72-2019 [Section No. A.21.5]	

Submitter Information Verification

Submitter Full Name: Raymond Grill
Organization: Arup
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 10:57:29 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: SIG-PRO had a Task Group on this section (21.5) during the last code cycle, and the TG agreed to monitor the temperature in the lobbies. The concern was that potential high temperatures in FSAE lobbies and other FSAE associated spaces could occur even without direct smoke, such as due to radiant heat, etc. If the fire is outside the lobby and the elevator lobby doors are closed, the firefighters need to know the temperature in the affected lobbies and FSAE spaces before they make the decision to take the elevator to a specific lobby or location.

Public Input No. 623-NFPA 72-2019 [New Section after 21.6.2.1]

TITLE OF NEW CONTENT

21.6.2.1.3 Elevator opperation shall follow the following priorities:

.1st Prority - Siemic Operation

2nd Priority - Phase 1 Emergency Recall

3rd Priority - Occupant Evacuation Operation

Statement of Problem and Substantiation for Public Input

It important to understand that a seismic event can significantly damage an elevator, so the seimic safeties on elevators must take priority over other functions. Recall functions has a higher priority than OEO.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 628-NFPA 72-2019 [Section No. 21.6.2.1.2]	

Submitter Information Verification

Submitter Full Name: David Burkhart
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:17:19 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: There is no other reference in NFPA 72 to the term “seismic operation.” Seismic operation is not within the scope of NFPA 72 but is adequately addressed in ASME A17.1. If a seismic event occurs which trips the elevator seismic device, OEO will not operate for the affected elevators.

Public Input No. 628-NFPA 72-2019 [Section No. 21.6.2.1.2]

21.6.2.1.2*

OEO shall function per 21.6.2.1.1 only prior to Elevator Phase I Emergency Recall Operation and Seimic Saftey Functions .

Statement of Problem and Substantiation for Public Input

Seismic take priority over OEO.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 623-NFPA 72-2019 [New Section after 21.6.2.1]	

Submitter Information Verification

Submitter Full Name: David Burkhart
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:23:16 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: There is no other reference in NFPA 72 to the term “seismic operation.” Seismic operation is not within the scope of NFPA 72 but is adequately addressed in ASME A17.1. If a seismic event occurs which trips the elevator seismic device, OEO will not operate for the affected elevators.

Public Input No. 184-NFPA 72-2019 [Section No. 21.6.2.4.1]

21.6.2.4.1

A means shall be furnished at the FCC or the Emergency Command Center to provide for the manual selection of each floor in the building.

Statement of Problem and Substantiation for Public Input

To be consistent with Section 21.6.2.3 - The Emergency Command Center is a defined term in NFPA 72 and is used interchangeably with the term FCC

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 183-NFPA 72-2019 [Section No. 21.6.2.5.3]	Same issue regarding Emergency Command Center and FCC
Public Input No. 183-NFPA 72-2019 [Section No. 21.6.2.5.3]	
Public Input No. 185-NFPA 72-2019 [Section No. 21.6.2.5.2]	
Public Input No. 186-NFPA 72-2019 [Section No. 21.6.2.7 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 19 23:40:32 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5038-NFPA 72-2019

Statement: The text is revised to be consistent with Section 21.6.2.3. "Emergency Command Center" is a defined term in NFPA 72 and is used interchangeably with the term Fire Command Center.

SIG-PRO requests the Correlating Committee to review usage of the acronym FCC and interchangeability of Fire Command Center and Emergency Command Center throughout the Code. Also note that the acronym is used for Fire Command Center and Federal Communications Commission; the TG should appropriately revise these.

Public Input No. 504-NFPA 72-2019 [Section No. 21.6.2.4.4]

21.6.2.4.4

When OEO is in effect and a manual floor selection is made, the elevator evacuation zone shall be expanded ~~as described in 21.6.2.3.4 .~~ by adding that floor to the evacuation zone.

Statement of Problem and Substantiation for Public Input

Adding floors other than intended by the fire department is a cause for confusion. For example, if the automatic evacuation group is L6 through L10 and the fire department wants to add L11 to the evacuation group, they will likely select the L11 switch. However, selecting the L11 switch will add L11, L12 and L13 to the evacuation group. In order to on add only L11 to the evacuation group, the L9 switch would need to be selected, thus adding L9, L10 and L11. Since L9 and L10 were already in the group, the end result just adds L11.
This requirement also complicates the OEO panel configuration.

Submitter Information Verification

Submitter Full Name: David Burkhart
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 12:28:27 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: This proposal would create conflicts with other OEO sections in NFPA 72, such as 21.6.2.3.4 and 21.6.2.4 and its associated annex. It is also creates conflicts with ASME A17.1, Section 2.27.11.5.1. The intent for the manual floor selection means is explained in A.21.6.2.4.

Public Input No. 185-NFPA 72-2019 [Section No. 21.6.2.5.2]

21.6.2.5.2

Output from the fire alarm system to the elevator system shall include the following:

(1) Floor(s) with anyactuated fire alarm initiating device(s)

(2) Floor(s) selected by manual means from the FCC or Emergency Command Center

Statement of Problem and Substantiation for Public Input

To be consistent with Section 21.6.2.3 - Emergency Command Center is a defined term in NFPA 72 and is used interchangeably with the FCC term

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 183-NFPA 72-2019 [Section No. 21.6.2.5.3]	same issue
Public Input No. 184-NFPA 72-2019 [Section No. 21.6.2.4.1]	same issue
Public Input No. 186-NFPA 72-2019 [Section No. 21.6.2.7 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 19 23:46:02 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5039-NFPA 72-2019
Statement: The text is revised to be consistent with Section 21.6.2.3. "Emergency Command Center" is a defined term in NFPA 72 and is used interchangeably with the term Fire Command Center.

Public Input No. 183-NFPA 72-2019 [Section No. 21.6.2.5.3]

21.6.2.5.3

The

~~identified floor~~

identified floor (s) , as well as all other associated floors comprising the elevator evacuation zone, shall be displayed on the building fire alarm system annunciator

~~at the FCC~~

or on a listed non-fire alarm system annunciator or other annunciator , as approved by the authority having jurisdiction. The annunciator shall be located at the FCC or the Emergency Command Center.

Statement of Problem and Substantiation for Public Input

It is important to display all the floors included in the elevator evacuation zone on the annunciator to provide this critical information to responding firefighters. The floors in the elevator evacuation zones are not only the "identified floor(s)" indicated in sections 21.6.2.5.1 and 21.6.2.5.2 (automatically selected by a fire alarm initiating device and/or manually selected by the manual means at the FCC, but they are also the other associated/expanded floors: two floors above and two floor below the identified floors and all the floors in between the identified floors.

Another proposed correction is to add the term Emergency Command Center to this section to be consistent with Section 21.6.2.3 since it is a defined term in NFPA 72 and used interchangeably with the term FCC.

This proposal was discussed in the JUNE 2019 meetings of the ASME A17.1 Emergency Operation Technical committee and it was agreed by the EOC members that it was a good proposal and should be included in NFPA 72.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 184-NFPA 72-2019 [Section No. 21.6.2.4.1]	Same issue regarding the Emergency Command Center and FCC
Public Input No. 184-NFPA 72-2019 [Section No. 21.6.2.4.1]	
Public Input No. 185-NFPA 72-2019 [Section No. 21.6.2.5.2]	
Public Input No. 186-NFPA 72-2019 [Section No. 21.6.2.7 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 19 22:49:08 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5040-NFPA 72-2019

Statement: The inclusion of all floors that are included in the elevator evacuation zone will provide additional emergency information for the responding firefighters.

The term “Emergency Command Center” is defined in Section 3.3.92. The addition of the term to this section will provide consistency with Section 21.6.2.3 increasing clarity and usability.

Public Input No. 547-NFPA 72-2019 [Section No. 21.6.2.6.2]

21.6.2.6.2

Automatic voice messages shall be transmitted to the coresponding elevator lobby of floors that are not in the ~~elevatorevacuation~~ elevator evacuation zone and are served by the group, to inform occupants that elevator service is not available.

Statement of Problem and Substantiation for Public Input

If the floor is not being told to evacuate, it make no sense to give the message throughout the floor. Operating the voice message along with strobes will only cause confusion and unnecessary panic. The only personnel who need to get a message are the people trying to use that particular elevator bank. In buildings that will most likely use OEE there will be multiple banks of elevators. Some floors (cross-over floors) will have multiple banks. In OEE mode some banks will be available on the non-evacuation floors while some will be in OEE mode.

Submitter Information Verification

Submitter Full Name: David Burkhart
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:24:01 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: This proposal conflicts with IBC-2018 Section 907.5.2.1(3), which requires the OEE lobbies' loudspeakers to be connected to separate notification zones for manual paging only.Individuals on the floor will hear the lobby message and go to the elevator lobby to determine what the message is. There are installations with a floor message being broadcast, and it has been effective.

Public Input No. 548-NFPA 72-2019 [Section No. 21.6.2.6.4]

~~**21.6.2.6.4 *** –~~

~~Where required by the building code, the emergency voice/alarm communications system's loudspeaker(s) located in each OEE lobby shall be connected to a separate notification zone for manual paging only.~~

~~**21.6.2.6.4.1** –~~

~~Individual paging zones per each OEE lobby on each flooror a grouped paging zone for all OEE lobbies on a floor shall be permitted if approved.~~

~~**21.6.2.6.4.2** –~~

~~A vertical paging zone for each elevator group shall be permitted if approved.~~

Statement of Problem and Substantiation for Public Input

These sections are in appropriate since there is nothing in NFPA 72 that would prevent these paging zones to be designed into the system. Therefore, there would not be a conflict between any building code and NFPA 72 to make these section necessary.

Submitter Information Verification

Submitter Full Name: David Burkhart
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:34:02 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: This section is needed to prevent conflict between the automatic messaging and the manual two-way communications system.This section agrees with IBC-2018 Section 907.5.2.1(3), which requires the OEE lobbies' loudspeakers to be connected to separate notification zones for manual paging only. See the Technical Committee response to PI 547, as well.

Public Input No. 186-NFPA 72-2019 [Section No. 21.6.2.7 [Excluding any Sub-Sections]]

A means to initiate total building evacuation labeled “ELEVATOR TOTAL BUILDING EVACUATION” shall be provided at the FCC or at the Emergency Command Center .

Statement of Problem and Substantiation for Public Input

To be consistent with Section 21.6.2.3 - Emergency Command Center is a defined term in NFPA 72 and is used interchangeably with the FCC term

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 183-NFPA 72-2019 [Section No. 21.6.2.5.3]	same issue
Public Input No. 184-NFPA 72-2019 [Section No. 21.6.2.4.1]	same issue
Public Input No. 185-NFPA 72-2019 [Section No. 21.6.2.5.2]	same issue

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 19 23:49:28 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5046-NFPA 72-2019
Statement: The text is revised to be consistent with Section 21.6.2.3. "Emergency Command Center" is a defined term in NFPA 72 and is used interchangeably with the term Fire Command Center.

Public Input No. 339-NFPA 72-2019 [Section No. 21.7.2]

21.7.2*

If connected to the fire alarm system serving the protected premises, all detection devices used to cause the operation of HVAC systems, smoke dampers, fire dampers, fan control, smoke doors, or fire doors shall be monitored for integrity in accordance with Section 12.6 and 23 . 8.5.4.6.

Statement of Problem and Substantiation for Public Input

The proposed amendment is to add further clarity for non-system type detection devices utilizing separate power circuits to insure the trouble contacts are connected in such a manner to cause a trouble signal at the fire alarm control unit upon loss of power. Some of the HVAC units are being shipped with integral duct detectors. Power operated devices connected to a building fire alarm control unit should be provided by the supplying contractor due to current and battery calculations. Detectors being shipped by the manufacturer does not allow the fire alarm vendor to properly maintain the calculations. The addition of a remote reset switch for this type of detector would be beneficial to the building owner as without the reset switch access to the unit would be required. This switch would only reset the power to the detector and would still require a reset at the fire alarm control unit.

This amendment addresses the requirement for initiating device wiring to be properly monitored for integrity as is required by Sections 12.6 and 23.8.5.4.6.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City Of Henderson
Affiliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 13:20:34 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5047-NFPA 72-2019
Statement: The existing reference to 12.6 within 21.7.2 does not directly include all requirements for monitoring of the initiating devices with separate power and signaling wiring contained in 23.8.5.3.

Public Input No. 11-NFPA 72-2018 [New Section after 21.7.3]

TITLE OF NEW CONTENT

Type your content here ...

21.7.3.1 There shall be a HVAC system interlock requirment that prevents them from restarting when the fire alarm system is reset before taking a second action by pressing a designated switch or acknowledging the condition as it applies to a BMS system.

Statement of Problem and Substantiation for Public Input

This insures that if smoke is present it will not be recirculated by the HVAC system and allows the fire department or others to reset the fire alarm system without restarting the HVAC system to allow further investigation. until it is determined that everything is ok.

Submitter Information Verification

Submitter Full Name: Stuart Gilbert
Organization: Superior Prot Svcs
Street Address:
City:
State:
Zip:
Submittal Date: Fri Oct 26 13:10:55 EDT 2018
Committee: SIG-PRO

Committee Statement

Resolution: This proposal is outside the scope of NFPA 72. If smoke is still present, the automatic detection device will continue to detect the smoke and perform the required emergency control function interface. If the device is an alarm initiating device, system reset will be prevented; if the device is a supervisory initiating device, the signal will automatically return after system reset.

Public Input No. 16-NFPA 72-2018 [New Section after 21.7.6]

TITLE OF NEW CONTENT

Type your content here ...

27.7.6.1

When designated or required, upon the detection of carbon monoxide all fossilbe fuled appliances shall have their fuel source completly shut off. This requirement is not limited to those in full operation but also include those in a standby condition that have a constant operation such as a pilot light being on awaiting the call to action for that appliance. The shut down operation shall be set up that upon the reset of the control (fire or other) the shut down will not reset until another second action takes place by pushing another switch. This rest switch should be in the area of the appliance being shut off to insure that some one goes to that location and confirms that things are the way they are required to be before resetting them. A distinct message shall be displayed on the control that the shut down is operated to allow the user to be fully aware of the conditon and it remains on until the second reset action takes place before it can be cleared.

Statement of Problem and Substantiation for Public Input

There is no defined method when it applies to the shut down of fossil fuel burning appliances such a gas heaters and gas water heaters in the NFPA but there are requirements to do this in many areas of the country such as NYC. The requirement and the method to do this needs to be defined , addressed and spelled out. What is not stated here but should be considered when an electrically powered gas valve is used is that the valve must be constantly power to insure electrical supervision (fail safe) like in kitchen hood fire suppression systems and the committee should provide the necessary wording for this. This prescribes the method on how to do this but as far as to when it is applied and exactly to when, that will be determined by the local or national code stating that is has to be done. What is stated here is how it should be done.

Submitter Information Verification

Submitter Full Name: Stuart Gilbert
Organization: Superior Prot Svcs
Street Address:
City:
State:
Zip:
Submittal Date: Sat Oct 27 15:17:17 EDT 2018
Committee: SIG-PRO

Committee Statement

Resolution: This proposal is outside the scope of NFPA 72. Depending on the quantity and arrangement of fuel-burning appliances and the associated carbon monoxide detectors, determination of the CO source based on CO detection can be complicated and inaccurate. The requirement to automatically shut down fuel-burning appliances upon detection of CO would need to be more widely addressed before these, or similar provisions, could be added into NFPA 72.

Public Input No. 257-NFPA 72-2019 [Section No. 23.6.1]

23.6.1* ~~– SLC Zones.~~

~~A~~

A single fault on a pathway connected to the addressable devices shall not cause the loss of

~~the devices in more than one zone.~~

~~23.6.1.1~~ ~~–~~

~~For the purpose of this section, each floor of the building shall be considered a separate zone.~~

~~23.6.1.2~~ ~~–~~

~~For the purpose of this section, if a floor of the building is subdivided into multiple zones by fire or smoke barriers and the fire plan for the protected premises allows relocation of occupants from the zone of origin to another zone on the same floor, each zone on the floor shall be considered a separate zone.~~

~~23.6.1.3~~ * ~~–~~

~~The requirements in 23.6.1 shall not apply to the following:~~

(1) ~~Circuits between enclosures containing transponders and control units regardless of the number of initiating devices, notification appliances, or control relays that might be connected to those control units~~

(2) ~~Circuits connecting short-circuit fault isolation modules to enclosures containing transponders and control units where the conductors are installed in metallic raceway or equivalently protected against mechanical injury and where the circuit does not exceed 3 ft (0.9 m) in length~~

(3)~~*~~ ~~Alterations or modifications made to an existing SLC not required to comply with 23.6.1 when originally installed~~

~~23.6.1.4~~ ~~–~~

~~The loss of more than one zone shall be permitted on a documented performance-based design approach.~~

~~23.6.1.5~~ * ~~–~~

~~Performance-based designs submitted to the authority having jurisdiction for review and approval shall include documentation, in an approved format, of each performance objective and applicable scenario, together with technical substantiation used in establishing the proposed zone performance.~~

more than 50 addressable devices.

Statement of Problem and Substantiation for Public Input

The current criteria for zoning of SLC's for multi-story buildings with small floor plates is excessive and potentially very liberal for buildings with large floor plates. You could have a 4 story building with as few as 12 initiating devices and have a requirement for 4 SLC unless to take it to an AHJ and do a performance based design. On the other hand, you could have a single story building with an unlimited number of initiating devices on a single SLC. The application of these requirements can be very subjective. The proposed language is how it used to be written in the code. It is straight forward and provides a limit on the exposure for a single SLC.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 258-NFPA 72-2019 [Section No. A.23.6.1]	

Submitter Information Verification

Submitter Full Name: Raymond Grill
Organization: Arup

Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 11:29:53 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The submitter's reason for the change appears to be that it may require too many SLC's in a multi-story small footprint building. The existing language does not require a separate SLC for each zone. Isolation modules and/or Class A circuitry could be used to meet the Code requirement as noted in the annex. Good design, in many instances involves the separation of circuits between floors so this requirement does not appear to be onerous. The submitter additionally states that an unlimited number of devices could be on a SLC in a single-story large footprint building. This statement is true, however in a large footprint building the design engineer may divide the area into more than one zone where deemed necessary. 51 devices on a zone may be acceptable in one building and 30 may be too many in another building. The annex information is helpful to the design engineer in making these decisions. The text as written, allows the design engineer the latitude to evaluate the arrangement of zones. NFPA 72 is a minimum installation standard and cannot anticipate the variables in large footprint or other complex buildings.

Public Input No. 645-NFPA 72-2019 [Section No. 23.6.2.2]

23.6.2.2

Multiple devices shall not be required in areas served by pathways not susceptible to ground faults, such as fiber ~~or wireless~~ pathways.

Statement of Problem and Substantiation for Public Input

Class N was derived to address galvanically isolated pathways. Wireless radio frequency pathways can be covered under Class A (see 23.16.4.8). The same pathway performance can be covered under different Classes and will likely cause confusion when some products may claim compliance with Class A and others Class N for the same radio frequency pathways. Recommend Class A for radio frequency pathways because it is more prevalent.

Submitter Information Verification

Submitter Full Name: Lawrence Shudak
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 18:14:23 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee considers wireless as a pathway segment.

Public Input No. 626-NFPA 72-2019 [New Section after 23.6.3.8.8]

23.6.3.8.8 The risk analysis shall consider risks of unauthorized access in relation to cybersecurity design standards and certification requirements in accordance with 21.2.11 and 10.4.8

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	Part of a broader public input intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:21:06 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Correlating Committee will form a Task Group to address cyber security issues throughout the Code, and a representative from each affected Technical Committee will be appointed. Action on this topic will be considered at the Second Draft stage in accordance with the recommendations of that Task Group.

Public Input No. 489-NFPA 72-2019 [Section No. 23.8.1.1.2]

23.8.1.1.2

A presignal feature shall meet the following conditions:

(1) The initial fire alarm signals sound only in department offices, control rooms, fire brigade stations, or other constantly attended central locations.

(2) Where there is a connection to a remote location, the transmission of the fire alarm signal to the supervising station actuates upon the initial alarm signal.

(3) Subsequent system operation is by either of the following means:

(4) Human action that actuates the

~~general fire alarm~~

(a) evacuation alarm signal or other response per the emergency response plan

(b) A feature that allows the control equipment to delay the general alarm by more than 1 minute after the start of the alarm processing

(5) Investigation of a presignal alarm shall be performed by qualified personnel as specified by 10.5.7.

(6) The emergency response plan of a presignal facility shall include details of the alarm receipt, investigation, and alarm activation procedures and shall be approved by the AHJ.

Statement of Problem and Substantiation for Public Input

Presignal systems require investigation of an alarm situation prior to manual activation of evacuation signals, but 23.8.1.1 contains no requirement of an investigation, nor personnel qualifications for any investigation. The addition of this critical requirement would require presignal alarm investigations to be investigated by qualified personnel, using the new PI requirement found in 10.5.7 of trained response personnel located within the qualified personnel section of Chapter 10. The addition of this requirement will give AHJ's additional guidelines for reviewing and approving a presignal system and giving some important requirements and qualifications for staff required to investigate an alarm situation in a presignal system.

It is critical that the emergency response plan of a facility/building that has a presignal system approved by an AHJ be detailed and exact to include the entire alarm response procedure. This includes the alarm receipt location and method, the investigation procedure (including what staff will be used) and what procedure will be used to activate an evacuation or other alarm response. All of this should be detailed in the emergency response plan.

It should be noted that TerraView is not showing the revised (a) correctly. It should appear as follows:

(a) Human action that actuates the evacuation alarm signal or other response per the emergency response plan.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 488-NFPA 72-2019 [New Section after 10.5.6]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)

Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 23:07:48 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5082-NFPA 72-2019

Statement: "Constantly attended location" is the correct term.

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Presignal systems require investigation of an alarm situation prior to manual activation of evacuation signals, but 23.8.1.1 contains no requirement of an investigation, nor personnel qualifications for any investigation. The addition of this critical requirement would require presignal alarm investigations to be investigated by qualified personnel. The addition of this requirement will give AHJ's additional guidelines for reviewing and approving a presignal system and giving some important requirements and qualifications for staff required to investigate an alarm situation in a presignal system.

It is critical that the emergency response plan of a facility/building that has a presignal system approved by an AHJ be detailed and exact to include the entire alarm response procedure. This includes the alarm receipt location and method, the investigation procedure (including what staff will be used) and what procedure will be used to activate an evacuation or other alarm response. All of this should be detailed in the emergency response plan.

Public Input No. 572-NFPA 72-2019 [Section No. 23.8.1.1.2]

23.8.1.1.2

A presignal feature shall meet the following conditions:

(1) The initial fire alarm signals sound only in department offices, control rooms, fire brigade stations, or other constantly attended central locations.

(2) Where there is a connection to a remote location, the transmission of the fire alarm signal to the supervising station actuates upon the initial alarm signal.

(3) Subsequent system operation is by either of the following means:

(4) Human action that actuates the general fire alarm

(5) A feature that allows the control

~~equipment to~~

(a) unit to delay the general alarm by more than 1 minute after the start of the alarm processing

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:50:33 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5082-NFPA 72-2019
Statement: "Constantly attended location" is the correct term.

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Presignal systems require investigation of an alarm situation prior to manual activation of evacuation signals, but 23.8.1.1 contains no requirement of an investigation, nor personnel qualifications for any investigation. The addition of this critical requirement would require presignal alarm investigations to be investigated by qualified personnel. The addition of this requirement will give AHJ's additional guidelines for reviewing and approving a presignal system and giving some important requirements and qualifications for staff required to investigate an alarm situation in a presignal system.

It is critical that the emergency response plan of a facility/building that has a presignal system approved by an AHJ be detailed and exact to include the entire alarm response procedure. This includes the alarm receipt location and method, the investigation procedure (including what staff will be used) and what procedure will be used to activate an evacuation or other alarm response. All of

this should be detailed in the emergency response plan.

Public Input No. 487-NFPA 72-2019 [Section No. 23.8.1.2]

23.8.1.2 Positive Alarm Sequence.

23.8.1.2.1

Systems that have positive alarm features complying with 23.8.1.2 shall be permitted if approved by the authority having jurisdiction.

23.8.1.2.1.1

The positive alarm sequence operation shall comply with the following:

(1) To initiate the positive alarm sequence operation, the signal from an automatic fire detection device selected for positive alarm sequence operation shall be acknowledged at the fire alarm control unit by ~~trained~~ qualified personnel within 15 seconds of annunciation.

(2) If the signal is not acknowledged within 15 seconds, notification signals in accordance with the building evacuation or relocation plan and remote signals shall be automatically and immediately actuated.

(3) If the positive alarm sequence operation is initiated in accordance with 23.8.1.2.1.1(1), ~~trained personnel shall~~ qualified personnel as specified in 10.5.7 shall have an alarm investigation phase of up to 180 seconds to evaluate the fire condition and reset the system.

(4) If the system is not reset during the alarm investigation phase, notification signals in accordance with the building evacuation or relocation plan and remote signals shall be automatically and immediately actuated.

(5) If a second automatic fire detector selected for positive alarm sequence is actuated during the alarm investigation phase, notification signals in accordance with the building evacuation or relocation plan and remote signals shall be automatically and immediately actuated.

(6)* If any other fire alarm initiating device is actuated, notification signals in accordance with the building evacuation or relocation plan and remote signals shall be automatically and immediately actuated.

23.8.1.2.1.2*

The system shall provide means for bypassing the positive alarm sequence.

Statement of Problem and Substantiation for Public Input

Section 23.8.1.2.1 requires that “trained personnel” acknowledge an alarm condition within 15 seconds and investigate an alarm condition within 180 seconds “to evaluate the fire condition and reset the system.” This “trained personnel” term is not defined in NFPA 72 nor in the “NFPA Glossary of Terms – 2019”. Thus, given the importance of this alarm investigation, a defined term should be added. Rather than providing a new definition of “trained personnel”, the proposed language changes the reference to “qualified personnel”, which is noted in NFPA 72, Section 10.5. A definition of this term is proposed to be added as a new paragraph 10.5.7 in a related public input with Annex material that is more specific to this term as it applies to NFPA 72 Paragraph 23.8.1.2.1.

The undefined “trained personnel” term should be replaced with the defined term “qualified personnel”. The proposed changes herein should be accepted with the proposed addition of Paragraph 10.5.7 to provide adequate direction to the owner/operator who wants to use a positive alarm sequence (and potentially other related delayed notification like presignal) and to the AHJ who needs to review and approve the qualifications of those implementing a positive alarm sequence.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 488-NFPA 72-2019 [New Section after 10.5.6]	
Public Input No. 490-NFPA 72-2019 [New Section after 3.3.200.5]	

Submitter Information Verification

Submitter Full Name: William Koffel

Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 22:55:21 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5086-NFPA 72-2019
Statement: The undefined “trained personnel” is replaced with the defined term “qualified personnel”.

Public Input No. 221-NFPA 72-2019 [New Section after 23.8.1.2.1.2]

23.8.1.2.1.3 Manual alarm initiating devices shall be permitted to be included in a positive alarm sequence when specifically approved by the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

Due to the potential use of manual alarm initiating devices (e.g., manual pull stations) being used in active shooter or hostile intruder situations, the owner should have a means by which existing installed manual pull stations can be placed in a positive alarm sequence in accordance with the facilities' emergency response plan. In many cases, the validity of the activation of a manual pull station can be verified via Security or CCTV systems and/or by security or school resource officers prior to activation of a fire alarm in a non-fire alarm situation. The addition of this language can allow a fully UL-approved sequence to be used to verify the manual alarm prior to an inadvertent activation of a fire alarm.

This language allows the AHJ to review and approve the addition of manual alarms to a positive alarm sequence. An owner and the system vendor would have to provide substantiation that their system and procedures would allow for approval of the installation. This is critical to the process of approval. There are thousands of schools and other occupancies that have existing pull stations that could use this simple, low-cost option of reviewing the alarm first without unduly delaying the activation of an alarm should that be necessary. If the facility did not follow their own emergency response plan, an alarm would be activated without unnecessary delay. Alternatively, if the manual alarm is an intentional act in an non-fire alarm situation, the alarm could be averted potentially saving untold lives and allowing other emergency response procedures to be activated.

Submitter Information Verification

Submitter Full Name: Larry Rietz
Organization: JENSEN HUGHES
Affiliation: None
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 03 19:20:15 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5087-NFPA 72-2019
Statement: Due to the potential use of manually actuated alarm-initiating devices (e.g., fire alarm boxes) being used in active shooter or hostile intruder situations, the owner should have a means by which existing installed manual pull stations can be placed in a positive alarm sequence in accordance with the facilities' emergency response plan. This language allows the AHJ to review and approve the addition of manual alarms to a positive alarm sequence. An owner and the system vendor would have to provide substantiation that their system and procedures would allow for approval of the installation.

Public Input No. 573-NFPA 72-2019 [Section No. 23.8.2.2]

23.8.2.2

Except as permitted in 23.8.2.3, the alarm and signalingsystem components shall be permitted to share ~~control~~ equipment or shall be able to operate as stand-alone subsystems, but shall be arranged to function as a single system in accordance with 23.8.2.4 through 23.8.2.10.

Statement of Problem and Substantiation for Public Input

There is no definition of "control equipment" in the standard. The component potentially used in this application might or might not be a control unit. The term "equipment" conveys the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:52:45 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5088-NFPA 72-2019
Statement: There is no definition of "control equipment" in the standard. The component potentially used in this application might or might not be a control unit. The term "equipment" conveys the intended meaning.

Public Input No. 653-NFPA 72-2019 [Section No. 23.8.2.3]

23.8.2.3– .1

Where the building is not served by a building fire alarm system, independent dedicated function fire alarm systems and/or releasing fire alarm systems shall not be required to be interconnected to function as a single system.

23.8.2.3.2

Where the building is not served by a building fire alarm system, independent dedicated function fire alarm systems and/or releasing fire alarm systems shall be permitted to be interconnected to function as a single system.

Additional Proposed Changes

File Name	Description	Approved
72_HELD_PC_455_SIG-PRO.pdf	NFPA 72 HELD Public Comment No. 455 (SIG-PRO)	

Statement of Problem and Substantiation for Public Input

NOTE: This Public Input appeared as “Rejected but Held” in Public Comment No. 455 of the (A2018) Second Draft Report for NFPA 72 and per the Regs. at 4.4.8.3.1.

To allow a single fire alarm control unit to serve more than one function. Example: The sprinkler monitoring system control unit can also serve as the elevator recall control unit - In this case, a single dedicated functions fire alarm system will be dedicated to two functions.

Submitter Information Verification

Submitter Full Name: TC on SIG-PRO
Organization: NFPA
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 27 14:45:21 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The existing text does not prohibit interconnection.

Public Input No. 648-NFPA 72-2019 [New Section after 23.8.2.9]

TITLE OF NEW CONTENT

Type your content here ...

23.8.2.9.3.1 The use of cellular technology shall not be permitted to reset or silence fire alarm control panels or to make modifications to fire alarm control panel programming or settings.

Statement of Problem and Substantiation for Public Input

This section is a placeholder for the use of the cellular task group of the Correlating Committee.

Submitter Information Verification

Submitter Full Name: Art Black
Organization: Carmel Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 20:55:26 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5111-NFPA 72-2019
Statement: New technology allows remote access. This text is added to establish minimum requirements for these technologies.

Public Input No. 501-NFPA 72-2019 [New Section after 23.8.2.10]

23.8.2.11

Off-premises remote control of a signaling system that has been manually placed into a diagnostic mode at the protected premises shall be permitted where all of the following conditions are met:

(1) Placing the system into the diagnostic mode results in a trouble condition.

(2) The diagnostic mode can be exited manually at any time.

(3) The diagnostic mode is exited automatically within eight hours.

Statement of Problem and Substantiation for Public Input

Off-premises control of a signaling system should be permitted when manually enabled at the protected premises so that system diagnostics and testing can be performed by qualified personnel or algorithms that may be located remotely.

Submitter Information Verification

Submitter Full Name: Andrew Berezowski
Organization: Honeywell Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 11:10:39 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5111-NFPA 72-2019
Statement: New technology allows remote access. This text is added to establish minimum requirements for these technologies.

Public Input No. 525-NFPA 72-2019 [New Section after 23.8.2.10]

23.8.2.11 Remote access.

Protected premises alarm control units shall allow connections to a non-fire network directly or indirectly provided the connection is not used for supervising station alarm systems reporting.

23.8.2.11.1 Protected premises alarm control units shall be allowed to be monitored for allowing access for system events. Information shall be allowed to transmit to remote systems which would collect data for the purpose of evaluation only.

23.8.2.11.2 Systems shall be permitted to have remote access into the protected premises alarm control unit to query the system.

23.8.2.11.3 Any data exchange between the control unit and separate independent devices via remote access shall not compromise the integrity of the fire alarm system.

2 3.8.2.11.4 Systems shall be permitted to allow remote access to update system software, configuration, and service the system.

23.8.2.11.5 A qualified person must be at site to perform authorize the application being sent remotely.

23.8.2.11.6 Any data exchange between the control unit and separate independent devices via remote access shall not compromise the integrity of the fire alarm system.

Statement of Problem and Substantiation for Public Input

The proposed language will allow the flow of FACU information out of the system to a receiving source, not for dispatch/emergency use, but to allow viewing of the system status and normal outputs, such that would flow to a printer etc. This is already allowed in UL 864.

Two-way communication and UL 864 is needed. The proposed language opens the door for viewing of diagnostics, troubles and alarm conditions; by an authorized outside source but not RESET or ACKNOWLEDGE control functions.

The proposed language will also allow software and firmware downloads remotely, but a qualified person must be on site to allow the remote connection and communication from the remote source. This will allow technology to expedite fire life safety systems operational readiness.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 526-NFPA 72-2019 [New Section after 3.3.242]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 03:20:37 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5111-NFPA 72-2019

Statement: New technology allows remote access. This text is added to establish minimum requirements for these technologies.

Public Input No. 609-NFPA 72-2019 [Section No. 23.8.3.1]

23.8.3.1

A protected premises system shall be permitted to be interconnected to the household warning equipment ~~for~~ within a single dwelling unit for the purpose of actuating the notification appliances connected to the household warning equipment.

Statement of Problem and Substantiation for Public Input

The Protected Premises Alarm and Signaling System is not capable of synchronization with unsupervised household warning equipment. There would be a conflict between the required audible signal of the Protected Premises Signaling System and audible signal of the household warning equipment in Multiple Dwelling Unit.

Submitter Information Verification

Submitter Full Name: Thomas Chambers
Organization: Vector Security Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:39:32 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: By limiting the interconnection to single dwellings, this proposed revision would reduce the fire protection for multiple dwellings. Chapter 29 does not require synchronization of audible signals.

Public Input No. 624-NFPA 72-2019 [Section No. 23.8.3.1]

23.8.3.1

A protected premises system shall be permitted to be interconnected to the household warning equipment for the purpose of actuating the notification appliances connected to the household warning ~~equipment~~ within a single dwelling unit .

Statement of Problem and Substantiation for Public Input

This statement of operation implies that the required audibility requirements of the fully supervised Protected Premises Signaling System are being permitted to be satisfied by the unsupervised household warning equipment in a Multiple Dwelling Unit application.
3.3.83.1 Multiple Dwelling Unit: A building containing three or more dwelling units.

The Protected Premises Alarm and Signaling System is not capable of synchronization with unsupervised household warning equipment. There would be a conflict between the required audible signal of the Protected Premises Signaling System and audible signal of the household warning equipment in Multiple Dwelling Unit.

Submitter Information Verification

Submitter Full Name: Thomas Chambers
Organization: Vector Security Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:18:15 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: By limiting the interconnection to single dwellings, this proposed revision would reduce the fire protection for multiple dwellings. Chapter 29 does not require synchronization of audible signals.

Public Input No. 611-NFPA 72-2019 [Section No. 23.8.3.3]

23.8.3.3

If interconnected, an alarm condition at the protected premises system shall cause the alarm notification appliance(s) within the ~~family living unit of the~~ dwelling ~~unit~~ units warning equipment to become energizedand remain energized until the protected premises system is silenced or reset.

Statement of Problem and Substantiation for Public Input

Family Living Unit has not been defined and by definition would be a Dwelling Unit. 3.3.83

Submitter Information Verification

Submitter Full Name: Thomas Chambers
Organization: Vector Security Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:53:55 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5096-NFPA 72-2019
Statement: "Family living unit" is an undefined term.

Public Input No. 617-NFPA 72-2019 [Section No. 23.8.3.3]

23.8.3.3

If interconnected, an alarm condition at the protected premises system shall cause the alarm notification appliance(s) within the ~~family living unit of the~~ single dwelling unit warning equipment to become energizedand remain energized until the protected premises system is silenced or reset.

Statement of Problem and Substantiation for Public Input

The Protected Premises Alarm and Signaling System is not capable of synchronization with unsupervised household warning equipment. There would be a conflict between the required audible signal of the Protected Premises Signaling System and audible signal of the household warning equipment in Multiple Dwelling Unit.

Submitter Information Verification

Submitter Full Name: Thomas Chambers
Organization: Vector Security Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:01:03 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5096-NFPA 72-2019
Statement: "Family living unit" is an undefined term.

Public Input No. 652-NFPA 72-2019 [New Section after 23.8.3.5]

TITLE OF NEW CONTENT

23.8.3.5.1 Protected premise panels that are not atteded on a 24/7 basis shall be provided wh a time delay of a maximum setting of 180 seconds delay to transmit an evacuation signal from a dwelling alam unit to the protected premise panel system if the dwelling unit incoming alarm is not acknowedged then all dwelling_ alarms shall activate.The time delay seting shall be submitted on the record drawings for review by the AHJ.

23.8.3.5.2 Supervisory Signals from fault condions of the dwelling alarm units shall be clearly annotated for the monitored 24/7 attending staff at the protected premise panel of off-site monitoring so that proper action can be taken by the attending staff recieving he incoming supervisoy signal for he ransmission of the evacuaton signal from the non 24/7 attended protected premise panel.

Additional Proposed Changes

File Name	Description	Approved
72_HELD_PC_75_SIG-PRO.pdf	NFPA 72 HELD Public Comment No. 75 (SIG-PRO)	

Statement of Problem and Substantiation for Public Input

NOTE: This Public Input appeared as “Rejected but Held” in Public Comment No. 75 of the (A2018) Second Draft Report for NFPA 72 and per the Regs. at 4.4.8.3.1.

Protected Premise Panels or off-site monitoring by 24/7 attending staff can immediately respond to the situation. Since the incoming Supervisory Signal for the 24/7 staff needs to investigate or transmit return action as an evacuation signal to a connected dwelling alarms. This to correlate with FR 3008 change in the text. Non attended protected premise panels will not activate unless personnel are present.

Submitter Information Verification

Submitter Full Name: TC on SIG-PRO
Organization: NFPA
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 27 14:36:26 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: 23.8.3.5 does not permit an alarm condition in the dwelling unit to alarm the protected premises system.

Public Input No. 537-NFPA 72-2019 [Section No. 23.8.4.9]

23.8.4.9* – _ Carbon Monoxide Detector Signals.

Unless otherwise permitted by 23.8.4.9.1, signals from carbon monoxide detectors and carbon monoxide detection systems transmitted to a fire alarm system shall be indicated as a carbon monoxide alarm signal.

23.8.4.9.1

When in accordance with the emergency response plan, evacuation plan, fire safety plan, or similar documentation, signals from carbon monoxide detectors and carbon monoxide detection systems transmitted to a fire alarm system shall be permitted to be supervisory signals.

23.8.4.9.2*

Fire alarm system processing for and occupant response to carbon monoxide alarm signals shall be in accordance with the emergency response plan, evacuation plan, fire safety plan, or similar documentation.

23.8.4.9.3

Where carbon monoxide warning equipment is connected to a protected premises fire alarm system, receipt of signals shall initiate the signal required by Section 18.4.

23.8.4.9.4

Operation of carbon monoxide alarms or detectors shall not cause fire alarm or combination control units to actuate either protected premises or supervising station fire alarm signals.

Statement of Problem and Substantiation for Public Input

NFPA 72 Carbon Monoxide Task Group (SIG PRO) proposes removal of this asterisk to accompany the proposed removal of A.23.8.4.9. The annex material was removed to eliminate reference to the withdrawn NFPA 720.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 536-NFPA 72-2019 [Section No. A.23.8.4.9]	
Public Input No. 251-NFPA 72-2019 [Section No. 21.1 [Excluding any Sub-Sections]]	
Public Input No. 566-NFPA 72-2019 [Section No. 18.3.3]	

Submitter Information Verification

Submitter Full Name: Brandon Wilkerson
Organization: Poole Fire Protection
Affiliation: NFPA 72 Carbon Monoxide Task Group (SIG PRO)
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 09:57:17 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5099-NFPA 72-2019
Statement: The Technical Committee removes the reference to NFPA 720 since this standard has been withdrawn and all carbon monoxide requirements have been transitioned into NFPA 72.

Public Input No. 472-NFPA 72-2019 [Section No. 23.8.4.9.4]

23.8.4.9.4

Operation of carbon monoxide alarms or detectors shall not cause fire alarm or combination system control units to actuate either protected premises or supervising station fire alarm signals.

Statement of Problem and Substantiation for Public Input

"Combination control unit" is not defined in the code. A new definition for "Combination System Control Unit" has been submitted to Chapter 3 and the term has been inserted in section 29.10.6 to more accurately describe the device.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 466-NFPA 72-2019 [Section No. 3.3.63]	Definition

Submitter Information Verification

Submitter Full Name: Wendy Gifford
Organization: Consultant
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 17:14:23 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5100-NFPA 72-2019
Statement: "Combination system" is the correct term.

Public Input No. 77-NFPA 72-2019 [Section No. 23.8.5.4.3]

23.8.5.4.3

Systems that require the operation of two automatic detectors to initiate the alarm response shall be permitted, provided that the following conditions are satisfied:

(1) The systems are not prohibited by the authority having jurisdiction.

(2) At least two automatic detectors are in each protected space.

(3) The alarm verification feature is not used.

(4) The specific sequence of operations shall be detailed in the design documents as defined by Chapter 7 of this Code.

Statement of Problem and Substantiation for Public Input

Cross-zone detection sequences rely on a specific sequence of operations and yet, it has not been required in previous versions of NFPA 72. It is vital that the specific sequence of operations be detailed in the design drawings and the shop drawings so that the AHJ can review and approve the installation. It is critical to understand what the specific cross-zone requirements are for these very specific detection requirements. It is clear that the specific cross-zone requirements be detailed in the sequence of operations so that the activation of the suppression solenoid (or equivalent) is detailed in the design documents.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 18:29:27 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5103-NFPA 72-2019
Statement: It is vital that the specific sequence of operations be detailed in the design drawings and the shop drawings so that the AHJ can review and approve the installation.

Public Input No. 341-NFPA 72-2019 [Section No. 23.8.5.9]

23.8.5.9 Signal Initiation — Fire Pump.

23.8.5.9.1

Where fire ~~pumps are required to be monitored and~~ pumps and a building fire alarm system is installed, the pumps shall be monitored, a pump running signal shall be permitted to be a supervisory or alarm signal.

23.8.5.9.2

Where fire ~~pumps are required to be monitored and~~ pumps and a building fire alarm system is installed, ~~signals~~ signals other than pump running shall be supervisory signals.

Statement of Problem and Substantiation for Public Input

The way this is currently written it is makes monitoring of fire pumps permissive. Monitoring of fire pumps is a requirement of most fire and building codes and NFPA 20.

Fire pumps are a critical piece of any fire protection system. It's very important to immediately know when fire pumps are running, whether it has operational problems, or when the associated valves are not in their normal positions.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City Of Henderson
Affiliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 13:35:28 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: It is not within the scope of NFPA 72 to mandate monitoring of fire pumps.

Public Input No. 344-NFPA 72-2019 [New Section after 23.8.6.1]

TITLE OF NEW CONTENT

23.8.6.5* Emergency Voice/Alarm Communication Notification Appliance Circuits. Emergency voice/alarm communication notification appliance circuits shall be capable of full-load operation with a wiring power loss not to exceed 12.5% (0.5dB).

A23.8.6.5 Some of the available methods of calculating e mergency voice/alarm communication notification appliance circuits are as follows Sections A23.8.6.5.a, A23.8.6.5.b or A23.8.6.5.c.

A23.8.6.5.a Power Loss Calculations. A calculation for each circuit shall be provided to the authority having jurisdiction demonstrating simultaneous full-load operation with a wiring power loss not to exceed 12.5% (0.5dB). Power loss calculations similar to the following shall be used:

PLoss = 10 * Log [1 - ((2 * RL) / (2 * RL + (VLine squared / PRated))]

RL = (RRef / 1000) * D

With variables defined as follows:

D = length of wire used (in feet)

PLoss = power loss (in dB)

PRated = power driven on line from the amplifier (in watts)

RL = wire gauge resistance (in ohms)

RRef = wire resistance based on gauge of wire used (in ohms/ft.)

VLine = voltage on line (typically 25 volts or 70 volts)

Alternatively the distance may be calculated using a calculation similar to:

D = (61 / RRef) * (VLine squared / PRated)

A23.8.6.5.b Power Loss Tables. To ensure circuits are capable of simultaneous full-load operation with a wiring power loss not to exceed 12.5% (0.5dB), wiring shall be limited to the distance allowed in Tables A23.8.6.5.b.a and A23.8.6.5.b.b.

Table 23.8.6.5.2.a, 25 V Circuit

Loudspeaker Distribution Cable Length (in feet) and Gauge for 0.5-dB Loss

Wire Gauge (AWG)	18	16	14	12	10
Cable Ohms*	15.54	9.78	6.14	3.86	2.42
Circuit Power	-	-	-	-	-
200	12	19	31	49	79
150	16	26	41	66	105
100	25	39	62	99	158
75	33	52	83	132	210
60	41	65	104	165	263

50	49	78	124	198	315
40	61	97	155	247	394
30	82	130	207	329	525
25	98	156	248	395	630

Table 23.8.6.5.2.b, 70 V Circuit

Loudspeaker Distribution Cable Length (in feet) and Gauge for 0.5-dB Loss

Wire Gauge (AWG)	18	16	14	12	10
Cable Ohms*	15.54	9.78	6.14	3.86	2.42
Circuit Power	-	-	-	-	-
200	98	156	248	395	630
150	131	208	331	527	840
100	196	312	497	790	1260
75	262	416	662	1053	1680
60	327	520	828	1317	2100
50	392	624	993	1580	2520
40	491	780	1242	1975	3150
30	654	1039	1656	2633	4200
25	785	1247	1987	3160	5041

*Cable Ohms is expressed in ohms per 1000 feet (2008 NEC Ch.9 Table 8, uncoated, single strand copper)

The length represented accounts for both wires in the circuit.

23.8.6.5.c Manufacturers Power Loss Calculator. Many manufacturers provide calculations that can show a circuit is capable of simultaneous full-load operation with a wiring power loss not to exceed 12.5% (0.5dB).

Statement of Problem and Substantiation for Public Input

This amendment was created to provide prescriptive requirements for calculating power loss due to wiring in emergency voice alarm communication systems. New annex material is also provided with three methods for achieving a result.

Compliance with this section will improve intelligibility by ensuring the performance of all speakers on a circuit have the power needed to perform nearly equivalently.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City Of Henderson
Affiliation: Self
Street Address:

City:
State:
Zip:
Submittal Date: Fri Jun 21 13:57:37 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The proposed text does not belong in Chapter 23. This text is being addressed by the Notification Appliance Circuit Task Group, under the purview of SIG-NAS.It is requested that the Correlating Committee coordinate this PI with other technical committees, as appropriate.

Public Input No. 74-NFPA 72-2019 [Section No. 23.10.2]

23.10.2*

Fire alarm systems used for partial evacuation and relocation shall be designed and ~~installed~~ installed with a Level 2 or Level 3 pathway survivability in accordance with Section 12.4, unless otherwise permitted in 23.10.2.1 or 23.10.2.2. such that attack by fire within a notification zone shall not impair control and operation of the notification appliances outside that notification zone.

23.10.2.1 Where notification zones are separated by less than 2-hour fire-rated construction, a pathway survivability of Level 1 shall be permitted.

23.10.2.2 Where Class X or Class N system pathways are installed and the incoming and outgoing pathways are separated by at least one-third of the maximum diagonal of the notification zone, a pathway survivability of Level 1 shall be permitted.

Statement of Problem and Substantiation for Public Input

As currently written, Section 23.10.2 is in conflict with Chapter 24 by not mandating a specific level of pathway survivability for tone-based fire alarm systems used in relocation or partial evacuation systems. Pathway survivability is no less important in a tone-based fire alarm system (e.g., chimes used in a hospital or ambulatory care facility) than it is in a voice fire alarm system (EVACS). The Annex A material for 23.10.2 seems to indicate that a fully sprinklered building is equivalent to pathway survivability requirements, which it is not, and creates a conflict with Chapter 24.

The added language of 23.10.2.1 and 23.10.2.2 provides relief from a Leve 2 or Level 3 pathway survivability when there is less than 2-hour rated construction or provides an alternative as also currently allowed by Chapter 24 (24.3.14.4.1.2).

See related PI containing proposed changes to the Annex note.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 153-NFPA 72-2019 [Section No. A.23.10.2]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 18:18:45 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: This section permits performance-based evaluation of the level of survivability required when partial evacuation is permitted in a facility utilizing tones. Tonal systems are only required to have 5 minutes of alarm standby power and voice systems are required to have 15 minutes of alarm standby power. Additionally, tonal systems do not require 2 hours of communication that would be required for a voice system.

Public Input No. 75-NFPA 72-2019 [Section No. 23.10.3]

23.10.3

Performance features provided to ensure survivability shall be described and technical justification provided in the documentation submitted to the authority having jurisdiction~~ with the evaluation required in 23 . 4.3.1.~~

Statement of Problem and Substantiation for Public Input

The language provided in 23.10.3 is misleading and may make a reader believe that pathway survivability requirements can be met by providing a specific pathway class designation. The “evaluation” of pathway class in 23.4.3.1 is required no matter what and is separate and distinct from the requirement to provide pathway survivability. Both designations should be detailed on the set of shop drawings or engineering justification/performance alternative submitted to the AHJ.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 18:26:32 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5064-NFPA 72-2019
Statement: The evaluation of pathway class in 23.4.3.1 is required no matter what and is separate and distinct from the requirement to provide pathway survivability.

Public Input No. 76-NFPA 72-2019 [New Section after 23.10.4]

23.10.5

All circuits necessary for the operation of the notification appliances shall be protected until they enter the notification zone that they serve by the protection required by the pathway survivability level required in 23.10.2.

Statement of Problem and Substantiation for Public Input

While 23.10.2 requires pathway survivability, especially if PI#74 is accepted, it does not mandate or define WHERE that pathway survivability must be provided. This new language makes it clear where such required pathway survivability must be provided. This requirement is in harmony with the requirements contained within Chapter 24.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 18:27:26 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: Sections 23.10.2 and 23.10.3 permit performance-based evaluation of the level of survivability required when partial evacuation or relocation is permitted in a facility utilizing tones and does not apply to buildings with total evacuation. Therefore, protection of circuitry for adjacent notification zones is not required.

Public Input No. 640-NFPA 72-2019 [New Section after 23.16.4.7]

Updated Class A and B desginations for radio frequency pathways

Type your content here ...Add new clauses after 23.16.4.7:

23.16.4.8 Radio frequency pathways designated Class A shall operate as follows:

a) A redundant pathway is included.

b) Operational capability is verified via end-to-end communication.

c) Conditions that affect the intended operation of the required pathways are annunciated as a trouble signal when two pathways are no longer available to each transceiver/device.

d) Operational capability in a radio frequency pathway/channel continues during conditions that affect the intended operation of one of the two remaining pathways

e) Each transceiver and/or repeater in a radio frequency and/or wireless pathway is powered by one of the following means:

1) Both a primary and secondary source meeting 10.6;

2) Multiple primary batteries meeting 23.16.2.2

f) Where operational capability is to be maintained during a fault, the operational capability shall be restored within 200 s of the application of the fault.

23.16.4.8 R adio frequency pathways designated as Class B shall operate as follows:

a) A redundant path is not included.

b) Operational capability is verified via end-to-end communication.

c) Conditions that affect the intended operation of the pathway are annunciated as a trouble signal.

d) Operational capability stops at the affected portion of the pathway.

e) Each transceiver and/or repeater in a radio frequency pathway is powered by one of the following means:

1) Both a primary and secondary source meeting 10.6;

2) Multiple primary batteries meeting 23.16.2.2.

g) Where operational capability is to be maintained during a fault, the operational capability shall be restored within 200 s of the application of the fault.

Statement of Problem and Substantiation for Public Input

The pathway class performance levels in 12.3 do not sufficiently address Class A and B performance for radio frequency pathways because the Class designations are primarily based on land-based pathways concerned with open, ground and wire-to-wire faults . Modern radio frequency mesh networks provide multiple pathways which do not fit in the land-based paradigm.

In addition, primary battery powered radio frequency transceivers need to meet the requirements of 23.16.2.2 for multiple battery powered devices because loss of a single primary battery should not affect the Class designation minimum performance.

The class A and B radio frequency performance levels are included in 23.16 because they are specific to radio frequency signaling.

Submitter Information Verification

Submitter Full Name: Lawrence Shudak
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 17:30:57 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5072-NFPA 72-2019
Statement: Wireless devices can and should be able to be classified the same as wired devices, provided they meet the performance standards that relate to pathway operation (i.e. ground faults are not possible on wireless devices, etc…).

Public Input No. 162-NFPA 72-2019 [Section No. 24.3.1.2]

24.3.1.2*

Where listed loudspeakers ~~do not achieve the intelligibility~~ are unable to meet the intelligibility performance requirements of the Code for a notification zone, ~~nonlisted~~ non-listed loudspeakers shall be permitted to be installed to ~~achieve the~~ meet the required intelligibility performance for that notification zone.

Statement of Problem and Substantiation for Public Input

The current language includes the term: "intelligibility requirements of the Code" - however, quantitative intelligibility measurements are not required per section 18.4.11.5, (There are no specific requirements for intelligibility in the body of the Code) therefore, the "required" intelligibility level is based on performance or the guidelines indicated in Appendix D. Also the word "nonlisted" is corrected to be "non-listed" as indicated in the annex for this section.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 163-NFPA 72-2019 [Section No. 24.5.9.3]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 18:43:22 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The ability to meet the intelligibility requirements is not solely dependent upon the loudspeaker.

Public Input No. 303-NFPA 72-2019 [Section No. 24.3.6.1]

24.3.6.1*

Messages shall be developed for each scenario developed in the emergency response plan and shall be approved by the authority having jurisdiction .

Statement of Problem and Substantiation for Public Input

It is important that all life-safety related messages (pre-recorded or written emergency live announcements to be broadcasted by an authorized person) shall be specifically approved by the AHJs. This is in addition to the specific requirement in 24.3.6.2.2 to also include approve message templates for live announcements.
If the messages templates are only required to be developed by the system designer/owner/building engineers, etc. they may have deficiencies which may not be acceptable for the AHJs.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 304-NFPA 72-2019 [Section No. 24.3.6.2.1]	Approved messages pre-recorded and templates
Public Input No. 304-NFPA 72-2019 [Section No. 24.3.6.2.1]	
Public Input No. 318-NFPA 72-2019 [Section No. 24.3.6.3]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 17 06:05:25 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The requirement for AHJ approval is already captured in 24.3.6.2.2 and need not be repeated in this paragraph.

Public Input No. 304-NFPA 72-2019 [Section No. 24.3.6.2.1]

24.3.6.2.1

Based on the emergency response plan, approved emergency messages shall have content that provides information and instructions to people in the building, area, site, or installation.

Statement of Problem and Substantiation for Public Input

All emergency messages (pre-recorded and Templates for live messages) must be specifically reviewed and approved by the AHJ in order to prevent unacceptable or unsafe announcements

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 303-NFPA 72-2019 [Section No. 24.3.6.1]	AHJ approval of messages
Public Input No. 303-NFPA 72-2019 [Section No. 24.3.6.1]	
Public Input No. 318-NFPA 72-2019 [Section No. 24.3.6.3]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 17 06:15:04 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The requirement for AHJ approval is already captured in 24.3.6.2.2 and need not be repeated in this paragraph.

Public Input No. 318-NFPA 72-2019 [Section No. 24.3.6.3]

24.3.6.3*

~~A~~ An approved message template shall be developed for each message required in 24.3.6.1.

Statement of Problem and Substantiation for Public Input

All templates for emergency messages should be approved by the AHJ to prevent potential conflicts with specific emergency requirements.
All LIVE messages which are broadcasted via the microphone during emergencies (Fire or Non-Fire) NOT based on templates must only be broadcasted by responding firefighters, or other emergency or authorized personnel.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 303-NFPA 72-2019 [Section No. 24.3.6.1]	approved messages
Public Input No. 304-NFPA 72-2019 [Section No. 24.3.6.2.1]	approved messages

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 14:24:55 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: At this stage the messages have not been developed. These templates are a guide (template) and other paragraphs require the specific messages to be approved.

Public Input No. 319-NFPA 72-2019 [New Section after 24.3.6.5]

21.3.6.6 Live messages

All live messages to be broadcasted during fire or non-fire emergencies shall only be broadcasted by responding firefighter(s) or other emergency or authorized personnel.

Statement of Problem and Substantiation for Public Input

Live messages should not be broadcasted by untrained persons. This can create unsafe conditions, confusion, etc. This PI is related to section A24.11.1.5 and also to the NEW proposed definitions for Emergency personnel and Authorized personnel which must be trained

A.24.11.1.5 It is imperative that individuals expected to initiate or deliver emergency messages be properly trained in the expected operations. Individuals must be familiar with the equipment, its location, and functions if they will be expected to react properly in an emergency. In an emergency situation. people only react according to instinct or habit. If the individual has not had proper and repeated training over the emergency expectations, they could lack the proper instinct or habit.
Reading an employee manual is generally not an effective means of training for an emergency. To be effective, training must be reinforced with multiple means such as text, audio, visual, and, most importantly, hands-on experience. Regular drills allowing for delivery of live messages indicating an emergency condition is important. Many people have a very difficult time communicating clearly and effectively in an emergency situation when they are excited or fearful. If live messages are to be effective, they must be short, to the point, and in a calm tone conveying exactly what is expected. Screaming into the microphone, for instance, would not be appropriate. Actual message content will depend on the emergency response plan in place for the respective business and the response to an unfolding event. Situations such as an intruder in a building have become more common today and, as such, should be considered and planned for.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 165-NFPA 72-2019 [New Section after 3.3.94]	new definition
Public Input No. 164-NFPA 72-2019 [New Section after 3.3.23]	new definition
Public Input No. 325-NFPA 72-2019 [Section No. 24.4.5.7]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 14:36:32 EDT 2019

Committee: SIG-ECS

Committee Statement

Resolution: The Code already requires authorized personnel to broadcast the message and there is not a need to call out all the specific personnel such as firefighters, etc. Access to the equipment to broadcast a message is restricted by other paragraphs, such as 24.4.5.2.

Public Input No. 562-NFPA 72-2019 [Section No. 24.3.8]

24.3.8* Mass Notification Layers.

Emergency communications used for mass notification shall be categorized into layers and take into consideration type of audience and reach as follows:

(1) Layer 1 relates to means of notification of occupants by systems/equipment installed inside a building and controlled only by authorized users (in-building ECS)

(2) Layer 2 relates to means of notification of occupants on the exterior of a building and controlled only by authorized users. Layer 2 may also relate to notification of multiple buildings both for continuous and non-contagious campus', controlled from centralized locations. (wide-area MNS)

(3) Layer 3 relates to means of notification of personnel through individual measures (distributed recipient MNS)

(4) Layer 4 relates to means of notification of personnel by public measures (broadcast radio, television, and so forth)

Statement of Problem and Substantiation for Public Input

Section 24.11, Information, Command, and Control recognizes the requirements to transmit information between premise systems. There are a multitude of network deployed technologies that provide emergency notification by way of a wide area network (or in some cases the internet). This PI recognizes that these systems exist and seeks to include them in the term wide area MNS, so that this code can be considered in their deployment. Even though Layer 2 MNS fundamentally applies to outside notification, the inclusion of the term wide area MNS is potentially misleading to readers who understand wide area MNS to refer to wide area network distribution of emergency messaging. Neither layer 3 nor layer 4 is appropriate to this type of distribution. And even though section 24.6 is primarily written around HPSAs, section 24.6.1 - 24.6.3 are suitable requirements for wide area networked MNS, and 24.6.4 makes a direct reference to 24.11.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 563-NFPA 72-2019 [Section No. A.24.3.8]	

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:20:57 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The layers are intended to be categories of the intended audience for the MNS at a high level and not to include requirements.

Public Input No. 577-NFPA 72-2019 [New Section after 24.3.10]

24.3.11 Listing for Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems, Stairway Communications Systems, Elevator Landing Communications Systems, and Occupant Evacuation Elevator Lobby Communications Systems

24.3.11.1 Control Units, installed as part of a Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems, Stairway Communications Systems, Elevator Landing Communications

Systems, and Occupant Evacuation Elevator Lobby Communications Systems shall be in compliance with this code and listed in accordance to applicable standards such as ANSI/UL 2525, *Outline of Investigation for Rescue Assistance Two-Way Emergency Communication Systems for Stairwell and Elevator Landing/Lobby Areas of Refuge.*

24.3.11.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications stations, Stairway Communications stations, Elevator Landing Communications stations, and Occupant Evacuation Elevator Lobby Communications stations shall be listed shall be in compliance with this code and listed in accordance to applicable standards such as ANSI/UL 2525, *Outline of Investigation for Rescue Assistance Two-Way Emergency Communication Systems for Stairwell and Elevator Landing/Lobby Areas of Refuge.*

Statement of Problem and Substantiation for Public Input

MNS and EVAC are emergency communication systems that are required to be listed systems. For the same reasons, the Area of Rescue Assistance, and the other related emergency communication systems should also be listed. But until recently there was no UL standard focused on these types of systems. But in November of 2018, such a standard was published by UL, 2525, so it is reasonable that for this life safety system, the standard should be required.

I am putting this into section 24.3, instead of section 24.10, because 24.3 was where the listing requirements for MNS were. I think we should also consider moving 24.3.10 to section 24.5 and this section to 24.10.

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:26:03 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The reference to UL 2572 has been added to section 24.3.10.

Public Input No. 244-NFPA 72-2019 [Section No. 24.3.10]

24.3.10* Control Unit Listing for Mass Notification Systems.

Control units installed as part of a mass notification system shall be in compliance with this Code and ~~at least one of the following applicable standards:~~

- ~~ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*~~
  ~~ANSI/UL 2572,~~ UL 2572, *Mass Notification Systems* .

Statement of Problem and Substantiation for Public Input

UL 2572 has specific requirements on how mass notification systems need to function. UL 864 does not have these requirements. The industry has matured and many manufacturers have equipment listed to UL 2572 and therefor 72 needs to remove all other listings other than 2572.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 17:36:20 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5208-NFPA 72-2019
Statement: UL 2572 has specific requirements on how mass notification systems need to function. UL 864 does not have these requirements. The industry has matured and many manufacturers have equipment listed to UL 2572 and therefore NFPA 72 needs to remove all other listings other than 2572. In addition, modifications have been made to the annex language as well.

Public Input No. 372-NFPA 72-2019 [Section No. 24.3.10]

24.3.10* Control Unit Listing for Mass Notification Systems.

Control units installed as part of a mass notification system shall be in compliance with this ~~Code and at least one of the following applicable standards:~~

- ~~ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*~~

~~ANSI/~~ code and listed in accordance to applicable standards such as ANSI/ UL 2572, *Mass Notification Systems* .

Statement of Problem and Substantiation for Public Input

The Chapter 24 requirements for an EVACS listed to ANSI/UL 864 are outlined in section 24.4: In-Building Fire Emergency Voice/Alarm Communications Systems (EVACS). These requirements are reflected in testing for compliance under ANSI/UL 864, not in ANSI/UL 2572. Conversely the requirements for MNS are outlined in section 24.5 In-Building Mass Notification Systems. These requirements are reflected in testing for compliance under ANSI/UL 2572, not ANSI/UL 864. This resolves the problem by where under UL864, equipment testing does not reflect the requirements of MNS as stipulated by this code in 24.5.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 373-NFPA 72-2019 [Section No. A.24.3.10]	

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 16:02:13 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5208-NFPA 72-2019

Statement: UL 2572 has specific requirements on how mass notification systems need to function. UL 864 does not have these requirements. The industry has matured and many manufacturers have equipment listed to UL 2572 and therefore NFPA 72 needs to remove all other listings other than 2572. In addition, modifications have been made to the annex language as well.

Public Input No. 496-NFPA 72-2019 [Section No. 24.3.10]

24.3.10* Control Unit Listing for Mass Notification Systems.

Control units installed as part of a mass notification system shall be in compliance with this Code and at least one of the following applicable standards:

(1) ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*

(2) ANSI/UL 2572, *Mass Notification Systems*

(3) *Any device used as part of the Mass notification system that is not listed to one of the above standards, shall include a listed Surge Protective Device (SPD), unless it has a negative impact on the performance of the combination system.*

(4) *Any port on an ULA 864 and UL 2572 system intended for connection to external systems or devices is required to include transient protection and has been evaluated to ensure performance.*

Statement of Problem and Substantiation for Public Input

This text provides substantiation for item # 2 above that the designer has responsibility to consider what is needed 24.5.24.2*
Emergency communication systems (ECS) include many systems/devices (i.e. LED signs, TV's, etc.) that are not listed to these standards. It is important to make sure these devices critical to the overall ECS system are fully protected during a power surge. For instance, in airports when there is a power surge and the television/monitors are not surge protected, those in harm's way are vulnerable. Rather than getting the time sensitive information, the devices need to reboot; thus, they are not available when absolutely necessary. In an effort to avoid situations like this one, it is vitally important to have the emergency communications system designer attest to the fact that the device(s) has been evaluated with an appropriate listed surge protection device.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 09:26:55 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The devices identified in (3) and (4) are misplaced as proposed in 24.3.10 and should be proposed to SIG-FUN.

Public Input No. 642-NFPA 72-2019 [Section No. 24.3.12.1 [Excluding any Sub-Sections]]

Each application of a mass notification system shall be specific to the nature and anticipated risks of each facility for which it is designed.The risk analysis shall identify which threats are significant enough that a mass notification system is needed for an effective response. Significance of threats shall be based on the likelihood of occurrence and the negative consequences if the threat does occur.

Statement of Problem and Substantiation for Public Input

The current wording fails to provide sufficient guidance regarding the purpose of the risk analysis when required. While the annex note provides a list of methods, but users are not provided with any assistance regarding how to select a risk analysis method that will be useful in accomplishing the mandated risk analysis.

Submitter Information Verification

Submitter Full Name: Norman Groner
Organization: John Jay College Of Criminal Justice
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 18:06:12 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5213-NFPA 72-2019
Statement: The guidance requested by the submitter has been provided in the annex rather than in the body.

Public Input No. 600-NFPA 72-2019 [New Section after 24.3.12.10]

Add new Section to Risk Analysis

24.3.12.11 Cyber Security Design

24.3.12.11.1 Where required by the Risk Analysis, state, local, or the AHJ, systems shall be designed and installed in accordance with cyber security standards, such as:

(1) ANSI/ISA-62443 Series

(2) NIST Framework for Improving Critical Infrastructure Cybersecurity Version 1.1

(3) ANSI/UL 2900 Series

(4) or other standards accepted by the authority having jurisdiction

Statement of Problem and Substantiation for Public Input

Interfacing integrated systems [as outlined in NFPA 4] into the fire alarm system can increase the vulnerability of security breaches against unauthorised access or attack by individuals, groups, companies, and governments onto or from any of these integrated systems, including the fire alarm system. By evaluating these systems through the standards proposed, there is a level of confidence in the securing of these systems to prevent these attacks.

As an example, Target was breached through the HVAC system. The danger lies in the fact that everything can be hacked in these types of buildings. Outsiders can take control of all connected systems to turn off lights, trigger a fire alarm and cause panic, add external users to access controls, interfere with the HVAC system to knock staff off their guard and even disrupt machines, or to deactivate the CCTV (video surveillance) system to allow an intruder to enter, and the list goes on. For these reasons, we are including Cyber Security Design into the risk analysis to avoid potential security breaches to the system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 604-NFPA 72-2019 [Section No. 2.3.1]	
Public Input No. 605-NFPA 72-2019 [Section No. 2.3.8]	
Public Input No. 606-NFPA 72-2019 [New Section after 2.3.9]	

Submitter Information Verification

Submitter Full Name: Denise Pappas
Organization: Valcom, Inc.
Affiliation: ECS Cyber Security Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:18:46 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5216-NFPA 72-2019

Statement: Interfacing integrated systems [as outlined in NFPA 4] into the fire alarm system can increase the vulnerability of security breaches against unauthorised access or attack by individuals, groups, companies, and governments onto or from any of these integrated systems, including the fire alarm system. By evaluating these systems through the standards proposed, there is a level of confidence in the securing of these systems to prevent these attacks.

As an example, Target was breached through the HVAC system. The danger lies in the fact that everything can be hacked in these types of buildings. Outsiders can take control of all connected systems to turn off lights, trigger a fire alarm and cause panic, add external users to access controls, interfere with the HVAC system to knock staff off their guard and even disrupt machines, or to deactivate the CCTV (video surveillance) system to allow an intruder to enter, and the list goes on. For these reasons, the Technical Committee includes Cyber Security Design into the risk analysis to avoid potential security breaches to the system.

Public Input No. 629-NFPA 72-2019 [New Section after 24.3.12.10]

24.3.12.11 The risk analysis shall consider risks of unauthorized access in relation to cybersecurity design standards and certification requirements in accordance with 21.2.11 and 10.4.8

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	Part of a broader public input intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:23:46 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The issue of cyber security has been addressed in newly proposed Section 24.3.12.11.

Public Input No. 486-NFPA 72-2019 [Section No. 24.3.12.10]

24.3.12.10*

The risk analysis shall be used as the basis for development of the ECS/MNS provisions of the facility emergency response plan.

A.24.3.12.10 When a code requires a Risk Analysis for Mass Notification Systems to determine the need for an MNS, the stakeholders can determine the extent and types of coverage and systems needed. It can be found that the minimum code requirements already include what is needed for the risk of a project, and that nothing additional is needed. An example could be a small school that has an EVAC system, that system may be sufficient for emergency communications based on the risk analysis prepared by the stakeholders and approved by the AHJ.

Statement of Problem and Substantiation for Public Input

NFPA 1, NFPA 101, and building codes are requiring a Risk Analysis to determine the need for a mass notification system and the codes reference NFPA 72 for the criteria of the risk analysis. There is no “option” for the stakeholders, design professional, owner, or AHJ to determine that an MNS system is not required based upon the risk analysis. This language is intended to accomplish this mission. We also could not find within 72 where a risk analysis for the MNS system overall is required.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 22:37:22 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5217-NFPA 72-2019

Statement: NFPA 1, NFPA 101, and building codes are requiring a Risk Analysis to determine the need for a mass notification system and the codes reference NFPA 72 for the criteria of the risk analysis. There is no “option” for the stakeholders, design professional, owner, or AHJ to determine that an MNS system is not required based upon the risk analysis. This language is intended to accomplish this mission. The Technical Committee could not find within 72 where a risk analysis for the MNS system overall is required.

Public Input No. 172-NFPA 72-2019 [Section No. 24.3.14.4]

24.3.14.4

In-building fire emergency voice/alarm communications systems shall comply with 24.3.14.4.1 or 24.3.14.4.2.

24.3.14.4.1

For systems employing relocation or partial evacuation, a Level 2 or Level 3 pathway survivability shall be required, unless otherwise permitted in 24.3.14.4.1.1 or 24.3.14.4.1.2.

24.3.14.4.1.1

Where Class A, Class B, Class C, Class D or Class E system pathways are installed and the notification zones are separated by less than 2-hour fire-rated construction, a pathway survivability of Level 1, 2 or 3 shall be permitted.

24.3.14.4.1.2

Where Class X or Class N system pathways are installed and the incoming and outgoing pathways are separated by at least one-third the maximum diagonal of the notification zone, a pathway survivability of Level 1, 2 or 3 shall be permitted.

24.3.14.4.2

For systems that do not employ relocation or partial evacuation, a Level 0, Level 1, Level 2, or Level 3 pathway survivability shall be permitted.

Statement of Problem and Substantiation for Public Input

24.3.14.4.1.1 currently allows a Level 1 pathway (which requires the building to be fully protected by an NFPA 13 Sprinkler System and wiring to be installed in metal raceways);
- Where notification zones are separated by less than 2-hour fire-rated construction (i.e. no minimum construction fire-rating criteria), and
- There is no reference to Pathway Class requirements or limitations

24.3.14.4.1.2 currently allows a Level 1 pathway (which requires the building to be fully protected by an NFPA 13 Sprinkler System and wiring to be installed in metal raceways) where;
- With no minimum construction fire-rating criteria,
- Where Class X or Class N system pathways are installed and the incoming and outgoing pathways are separated by at least one-third the maximum diagonal of the notification zone.

Since each of these sections stand on their own, as written 24.3.14.4.1.1 eliminates the need for 24.3.14.4.1.2 because 24.3.14.4.1.1 allows a Level 1 pathway for all Pathways Classes without any minimum fire-rated construction criteria or separation of incoming and outgoing pathways. Adding the Pathway classes in 24.3.14.4.1.1 that are not addressed in 24.3.14.4.1.2 separates the requirements for the different pathway classes. However, since Class A pathways require incoming and outgoing wiring it is not clear if the committee intended Class A pathways to be included in 24.3.14.4.1.2.

Also, it is not clear if 24.3.14.4.1.2 should include fire-rating criteria similar to 24.3.14.4.1.1. A separate PI is being submitted that would:
- Include Class A circuits in 24.3.14.4.1.2 (not 24.3.14.4.1.1), and
- Include fire-rating criteria in 24.3.14.4.1.2 similar to 24.3.14.4.1.1

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 171-NFPA 72-2019 [Section No. 24.3.14.4.1]	
Public Input No. 173-NFPA 72-2019 [Section No. 24.3.14.4]	
Public Input No. 171-NFPA 72-2019 [Section No. 24.3.14.4.1]	
Public Input No. 173-NFPA 72-2019 [Section No. 24.3.14.4]	

Submitter Information Verification

Submitter Full Name: Daniel Gauvin
Organization: Johnson Controls
Affiliation: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 16 09:25:22 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: Class C, D, and E are not appropriate references. Paragraph 24.3.14.4.1.1 could be applicable to Class X as well.

Public Input No. 173-NFPA 72-2019 [Section No. 24.3.14.4]

24.3.14.4

In-building fire emergency voice/alarm communications systems shall comply with 24.3.14.4.1 or 24.3.14.4.2.

24.3.14.4.1

For systems employing relocation or partial evacuation, a Level 2 or Level 3 pathway survivability shall be required, unless otherwise permitted in 24.3.14.4.1.1 or 24.3.14.4.1.2.

24.3.14.4.1.1

Where notification zones are separated by less than 2-hour fire-rated construction ~~, a~~ and Class B, Class C, Class D or Class E system pathways are installed, a pathway survivability of Level 1, 2 or 3 shall be permitted.

24.3.14.4.1.2

Where notification zones are separated by less than 2-hour fire-rated construction and Class A, Class X or Class N system pathways are ~~installed and~~ installed with the incoming and outgoing ~~pathways are separated~~ pathways separated by at least one-third the maximum diagonal of the notification zone, a pathway survivability of Level 1, 2 or 3 shall be permitted.

24.3.14.4.2

For systems that do not employ relocation or partial evacuation, a Level 0, Level 1, Level 2, or Level 3 pathway survivability shall be permitted.

Statement of Problem and Substantiation for Public Input

24.3.14.4.1.1 currently allows a Level 1 pathway (which requires the building to be fully protected by an NFPA 13 Sprinkler System and wiring to be installed in metal raceways) where;

- Where notification zones are separated by less than 2-hour fire-rated construction (i.e. no minimum construction fire-rating criteria), and
- No reference to Pathway Class requirements or limitations

24.3.14.4.1.2 currently allows a Level 1 pathway (which requires the building to be fully protected by an NFPA 13 Sprinkler System and wiring to be installed in metal raceways) where;

- With no minimum construction fire-rating criteria,
- Where Class X or Class N system pathways are installed and the incoming and outgoing pathways are separated by at least one-third the maximum diagonal of the notification zone.

Since each of these sections stand on their own, as written 24.3.14.4.1.1 eliminates the need for 24.3.14.4.1.2 because 24.3.14.4.1.1 allows a Level 1 pathway for all Pathways Classes without any minimum fire-rated construction criteria or separation of incoming and outgoing pathways.

Adding the Pathway classes in 24.3.14.4.1.1 that are not addressed in 24.3.14.4.1.2 separates the requirements for the different pathway classes. Since Class A pathways require incoming and outgoing wiring, Class A pathways have been added to 24.3.14.4.1.2.

Also, the existing 24.3.14.4.1.1. includes a reference to less than 2-hour fire-rated construction where 24.3.14.4.1.2 does not mention any fire-rated construction criteria (which is essentially the same as fire-rated construction less than 2 hours). A reference to “less than 2-hour fire-rated construction criteria” has also been added to 24.3.14.4.1.2 intended to provide consistency, clarity, and eliminate ambiguity.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 172-NFPA 72-2019 [Section No. 24.3.14.4]	
Public Input No. 171-NFPA 72-2019 [Section No. 24.3.14.4.1]	
Public Input No. 171-NFPA 72-2019 [Section No. 24.3.14.4.1]	

Public Input No. 172-NFPA 72-2019 [Section No. 24.3.14.4]

Submitter Information Verification

Submitter Full Name: Daniel Gauvin
Organization: Johnson Controls
Affiliation: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 16 09:37:56 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: Class C, D, and E are not appropriate references. The reference to building construction less than 2 hours is covered elsewhere.

Public Input No. 435-NFPA 72-2019 [Section No. 24.3.14.4]

24.3.14.4

In-building fire emergency voice/alarm communications systems shall comply with 24.3.14.4.1 ~~or~~ or 24.3.14.4.2.

24.3.14.4.1

For systems employing relocation or partial evacuation, a Level 2 or Level 3 pathway survivability shall be required, unless otherwise permitted in 24.3.14.4.1.1 ~~or~~ , 24.3.14.4.1.2 or 24 . 3.14.4.1.3 .

24.3.14.4.1.1

Where notification zones are separated by less than 2-hour fire-rated construction, a pathway survivability of Level 1, 2 or 3 shall be permitted.

24.3.14.4.1.2

Where Class X or Class N system pathways are installed and the incoming and outgoing pathways are separated by at least one-third the maximum diagonal of the notification zone, a pathway survivability of Level 1, 2 or 3 shall be permitted.

24.3.14.4. 1.3

Where an analysis performed by the registered design professional demonstrates that a full-building evacuation results in an evacuation time less than 1 hour, a pathway surviability of Level 1, 2 ,or 3 shall be permitted.

24.3.14.4.2

For systems that do not employ relocation or partial evacuation, a Level 0, Level 1, Level 2, or Level 3 pathway survivability shall be permitted.

Statement of Problem and Substantiation for Public Input

The current requirement would not permit Level 1 pathway survivability in buildings that can demonstrate that a full-building evacuation results in an evacuation time less than 1 hour. This option would permit these type of buildings to meet Level 1 pathway survivability requirements in lieu of Level 2 or Level 3 pathway survivability requirements.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 436-NFPA 72-2019 [Section No. 24.3.14.9]	

Submitter Information Verification

Submitter Full Name: David Frable
Organization: US General Services Administration
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 11:04:44 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The relocation or partial evacuation may leave people in the premises for greater than 1 hour.

Public Input No. 171-NFPA 72-2019 [Section No. 24.3.14.4.1]

24.3.14.4.1

For systems employing relocation or partial evacuation, a Level 2 or Level 3 pathway survivability shall be required, unless otherwise permitted in 24.3.14.4.1.1 or 24.3.14.4.1.2.

24.3.14.4.1.1

Where notification zones are separated by less than 2-hour fire-rated construction, a pathway survivability of Level 1, 2 or 3 shall be permitted.

~~**24.3.14.4.1.2** –~~

~~Where Class X or Class N system pathways are installed and the incoming and outgoing pathways are separated by at least one-third the maximum diagonal of the notification zone, a pathway survivability of Level 1, 2 or 3 shall be permitted.~~

Statement of Problem and Substantiation for Public Input

24.3.14.4.1.1 currently allows a Level 1 pathway (which requires the building to be fully protected by an NFPA 13 Sprinkler System and wiring to be installed in metal raceways);
- Where notification zones are separated by less than 2-hour fire-rated construction (i.e. no minimum construction fire-rating criteria), and
- There is no reference to Pathway Class requirements or limitations

24.3.14.4.1.2 currently allows a Level 1 pathway (which requires the building to be fully protected by an NFPA 13 Sprinkler System and wiring to be installed in metal raceways);
- With no minimum construction fire-rating criteria,
- Where Class X or Class N system pathways are installed and the incoming and outgoing pathways are separated by at least one-third the maximum diagonal of the notification zone.

Since each of these sections stand on their own, as written 24.3.14.4.1.1 eliminates the need for 24.3.14.4.1.2 because 24.3.14.4.1.1 allows a Level 1 pathway for all Pathways Classes without any minimum fire-rated construction criteria or separation of incoming and outgoing pathways. As such 24.3.14.4.1.2 should be deleted since 24.3.14.4.1.1 is all that is necessary and 24.3.14.4.1.2 causes confusion.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 172-NFPA 72-2019 [Section No. 24.3.14.4]	
Public Input No. 173-NFPA 72-2019 [Section No. 24.3.14.4]	
Public Input No. 172-NFPA 72-2019 [Section No. 24.3.14.4]	
Public Input No. 173-NFPA 72-2019 [Section No. 24.3.14.4]	

Submitter Information Verification

Submitter Full Name: Daniel Gauvin
Organization: Johnson Controls
Affiliation: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 16 09:10:45 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The Technical Committee recognizes the concerns of the proposal and the committee is going to have a Task Group review this issue in preparation for second draft. The Task Group will be looking at pathway survivability throughout Chapter 24 and other chapters outside of Chapter 24. They will be looking to define the survivability levels.

Public Input No. 545-NFPA 72-2019 [Section No. 24.3.14.4.1 [Excluding any Sub-Sections]]

For systems employing relocation or partial evacuation, a Level ~~2~~ 1 or Level ~~3~~ 2 pathway survivability shall be required, unless otherwise permitted in 24.3.14.4.1.1 or 24.3.14.4.1.2.

Statement of Problem and Substantiation for Public Input

New buildings with fire sprinklers and passive fire protection, have a very good fire safety record with very few high rise/commercial building fire deaths. The confusion with enforcement and the extreme costs/lack of materials to cost effectively provide 2 hour ratings, justify that we look hard that new buildings with fire sprinklers and all pathways in conduit provide a reasonable level oflife safety. For existing buildings without fire sprinklers then 2 hour rated pathways could be justifiable. Another area that should be looked into is the evacuation time planned for the building, we may find that most can be evacuated within one hour.
The goal at the first draft meeting is to discuss this, and if the Committee see value, we can create a task group to review with entire topic in detail and submit a Public Comment for all to review.

Submitter Information Verification

Submitter Full Name: Daniel Finnegan
Organization: Siemens Industry, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 10:41:22 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5221-NFPA 72-2019
Statement: New buildings with fire sprinklers and passive fire protection have a very good fire safety record with very few high rise/commercial building fire deaths. The confusion with enforcement and the extreme costs/lack of materials to cost effectively provide 2 hour ratings, justify that we look hard that new buildings with fire sprinklers and all pathways in conduit provide a reasonable level of life safety. For existing buildings without fire sprinklers then 2 hour rated pathways could be justifiable. Another area that should be looked into is the evacuation time planned for the building, one may find that most can be evacuated within one hour.

Public Input No. 436-NFPA 72-2019 [Section No. 24.3.14.9]

24.3.14.9*

Area of refuge (area of rescue assistance) emergency communications systems shall comply with 24.3.14.9.1 and 24.3.14.9.~~3~~ 2 .

24.3.14.9.1

Area of refuge wired emergency communications systems that are installed where the building has less than 2-hour fire-rated construction shall have a pathway survivability of Level 1, 2, or 3.

24.3.14.9.~~2~~ 1.1

Area of refuge wired emergency communication systems that are installed where the building has 2-hour fire-rated construction or greater shall have a pathway survivability of Level 2 or 3.

24.3.14.9.

~~3~~

1.2

Area of refuge wired emergency communication systems that are installed where an analysis performed by the registered design professional demonstrates that a full-building evacuation results in an evacuation time less than 1 hour shall have a pathway survivability of Level 1, Level 2 or Level 3.

24.3.14.9.2

Circuits intended to transmit off-premises shall have a pathway survivability of Level 0, Level 1, Level 2, or Level 3.

Statement of Problem and Substantiation for Public Input

The current requirement would not permit Level 1 pathway survivability in buildings that can demonstrate that a full-building evacuation results in an evacuation time less than 1 hour. This option would permit these type of buildings to meet Level 1 pathway survivability requirements in lieu of Level 2 or Level 3 pathway survivability requirements.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 435-NFPA 72-2019 [Section No. 24.3.14.4]	

Submitter Information Verification

Submitter Full Name: David Frable
Organization: US General Services Administration
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 11:33:12 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: It is inappropriate to tie in full building evacuation when dealing with areas of refuge.

Public Input No. 521-NFPA 72-2019 [New Section after 24.3.14.10]

TITLE OF NEW CONTENT

24.3.14.10 Stairway communication systems shall comply with 24.3.14.10.1 and 24.3.14.10.2.

24.3.14.10.1 Stairway communication systems that are installed where the building has less than 2-hour fire-rated construction shall have a pathway survivability of Level 1, Level 2 or Level 3.

24.3.14.10.1.1Stairway communication systems that are installed where an analysis performed by the registered design professional demonstrates that a full-building evacuation results in an evacuation time less than 1 hour shall have a pathway survivability of Level 1, Level 2 or Level 3.

24.3.14.10.1.2 Stairway communication systems that are installed where the building has a 2-hour fire-rated construction shall have a pathway survivability of Level 2 or Level 3.

24.3.14.10.2 Circuits intended to transmit off-premises shall have a pathway survivability of Level 0, Level 1, Level 2, or Level 3.

24.3.14.11 Elevator landing communication systems shall comply with 24.3.14.11.1 and 24.3.14.11.2.

24.3.14.11.1 Elevator landing communication systems that are installed where the building has less than 2-hour fire-rated construction shall have a pathway survivability of Level 1, Level 2 or Level 3.

24.3.14.11.1.1 Elevator landing communication systems that are installed where an analysis performed by the registered design professional demonstrates that a full-building evacuation results in an evacuation time less than 1 hour shall have a pathway survivability of Level 1, Level 2 or Level 3.

24.3.14.11.1.2 Elevator landing communication systems that are installed where the building has a 2-hour fire-rated construction shall have a pathway survivability of Level 2 or Level 3.

24.3.14.11.2 Circuits intended to transmit off-premises shall have a pathway survivability of Level 0, Level 1, Level 2, or Level 3.

24.3.14.12 Occupant evacuation elevator lobby communication systems comply with 24.3.14.12.1 and 24.3.14.12.2.

24.3.14.12.1 Occupant evacuation elevator lobby communication systems that are installed where the building has less than 2-hour fire-rated construction shall have a pathway survivability of Level 1, Level 2 or Level 3.

24.3.14.12.1.1 Occupant evacuation elevator lobby communication systems that are installed where an analysis performed by the registered design professional demonstrates that a full-building evacuation results in an evacuation time less than 1 hour shall have a pathway survivability of Level 1, Level 2 or Level 3.

24.3.14.12.1.2 Occupant evacuation elevator lobby communication systems that are installed where the building has a 2-hour fire-rated construction shall have a pathway survivability of Level 2 or Level 3.

24.3.14.12.2 Circuits intended to transmit off-premises shall have a pathway survivability of Level 0, Level 1, Level 2, or Level 3.

Additional Proposed Changes

File Name	Description	Approved
Insert_as_new_24.3.14.10.docx	Insert new 24.3.14.10 thru 24.3.14.12 and renumber existing sections	

Statement of Problem and Substantiation for Public Input

Inserted new text for clarity since NFPA 72 does not specifically address pathway survivability for topics covered in

24.10. In addition, it appears the current requiremenst would not permit Level 1 pathway survivability in buildings that can demonstrate that a full-building evacuation results in an evacuation time less than 1 hour for stairway communication systems, elevator landing communication systems, and occupant evacuation elevator lobby communication systems. This option would permit these type of buildings to meet Level 1 pathway survivability requirements in lieu of Level 2 or Level 3 pathway survivability requirement.

Submitter Information Verification

Submitter Full Name: David Frable
Organization: US General Services Administration
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 20:29:49 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The criteria is provide in 24.3.14.7. Occupant evacuation elevators are not typically provided in 1 hour rated construction.

Public Input No. 189-NFPA 72-2019 [Section No. 24.3.14.10]

~~**24.3.14.10** –~~

~~Elevator emergency communications systems shall have a pathway survivability of Level 0, Level 1, Level 2, or Level 3.~~

Statement of Problem and Substantiation for Public Input

This section should be deleted since the "Elevator emergency communication system" was removed from section 24.3.7.2 and was placed in the annex. This ELEVATOR communication system is the 2-way communication system installed inside elevator cars and is specified by the ASME A 17.1 code. It is installed inside elevator cars and serviced by elevator personnel and it is monitored by elevator call centers. It has nothing to do with the other building 2-way ECS specified in section 24.3.7.2 (This is why this system was removed from the body of the code in the 2019 edition)
NFPA 72 should not specify requirements for a system which is defined and specified by the ASME A17.1 code and therfore, this section should be deleted

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 26 14:59:31 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5240-NFPA 72-2019

Statement: This section should be deleted since the "Elevator emergency communications system" was removed from Section 24.3.7.2 and was placed in the annex. This ELEVATOR communication system is the 2-way communications system installed inside elevator cars and is specified by the ASME A17.1 code. It is installed inside elevator cars and serviced by elevator personnel and could be monitored by elevator call centers. It has nothing to do with the other building 2-way ECS specified in Section 24.3.7.2. (This is why this system was removed from the body of the Code in the 2019 edition).

NFPA 72 should not specify requirements for a system which is defined and specified by the ASME A17.1 code and therefore, the Technical Committee deletes this paragraph.

Public Input No. 321-NFPA 72-2019 [Section No. 24.4.1 [Excluding any Sub-Sections]]

The in-building fire emergency voice/alarm communications system shall be used to provide an automatic response to the receipt of a signal indicative of a fire alarm~~ or other emergency~~ .

Statement of Problem and Substantiation for Public Input

The EVACS should only provide automatic pre-recorded messages associated with FIRE emergencies based on activation of Fire alarm initiating devices. While the EVACS could be potentially used to transmit LIVE Non-Fire emergency messages - these Non-Fire emergency messages should not be automatically initiated by the EVACS. This section is only related to Fire EVACS and not to MNS or other ECS.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 15:39:24 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: Removing "or other emergency" is too restrictive and the fire alarm system may be used to communicate other information (i.e. CO, weather).

Public Input No. 78-NFPA 72-2019 [Section No. 24.4.2.1]

24.4.2.1

Unless otherwise permitted by 24.4.8, evacuation messages shall be preceded and followed by a minimum of two cycles of the ~~emergency evacuation signal~~ emergency signal specified in 18.4.2 or 18 . 4.3 .

Statement of Problem and Substantiation for Public Input

The reference is needed for instances where carbon monoxide detectors are included in the system.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 18:52:24 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5242-NFPA 72-2019
Statement: The reference is needed for instances where carbon monoxide detectors are included in the system. The Technical Committee adds Annex text for further clarification.

Public Input No. 323-NFPA 72-2019 [Section No. 24.4.5.2]

24.4.5.2

Controls shall be located or secured to allow access only by ~~trained and authorized~~ emergency or authorized personnel.

Statement of Problem and Substantiation for Public Input

Both authorized and Emergency personnel must be trained. This PI is related to the new proposed definitions for emergency and trained personnel.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 164-NFPA 72-2019 [New Section after 3.3.23]	new proposed definition
Public Input No. 165-NFPA 72-2019 [New Section after 3.3.94]	new proposed definition

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 15:51:20 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: It is important that the word "trained" be maintained because those using the equipment must have appropriate training. Emergency personnel are encompassed in the term authorized personnel.

Public Input No. 325-NFPA 72-2019 [Section No. 24.4.5.7]

24.4.5.7

If live voice instructions are provided, they shall comply with 21.3.6.6. and perform as follows:

(1) They shall override previously initiated signals to the selected notification zone.

(2) They shall have priority over any subsequent automatically initiated signals to the selected notification zone.

(3) If a previously initiated recorded message is interrupted by live voice instructions, upon release of the microphone, the previously initiated recorded messages to the selected notification zones shall not resume playing automatically unless required by the emergency response plan.

(4) When the microphone is keyed by emergency or authorized personnel, it shall also activate the visual notification at the same area(s) where the live voice instructions are transmitted, to alert hearing-impaired occupants of an emergency. Upon release of the microphone, the visual notification shall deactivate.

Statement of Problem and Substantiation for Public Input

It is important that Live messages should only be provided by trained emergency or authorized personnel during Fire or non-fire emergencies. This PI is related to the proposed PI in 21.3.6.6.
The last proposed item (4) requires to have the visual notification appliances (strobes, signs, etc.) located at the same areas of the audible appliances being used for manual paging to also activate. This is required in order to alert hearing-impaired persons that an emergency has occurred and it will trigger them to seek additional information regarding the nature of this emergency. Without having visual notification, hearing-impaired persons may not be aware that a live emergency instructions are in effect and this is unsafe condition.

This is also the intent of Section 24.5.16.4

24.5.16.4 Transmission of visual notification and messages shall be simultaneous to audible notification and messages.

Also, Section 10.12 has a requirement to deactivate both audible and visual signals which means that both audible and visual signals must be activated together. This should also apply for live emergency messages:

A.10.12 It is the intent that both visual and audible appliances are shut off when the notification appliance silence feature is activated on the fire alarm control unit.
Per the ADA, it is important not to provide conflicting signals for the hearing or visually impaired.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 319-NFPA 72-2019 [New Section after 24.3.6.5]	emergency or authorized personnel
Public Input No. 343-NFPA 72-2019 [Section No. 24.5.16.1]	
Public Input No. 345-NFPA 72-2019 [Section No. 24.5.16.4]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:

Zip:
Submittal Date: Thu Jun 20 16:00:00 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: When a microphone key button is released the emergency situation may still be active and one would not want the visual notification appliances to stop. The microphone is not solely used for evacuation purposes.

Public Input No. 390-NFPA 72-2019 [New Section after 24.4.8.3.1]

24.4.8.3.2* When the message is recorded, it shall be periodically repeated, until silenced or reset by emergency personnel.

24.4.8.3.3* The periodic interval between the subsequent message sequences shall be a minimum of three minutes.

Statement of Problem and Substantiation for Public Input

There was significant debate during the 2019 code cycle regarding the merits of continuous repetition of audible messaging during fire related partial evacuation and/or relocation. Continuous verbal messaging, repeating the same instructions over and over without a break, is considered by some to be the safest approach. Not letting up for even an instant, until a fire response official can attend the site, evaluate the risks, and then manually silence the audible messaging has been positioned as what should be the default procedure across the nation. However, there is too much that can go wrong with this approach to be considered the default position taken by this code. Some of the reasons are spelled out in related annex public inputs, so I won't repeat them all here. But the fundamental problem with a barrage of continuous messaging is the impairment created for effective interpersonal communications between the occupants (including staff) that may be assisting confused, impaired, or disabled individual in following the instructions being provided. It has been argued on the floor of the NFPA convention that emergency procedure cannot cater to the minority. This attitude is specifically disallowed by the ADA where, by law we must provide emergency response plans that are inclusive of people with disabilities.

Additionally, Effective Emergency Management: Making Improvements for Communities and People with Disabilities, published by the National Council on Disability in Aug.12, 2009, concludes: "People with disabilities are often forgotten during the response phase of a disaster. Historically, our society has approached people with disabilities by implying they need to take on “extra” personal responsibility to avoid the consequences of disaster rather than by addressing the built environment and social responsibility in an effort to create a safer setting for everyone. When people with disabilities are remembered, they are often grouped into one homogeneous population and provided with instructions that are not appropriately communicated or that are impossible for everyone to follow. "

It is our responsibility to respect the rights of all people, whether young children, or people physically, sensory, cognitively, or emotionally impaired, and to expect that emergency response plans are being created to consider the existence of all people of all abilities.

Yet in the argument for continuous notification some suggest convincingly that the existing code, in only requiring the message sequence to be repeated three times, does not go far enough. They argue that the scope of this requirement is small, and this section only applies to fire related emergencies. Where in reality, a fire alarm activation is not exclusively used only in instances of fire. This series of public inputs addresses those concerns in a balance way with the support of research referenced in the Annex to establish an informed basis for the creation of inclusive emergency response plans.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 391-NFPA 72-2019 [New Section after A.24.4.8]	

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 11:57:56 EDT 2019

Committee: SIG-ECS

Committee Statement

Resolution: FR-5253-NFPA 72-2019

Statement: There was significant debate during the 2019 code cycle regarding the merits of continuous repetition of audible messaging during fire related partial evacuation and/or relocation. Continuous verbal messaging, repeating the same instructions over and over without a break, is considered by some to be the safest approach. Not letting up for even an instant, until a fire response official can attend the site, evaluate the risks, and then manually silence the audible messaging has been positioned as what should be the default procedure across the nation. However, there is too much that can go wrong with this approach to be considered the default position taken by this Code. Some of the reasons are spelled out in related annex public inputs. But the fundamental problem with a barrage of continuous messaging is the impairment created for effective interpersonal communications between the occupants (including staff) that may be assisting a confused, impaired, or disabled individual in following the instructions being provided. It has been argued on the floor of the NFPA conference that emergency procedure cannot cater to the minority. This attitude is specifically disallowed by the ADA where, by law one must provide emergency response plans that are inclusive of people with disabilities.

Additionally, Effective Emergency Management: Making Improvements for Communities and People with Disabilities, published by the National Council on Disability in Aug.12, 2009, concludes: "People with disabilities are often forgotten during the response phase of a disaster. Historically, our society has approached people with disabilities by implying they need to take on “extra” personal responsibility to avoid the consequences of disaster rather than by addressing the built environment and social responsibility in an effort to create a safer setting for everyone. When people with disabilities are remembered, they are often grouped into one homogeneous population and provided with instructions that are not appropriately communicated or that are impossible for everyone to follow. "

It is our responsibility to respect the rights of all people, whether young children, or people physically, sensory, cognitively, or emotionally impaired, and to expect that emergency response plans are being created to consider the existence of all people of all abilities.

Yet in the argument for continuous notification some suggest convincingly that the existing code, in only requiring the message sequence to be repeated three times, does not go far enough. They argue that the scope of this requirement is small, and this section only applies to fire related emergencies. Where in reality, a fire alarm activation is not exclusively used only in instances of fire. This series of public inputs addresses those concerns in a balance way with the support of research referenced in the Annex to establish an informed basis for the creation of inclusive emergency response plans.

Public Input No. 299-NFPA 72-2019 [Section No. 24.4.8.3.1]

24.4.8.3.1*

The sequence [the alert tone followed by the message(s)] shall be ~~repeated at least three times~~ continously repeated, until silenced or reset by emergency personnel, to inform and direct occupants in the signaling zone where the alarm initiation originated, as well as other signaling zones in accordance with the building fire safety plan.

Additional Proposed Changes

File Name	Description	Approved
A2018_Floor_Actions_Tech_Session.pdf	NFPA 72 2018 Tech-Session CAM 72-5	

Statement of Problem and Substantiation for Public Input

The intent of this PI is based on the 2018 NFPA Tech-Session CAM 72-5 and it is very similar to CAM 72-2.

The intent is simply to prohibit automatic cut-off of FIRE ALARM RELOCATION Emergency pre-recorded messages and to only allow manual silence or reset of the notification signal by firefighters or other emergency personnel.

It was obvious during the 2018 Tech-Session debate that most of the Association membership disagree with the concept of allowing automatic cut-off of fire alarm notification signals.

The 2018 NFPA membership opinion is aligned with the NFPA 72 code language a few code cycles ago which prohibited automatic cut-off of notification signal in the body of the code because it was simply unsafe.

The actual FIRE EMERGENCY RELOCATION time is unknown. It could be only estimated or guessed but most people agree that each fire is different and there are many potential unknown factors that can affect the actual occupants relocation time.

This PI is related to Automatic FIRE Emergency Relocation Messages only and NOT to MNS or other NON- Fire emergencies.

If there is a FIRE Emergency which requires the relocation of occupants from one unsafe FIRE area to another safer area within the building - then, the pre-recorded FIRE Emergency relocation message should continue to sound non-stop to ensure that all occupants are safely relocated to the safer area.

It is never known how much time it will take to safely relocate during a real FIRE scenario - the relocation time can only be estimated but it is uncertain.

If a FIRE relocation message will only sound for three cycles and then automatically stop - this might create an unsafe condition.

This is the purpose of this PI which was supported by NFPA membership with a 287-160 majority during the 2018 Tech Session CAM 72-5. This is what most of the public and association membership believe is the safe operation for FIRE emergency relocation messages.

Only the responding firefighters or other trained emergency personnel should be able to manually stop this life-safety FIRE emergency relocation message after physically ensuring the safety of all building occupants.

If the code will allow the automatic cut-off of the message after 3 or more cycles - this might cause unsafe condition when relocating occupants may stop their relocation procedure and relocated occupants may return to the unsafe fire area as they may think that the emergency condition has ended. This is unsafe!

There is nothing unsafe if the FIRE emergency relocation message will keep sounding for a few minutes until the responding firefighters (or other emergency personnel) will investigate the Fire conditions and ensure the safety of all building occupants before they stop the pre-recorded message.

While It might be a little inconvenience for some occupants to listen to the message for a few minutes, there is nothing unsafe with that.

Of course, that in some specific occupancies such as health care facilities or in occupancies housing people with special needs or in jurisdiction where response time is long, etc. - the relocation messages sequence could have different operation on a Case-by-case basis as a proposed approved alternative specified in 24.4.8.3.2. But the code should not be written for case-by case scenarios and for specific occupancies.

This code section should include the safest language as a default language for most buildings and occupancies and for FIRE related emergency pre-recorded relocation messages only and not for MNS or other Non-Fire emergency potential scenarios.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 300-NFPA 72-2019 [New Section after A.24.8]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 15:57:18 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5257-NFPA 72-2019
Statement: The Technical Committee adds annex text for clarification.

Public Input No. 327-NFPA 72-2019 [Section No. 24.4.8.5.2]

24.4.8.5.2

~~Manually activated loudspeakers shall be permitted in exit stair enclosures, exit passageways, and elevators in buildings that have emergency voice/alarm communications systems in accordance with Section~~ Where required by other governing laws, codes, or standards; loudspeakers shall be provided in locations specified in 24.4.8.5 and shall conform to Section 24.4.

Statement of Problem and Substantiation for Public Input

There is no need to indicate: "Manually activated loudspeakers" in this section since Section 24.4.8.5 already indicates these speakers are "for manual paging only"
Also, these Manual Paging speakers are Required by the IFC and IBC (EVACS section 907.5.2.1 - OEE and 907.5.2.2.) and therefore NFPA 72 should not have a permissive language.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 17:09:59 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5259-NFPA 72-2019
Statement: There is no need to indicate: "Manually activated loudspeakers" in this section since Section 24.4.8.5 already indicates these loudspeakers are "for manual paging only".

Also, these manual paging speakers are required by the IFC and IBC (EVACS section 907.5.2.1 - OEE and 907.5.2.2.) and therefore NFPA 72 should not have permissive language.

Public Input No. 554-NFPA 72-2019 [Section No. 24.4.8.6.4]

24.4.8.6.4

Where the separation of in-building fire emergency voice/alarm ~~control~~ equipment locations results in the portions of the system ~~controlled by~~ in one location being dependent upon the ~~control~~ equipment in other locations, the circuits between the dependent ~~controls shall~~ locations shall be protected against attack by fire by the protection provided by the pathway survivability level required in 24.3.14.4.1 or by performance alternatives approved by the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The proposed changes deletes this undefined term to prevent confusion.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:59:52 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 555-NFPA 72-2019 [Section No. 24.4.8.6.5]

24.4.8.6.5

Protection of circuits between redundant ~~control~~ equipment locations that are not mutually dependent shall not be required.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The proposed changes deletes this undefined term to prevent confusion.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:03:44 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 556-NFPA 72-2019 [Section No. 24.4.8.6.6]

24.4.8.6.6

Where the separation of the in-building fire emergency voice/alarm ~~control~~ equipment occurs as in 24.4.8.6.4, and where the circuits are run through junction boxes, terminal cabinets or control equipment, such as system control units, power supplies and amplifiers, and where cable integrity is not maintained, these components shall, in addition to the pathway survivability required by 24.3.14.4.1, be protected by using one of the following methods:

(1) A 2-hour fire–rated enclosure

(2) A 2-hour fire–rated room

(3) Other equivalent means to provide a 2-hour fire resistance–rating approved by the authority having jurisdiction

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The proposed changes deletes this undefined term to prevent confusion.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:05:33 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 342-NFPA 72-2019 [Section No. 24.5.2.1]

24.5.2.1*

~~Authorized~~ Only emergency or authorized personnel shall be permitted to control message initiation over the mass notification system.

Statement of Problem and Substantiation for Public Input

This will ensure that only Emergency personnel or authorized personnel will have control over MNS messages. No other person should have such control.
This is related to the proposed PIs for Emergency and Authorized personnel definitions.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 164-NFPA 72-2019 [New Section after 3.3.23]	new proposed definition
Public Input No. 165-NFPA 72-2019 [New Section after 3.3.94]	new proposed definition

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 13:49:17 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: Authorized personnel can include emergency personnel.

Public Input No. 163-NFPA 72-2019 [Section No. 24.5.9.3]

24.5.9.3

Where no listed device exists for the detection required by the emergency response plan, ~~nonlisted~~ non-listed devices shall be permitted to be used if their failure will not impair the operation of the mass notification system.

Statement of Problem and Substantiation for Public Input

The word nonlisted is a typo - it should be changed to non-listed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 162-NFPA 72-2019 [Section No. 24.3.1.2]	same typo error nonlisted should be changed to non-listed

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 19:11:23 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5260-NFPA 72-2019
Statement: The word nonlisted is a typo. The Technical Committee changes it to non-listed.

Public Input No. 375-NFPA 72-2019 [Section No. 24.5.11.5]

24.5.11.5

When the ACU is integrated with the building fire alarm control unit to form one combined system that performs both functions, the system shall meet the secondary (standby) power requirements of this chapter.

Statement of Problem and Substantiation for Public Input

"Standby power" is not a defined term, and while used extensively in the form proposed here "secondary (standby) power" in tables, for Chapter 14 Inspection, Testing , & Maintenance, and elsewhere, the term "standby power" is not used in fundamentals. It is only used in reference to locations (i.e., standby power rooms in 24.8.12), and standby power status indicators (24.11.1.2), and several places in Annex A, and in reference to NFPA 110 & 111.

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 16:43:24 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5261-NFPA 72-2019
Statement: "Standby power" is not a defined term, and while used extensively in the form proposed here "secondary (standby) power" in tables, for Chapter 14 Inspection, Testing, and Maintenance, and elsewhere, the term "standby power" is not used in Chapter 10. It is only used in reference to locations (i.e., standby power rooms in 24.8.12), and standby power status indicators (24.11.1.2), and several places in Annex A, and in reference to NFPA 110 & 111.

Public Input No. 343-NFPA 72-2019 [Section No. 24.5.16.1]

24.5.16.1

Where automatic or manual audible notification is provided, mass notification systems shall also provide visual notification information to serve the hearing impaired and for high-noise areas.

Statement of Problem and Substantiation for Public Input

This is proposed to ensure that even if live messages are being broadcasted via the microphone, there will be associated visual notification upon keying the microphone.
This is related to the EVACS live messages PI for section 24.4.5.7. It is also related to the intent of Section 24.5.16.4:

24.5.16.4 Transmission of visual notification and messages shall be simultaneous to audible notification and messages.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 325-NFPA 72-2019 [Section No. 24.4.5.7]	visual notification for live messages

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 13:55:21 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: Adding "automatic or manual" is unnecessary, the term "audible" is inherently "automatic or manual".

Public Input No. 345-NFPA 72-2019 [Section No. 24.5.16.4]

24.5.16.4

Transmission of visual notification and messages shall be simultaneous to automatic and manual audible notification and messages.

Statement of Problem and Substantiation for Public Input

This has the same intent of the PIs related to simultaneous Audible and Visual notification and it specifically requires associated visual notification for BOTH manual and automatic audible paging. The visual notification is typically provided automatically upon automatic voice messages, but they typically are not provided when the microphone is keyed for live announcements.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 325-NFPA 72-2019 [Section No. 24.4.5.7]	visual notification for live messages

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 14:08:16 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: Adding "automatic or manual" is unnecessary, the term "audible" is inherently "automatic or manual".

Public Input No. 232-NFPA 72-2019 [Section No. 24.6.11 [Excluding any Sub-Sections]]

Interfaces between wide-area mass notification systems and in-building mass notification systems, other alert and notification systems, regional mass notification systems, and off-~~site~~ premise interfaces shall have a standard interface method (such as an audio line–level output and multiple relay contacts) or supply the necessary communications protocols to provide interoperability and a secure communications link.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 15:58:38 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5273-NFPA 72-2019
Statement: Off-site is not the correct term. The term used throughout NFPA 72 is "off-premises."

Public Input No. 557-NFPA 72-2019 [Section No. 24.8.7]

24.8.7

A ~~notification~~ signal at the control ~~equipment~~ unit , distinctive from any other alarm, supervisory, or trouble signal, shall indicate the off-hook condition of a calling telephone circuit.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:08:54 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue. No substantiation was provided for deleting "notification".

Public Input No. 558-NFPA 72-2019 [Section No. 24.8.15]

24.8.15

If the control ~~equipment provided~~ unit provided does not indicate the location of the caller (common talk systems), each telephone station or telephone jack shall be clearly and permanently labeled to allow the caller to identify his or her location to the control center by voice.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:11:37 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 305-NFPA 72-2019 [Section No. 24.9.1]

~~**24.9.1** – Non-interference.~~

~~**24.9.1.1** –~~

~~No amplification system capable of operating on frequencies or causing interference on frequencies assigned to the jurisdiction by the FCC shall be installed without prior coordination and approval of the authority having jurisdiction.~~

~~**24.9.1.2** –~~

~~The building manager/owner shall suspend and correct other equipment installations that degrade the performance of the public safety radio system or public safety radio enhancement system.~~

Statement of Problem and Substantiation for Public Input

This action is taken to delete the balance of code language to avoid confusion and have the designers, stakeholders and authority having jurisdiction go to NFPA 1221 for all requirements for Emergency Radio Enhancement Systems. These systems are not a part of the Building Fire Alarm System, we only monitor some points as outlined in NFPA 1221.

Submitter Information Verification

Submitter Full Name: Daniel Finnegan
Organization: Siemens Industry, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 17 08:18:04 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5275-NFPA 72-2019
Statement: The Technical Committee deletes the balance of code language to avoid confusion and to have the designers, stakeholders and authority having jurisdiction go to NFPA 1221 for all requirements for Emergency Radio Enhancement Systems. These systems are not a part of the Building Fire Alarm System, monitoring is as outlined in NFPA 1221.

Public Input No. 152-NFPA 72-2019 [New Section after 24.9.2]

TITLE OF NEW CONTENT

Type your content here ...

24.10.1 Systems used for Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems, Stairway Communications Systems, Elevator Landing Communications Systems, and Occupant Evacuation Elevator Lobby Communications Systems shall be listed to UL 2525 Standard for Rescue Assistance Two-Way Emergency Communication Systems for Stairwell and Elevator Landing/Lobby Areas of Refuge.

Statement of Problem and Substantiation for Public Input

NFPA 72 required these systems to monitor for integrity (supervision) and UL created a new Standard to allow products to be listed. This same process was used for MNS and UL 2572. This language directs the user to ensure that these systems conform to the new UL Standard and are now aware that the new Standard exists.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 07 12:22:08 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5276-NFPA 72-2019
Statement: NFPA 72 required these systems to monitor for integrity (supervision) and UL created a new Standard to allow products to be listed. This same process was used for MNS and UL 2572. This language directs the user to ensure that these systems conform to the new UL Standard (or equivalent) and are now aware that the new Standard exists.

Public Input No. 306-NFPA 72-2019 [New Section after 24.9.2]

TITLE OF NEW CONTENT

A 24.9.2.1 The intent of these systems is to provide reliable radio communications for first responders within all buildings in their jurisdiction. The building codes now require these systems in lieu of fire fighter telephones. These are not Building Life Safety Systems and have no direct bearing on providing life safety to the occupants.

NFPA 1221 is followed by 911 Centers, Dispatchers and municipal radio operations centers. It is the best standard to follow for these systems.

Dedicated fire fighter telephone (FFT) systems were required in high-rise buildings to assist first responder's ability to communicate within the building and to communicate primarily to the fire ground commander located at the fire command center. Although Two-Way Radio Communications Enhancement Systems were allowed during these early years, the radio systems were not as reliable as they are today. In addition, because the FFTs were generally supplied by the manufacturers of the fire alarm systems, designers, AHJs and installers wrongly assumed the FFTs were a part of the life safety system and were required (they were, only in lieu of not installing an ERRCS). Today the opposite is true. Since 2009, the building and fire codes require the ERRCS, allowing the FFT only by permission of the AHJ.

Statement of Problem and Substantiation for Public Input

This new annex material is intended to provide additional guidance to the designers, installers, stakeholders and authority having jurisdiction that these systems fall under the scope of NFPA 1221, and are not part of the building fire alarm design or building occupant life safety systems. They are an important tool for first responders.

Submitter Information Verification

Submitter Full Name: Daniel Finnegan
Organization: Siemens Industry, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 17 08:23:01 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5277-NFPA 72-2019
Statement: This new annex material is intended to provide additional guidance to the designers, installers, stakeholders and authority having jurisdiction that these systems fall under the scope of NFPA 1221. They are an important tool for first responders.

Public Input No. 227-NFPA 72-2019 [Section No. 24.10]

24.10* ~~Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems, Stairway Communications Systems, Elevator Landing Communications Systems, and Occupant Evacuation Elevator Lobby Communications Systems.~~ Rescue Assistance Two-Way Emergency Communication Systems for Stairwell and Elevator Landing/Lobby Areas of Refuge

24.10.1

Where required by the enforcing authority, governing laws, codes, or standards, any communications system specified in this section shall be installed in accordance with 24.10.2 through 24.10.11.

24.10.2*

The communications system shall comprise remotely located communications stations, a master control unit, and a primary and secondary power supply as required by Section 10.6.

24.10.2.1

When a remote communications station(s) is activated by a building occupant(s), a two-way live voice communication shall be required to operate between the remote communications station(s) and a constantly attended location.

24.10.2.2*

The master control unit shall be installed in a central control point within the building.

24.10.2.3*

The constantly attended location shall be located either within the building or at an off-site monitoring location and shall be approved by the authority having jurisdiction.

24.10.3

The remote communications stations and the master control unit shall communicate with each other via pathways based on their performance capabilities under abnormal (fault) conditions in accordance with the requirements for Class A, Class B, Class N, or Class X pathways specified in Chapter 12.

24.10.4

All pathways between the remote communications stations and the master control unit shall be monitored for integrity.

24.10.5*

If the central control point is not constantly attended, the master control unit shall have a timed automatic communications capability to connect with an off-site constantly attended monitoring location approved by the authority having jurisdiction, where trained personnel can initiate the appropriate response.

24.10.6*

In the event of an off-site connection, a signal shall be transmitted to the off-site monitoring location, identifying the specific building prior to initiating the live voice two-way communication.

24.10.7*

The physical locations of the remote communications stations and the master control unit shall be as designated by the building code in force and the system designer and approved by the authority having jurisdiction.

24.10.8

The specific location of each remote communications station shall be identified on the master control unit display on a floor and area basis.

24.10.9

The remote communications stations shall provide for hands-free, two-way communication, provide an audible and visual signal to indicate communication has occurred, and indicate to the receiver the location sending the signal.

24.10.10

Instructions for the use of the two-way communications system, instructions for summoning assistance via the two-way communications system, and written identification, including in braille, of the location shall be posted adjacent to each remote communications station.

24.10.11*

The communications systems specified in this section shall be permitted to be integrated with each other or other two-way emergency communications system(s) provided they are installed in accordance with Section 24.10.

Statement of Problem and Substantiation for Public Input

These systems are being used for more than just area of refuge. The section should address and does address all of these systems and therefore the title of the section should be changed. The proposed title change is that of the new UL 2525 document, Rescue Assistance Two-Way Emergency Communication Systems for Stairwell and Elevator Landing/Lobby Areas of Refuge.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 15:42:13 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5325-NFPA 72-2019

Statement: These systems are being used for more than just area of refuge. The section should address and does address all of these systems and therefore the title of the section should be changed. The Technical Committee changes the title to Rescue Assistance Two-Way Emergency Communications Systems for Stairwell and Elevator Landing/Lobby Areas of Refuge.

Public Input No. 229-NFPA 72-2019 [Section No. 24.10.1]

24.10.1

Where required by the enforcing authority, governing laws, codes, or standards, any communications system specified in this section shall be ~~installed~~ listed to UL 2525 and installed in accordance with 24.10.2 through 24.10.11.

Statement of Problem and Substantiation for Public Input

Starting in 2016 edition of NFPA 72 chapter 24 required these systems to be supervised. UL has now created a listing document and 72 should require these systems to be listed to the new standard.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 15:49:44 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5276-NFPA 72-2019
Statement: NFPA 72 required these systems to monitor for integrity (supervision) and UL created a new Standard to allow products to be listed. This same process was used for MNS and UL 2572. This language directs the user to ensure that these systems conform to the new UL Standard (or equivalent) and are now aware that the new Standard exists.

Public Input No. 582-NFPA 72-2019 [Section No. 24.10.1]

24.10.1

Where required by the enforcing authority, governing laws, codes, or standards, any communications system specified in this section shall ~~be~~ be listed in accordance with UL 2525 and installed in accordance with its listing and 24.10.2 through 24.10.11.

Statement of Problem and Substantiation for Public Input

Industry has demanded a standard to keep the playing field level and consistent for the benefit of the system users.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:46:36 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5276-NFPA 72-2019
Statement: NFPA 72 required these systems to monitor for integrity (supervision) and UL created a new Standard to allow products to be listed. This same process was used for MNS and UL 2572. This language directs the user to ensure that these systems conform to the new UL Standard (or equivalent) and are now aware that the new Standard exists.

Public Input No. 302-NFPA 72-2019 [New Section after 24.10.2.1]

Area of Refuge System Level Types

Area of refuge systems shall be classifired as one of three types of systems.

1. Type 1 - Stand alone area of refuge that is constantly attended.
2. Type 2 - System premisies area of refuge this is monitoered off premises.
3. Type 3 - Networked area of refuge systems on a premises that are managed locally.

Statement of Problem and Substantiation for Public Input

When working through how these systems will be used and listed the need for multiple types of systems or classifying systems differently is needed. The functionality required in a local system will be different than that of a networked or a system that connects off premises. NFPA 72 needs to define these various types of systems like we do with MNS. Not all Mass notification systems function the same, ie., DRMNS, In building, Outdoor, etc. The same concept is true with AOR.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 18:14:14 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5289-NFPA 72-2019

Statement: When working through how these systems will be used and listed the need for multiple types of systems or classifying systems differently is needed. The functionality required in a local system will be different than that of a networked or a system that connects off-premises. NFPA 72 needs to define these various types of systems as it does for MNS. Not all mass notification systems function the same, ie., DRMNS, In-building, Outdoor, etc. The same concept is true with area of refuge.

The Technical Committee has developed a Task Group to review these requirements and make ITM recommendations.

Public Input No. 301-NFPA 72-2019 [New Section after 24.10.2.2]

The master control unit shall be capable of resetting the remote station after a call has been activated and connected.

Statement of Problem and Substantiation for Public Input

There is confusion as to where a unit can be reset from. The remote call in unit should not be able to be reset at that location but force the master control unit to have this capability. Chapter 24 needs to define how these systems are to function.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 18:09:33 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5289-NFPA 72-2019

Statement: When working through how these systems will be used and listed the need for multiple types of systems or classifying systems differently is needed. The functionality required in a local system will be different than that of a networked or a system that connects off-premises. NFPA 72 needs to define these various types of systems as it does for MNS. Not all mass notification systems function the same, ie., DRMNS, In-building, Outdoor, etc. The same concept is true with area of refuge.

The Technical Committee has developed a Task Group to review these requirements and make ITM recommendations.

Public Input No. 230-NFPA 72-2019 [Section No. 24.10.2.3]

24.10.2.3*

The constantly attended location shall be located either within the building or at an off ~~-site~~ premise monitoring location and shall be approved by the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 15:52:59 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5290-NFPA 72-2019
Statement: Off-site is not the correct term. The term used throughout NFPA 72 is "off-premises." In addition, modifications have been made to the annex language as well.

Public Input No. 233-NFPA 72-2019 [Section No. 24.10.5]

24.10.5*

If the central control point is not constantly attended, the master control unit shall have a timed automatic communications capability to connect with an off-~~site~~ premise constantly attended monitoring location approved by the authority having jurisdiction, where trained personnel can initiate the appropriate response.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 15:59:54 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5292-NFPA 72-2019
Statement: Off-site is not the correct term. The term used throughout NFPA 72 is "off-premises." In addition, modifications have been made to the annex language as well.

Public Input No. 231-NFPA 72-2019 [Section No. 24.10.6]

24.10.6*

In the event of an off-~~site~~ premise connection, a signal shall be transmitted to the off-~~site~~ premise monitoring location, identifying the specific building prior to initiating the live voice two-way communication.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 15:56:57 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5293-NFPA 72-2019
Statement: Off-site is not the correct term. The term used throughout NFPA 72 is "off-premises." In addition, modifications have been made to the annex language as well.

Public Input No. 243-NFPA 72-2019 [New Section after 24.10.10]

Signage

Directions for the use of the two-way communication system, instructions for summoning assistance via the two-way communication system and written identification of the location shall be posted adjacent to the two-way communication system. Signage shall comply with the ICC A117.1 requirements for visual characters.

Statement of Problem and Substantiation for Public Input

The language here is pulled from IBC section 1009.8.2. These are the requirements the field is being asked to comply with. 72 needs to have the same requirements here to provide guidance to the installers on what AHJs are enforcing.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 17:25:29 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5294-NFPA 72-2019
Statement: The language is pulled from IBC section 1009.8.2. These are the requirements the field is being asked to comply with. The Technical Committee adds requirements to provide guidance to the installers on what AHJs are enforcing.

Public Input No. 428-NFPA 72-2019 [New Section after 24.11]

Training for Two Way Communcations Systems

Operators of Two-way Communcations Systems shall be proplery trained and qualifierd per section 10.5.5 in the operation, handling and disatching of calls.

Statement of Problem and Substantiation for Public Input

The operation of these systems are unique and will require a person that is properly educated on how to receive, dispatch and process these calls. The issue of training becomes even more important when multiple calls are coming into the master unit and how those calls will be handled, priority, stacking etc.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 09:43:25 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5297-NFPA 72-2019
Statement: The operation of these systems is unique and will require a person that is properly educated on how to receive, dispatch and process these calls. The issue of training becomes even more important when multiple calls are coming into the master unit and how those calls will be handled, priority, stacking etc.

Public Input No. 374-NFPA 72-2019 [Section No. 24.11.1.2]

24.11.1.2

The emergency command center shall contain the following where supplied :

(1) The in-building fire emergency voice/alarm communications system equipment including:

(2) Fire alarm system controls

(3) Fire alarm system annunciator

(4) In-building fire emergency voice/alarm communications system controls

(5) The in-building mass notification system equipment including:

(6) Mass notification system equipment controls

(7) Area of refuge (area of rescue assistance) emergency communications systems equipment

(8) Elevator emergency communications systems equipment

(9) Distributed recipient MNS control stations where provided

(10) Tables and chairs to accommodate emergency management staff

(11) Other equipment/information deemed necessary by the facility emergency response plan such as:

(12) Displays indicating the location of the elevators and whether they are operational

(13) Status indicators and controls for air-handling systems

(14) Fire fighter's control panel for smoke control systems

(15) Fire department communications unit

(16) Controls for unlocking stairway doors simultaneously

(17) Security systems

(18) Emergency and standby power status indicators

(19) Telephone for emergency use with controlled access to the public telephone system

(20) Schematic building plans indicating the typical floor plan and detailing the building core, means of egress, fire protection systems, security systems, fire-fighting equipment, and fire department access

(21) Generator supervision devices, manual start, and transfer features

(22) Other monitoring, control, information display, and management systems associated with operation of the ECC

Statement of Problem and Substantiation for Public Input

Emergency Command Center for Emergency Communications Systems omits a class of ECS: MNS as defined distinctly from in-building fire emergency voice/alarm communications systems (EVACS) in 24.3.7.1 (2): In-building mass notification system (see 24.5). This corrects that omission.

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:

State:
Zip:
Submittal Date: Sat Jun 22 16:27:04 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5301-NFPA 72-2019
Statement: Emergency Command Center for Emergency Communications Systems omits a class of ECS: MNS as defined distinctly from in-building fire emergency voice/alarm communications systems (EVACS) in 24.3.7.1 (2): In-building mass notification system (see 24.5). This corrects that omission.

Public Input No. 418-NFPA 72-2019 [New Section after 26.2.1.3]

TITLE OF NEW CONTENT

26.2.1.4 The supervising station shall continue to retransmit alarm signls from a protective premises to the communcations center until advised otherwise by the communications center.

26.2.1.5 The responsible party for the alarm system shall advise the supervising station when the fire alarm system is in a condition such that the supervising station can resume retransmitting signals received to the communications center.

Statement of Problem and Substantiation for Public Input

Currently the code in 26.2.1.3 requires that a supervising station retransmitt fire alarm signals to the communication center. The International Association of Fire Chiefs, during the 2013 code cycle, requested that responding fire apparatus be notified of additional signals being received from a protective premises that they were responding to. Currently, the code does not address what to do when signals continue to be transmitted from a protected premises when the fire department is already on the scene and likely is aware that additional signals are being generated due to the severity of an incident. The proposed PI language is intended to begin a dialog on how a supervising station should address additional signals received once the fire department is already on the scene. Continuing to call the communications center during an active fire emergency with alarm signal information adds additional unnecessary work for the supervising station and can overload the communications center.

Submitter Information Verification

Submitter Full Name: Warren Olsen
Organization: Fire Safety Consultants, Inc.
Affiliation: Illinois Fire Inspectors Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 21:41:16 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5228-NFPA 72-2019
Statement: Continuing to call the communications center during an active fire emergency with alarm signal information adds additional unnecessary work for the supervising station and can overload the communications center.

Public Input No. 630-NFPA 72-2019 [New Section after 26.2.9]

26.2.10 Cybersecurity Classification. Cybersecurity design standards and certification requirements shall be in accordance with 10.4.8

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	Part of a broader public input intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:26:17 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5197-NFPA 72-2019
Statement: The Technical Committee on Fundamentals of Fire Alarm and Signaling Systems has added a new section on cyber security (See FR 5122, Section 10.5) and this First Revision is to coordinate with that new section.

Public Input No. 155-NFPA 72-2019 [Section No. 26.4.5]

26.4.5 Personnel.

26.4.5.1

Except as permitted in 26.4.5.2 and 26.4.5.3 , the proprietary supervising station shall be staffed at all times by a minimum of two qualified operators.

26.4.5.2

Where the means for transmitting alarms to the communications center is automatic, the proprietary supervising station shall be permitted to be staffed by a minimum of one qualified operator at all times.

26.4.5.3

–

~~Where the~~

When the proprietary supervising station covers less than 25 buildings, a single operator shall be allowed wihtout an automatic connection to the communications center.

26.4.5.4

Where one qualified operator has the means to automatically stay in communication and have remote control of the supervising station, the operator shall be permitted to roam the protected property to perform other duties.

26.4.5.5

Where the proprietary supervising station is staffed by two qualified operators, one of the operators shall be permitted to be a runner.

26.4.5.4 – 6

When the runner is not in attendance at the proprietary supervising station, the runner shall establish two-way communications with the station at intervals not exceeding 15 minutes, unless otherwise permitted by 26.4.5.~~5~~ 7 .

26.4.5.5 7

Where two or more operators are on duty in the supervising station, a runner physically in attendance at a noncontiguous protected premises and immediately available via telephone or other approved means of communication shall not be required to maintain two-way communications at 15-minute intervals if that runner is not responsible for another protected premises.

26.4.5.6 – 8

The primary duties of the operator(s) shall be to monitor signals, operate the system, and take such action as shall be required by the authority having jurisdiction.

26.4.5.~~7~~ 9

The operator(s) shall not be assigned any additional duties that would take precedence over the primary duties.

Statement of Problem and Substantiation for Public Input

Knowing that a fire can double in size every 30 to 60 seconds poses a real problem. Having a Proprietary Supervising Station (PSS) saves lives because the response to a real fire situation can be faster than that of a commercial Central Supervising Station. With a PSS, personnel on site can investigate and begin mitigation of fires long before the Central Supervising Station can track down who is in charge, verify security questions/codes, etc. For a PSS with 25 or fewer buildings, maintaining two full time operators is cost prohibitive. This change is being added to allow entities to operate economically and to take advantage of emerging technologies that allow personnel to be able to roam their property while still being able to view their entire system.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 13:23:08 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: There is no substantiation for the 25 building threshold. The size of the building and the occupancy could vary greatly. Allowing the operator to roam to perform other duties conflicts with existing section 26.4.5.7.

Public Input No. 198-NFPA 72-2019 [Section No. 26.4.5.2]

26.4.5.2

~~Where the means for transmitting alarms to the communications center is automatic, the proprietary supervising station shall be permitted to be staffed by a minimum of one qualified operator at all times.~~

Change to

26.4.5.2 The proprietary supervising station shall be permitted to be staffed by one qualified operator when either of the following conditions is met:

(1) The means for transmitting alarms to the communications center is automatic

(2) The PSS covers less than 25 buildings

Statement of Problem and Substantiation for Public Input

Knowing that a fire doubles in size every 30 to 60 seconds poses a real problem. Having a Proprietary Supervising Station (PSS) saves lives because the response to a real fire situation is faster than that of a commercial Central Supervising Station. With a PSS, personnel on site can investigate and begin mitigation of fires long before the Central Supervising Station can track down who is in charge, verify security questions/codes, etc. For a PSS with 25 or fewer buildings, maintaining two full time operators is cost prohibitive. This change is being added to allow entities to operate economically.

Submitter Information Verification

Submitter Full Name: Denise Pappas
Organization: Valcom, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 29 12:03:16 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: There is no substantiation for the 25 building threshold. The size of the building and the occupancy could vary greatly.

Public Input No. 207-NFPA 72-2019 [New Section after 26.4.5.5]

TITLE OF NEW CONTENT

(Add the following paragraph and renumber following paragraphs.)

26.4.5.6 When a PSS has less than 25 buildings, the operator stays in communication and has remote control of the supervising station system to perform his primary duties, the operator shall be permitted to perform runner duties.

Statement of Problem and Substantiation for Public Input

Substantiation: Knowing that a fire doubles in size every 30 to 60 seconds poses a real problem. Having a Proprietary Supervising Station (PSS) saves lives because the response to a real fire situation is faster than that of a commercial Central Supervising Station. With a PSS, personnel on site can investigate and begin mitigation of fires long before the Central Supervising Station can track down who is in charge, verify security questions/codes, etc. For a PSS with 25 or fewer buildings, maintaining two full time operators is cost prohibitive. This change is being added to take advantage of emerging technologies that allow personnel to be able to perform runner duties while still being able to perform their primary duties remotely.

Submitter Information Verification

Submitter Full Name: Denise Pappas
Organization: Valcom, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 11:36:01 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: There is no substantiation for the 25 building threshold. The size of the building and the occupancy could vary greatly.

Public Input No. 32-NFPA 72-2019 [Section No. 26.5.3.1 [Excluding any Sub-Sections]]

Alarm systems utilizing remote supervising station connections shall transmit alarm and supervisory signals to a facility meeting the requirements of 26. ~~5.~~ 3. ~~1.1, 26.~~ 5. ~~3.~~ 1. ~~2,~~ ~~26.5.3.1.3~~ ~~, or~~ ~~26.5.3.1.4~~ ~~.~~

Statement of Problem and Substantiation for Public Input

Any location that monitors alarm signals, whether Supervising Station Service or Remote Station Service, should be held to the same Standard. To ensure this level of security and service, the monitoring center should also be listed by a Nationally Recognized Testing Laboratory (NRTL).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 33-NFPA 72-2019 [Section No. 26.5.3.1.1]	
Public Input No. 34-NFPA 72-2019 [Section No. 26.5.3.1.2]	
Public Input No. 35-NFPA 72-2019 [Section No. 26.5.3.1.3]	
Public Input No. 38-NFPA 72-2019 [Section No. A.26.5.3]	

Submitter Information Verification

Submitter Full Name: Richard Kleinman
Organization: AFA Protective Systems Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 23 08:33:23 EST 2019
Committee: SIG-SSS

Committee Statement

Resolution: Central Station Service requirements are not applicable to Remote Supervising Station alarm systems. Currently, the use of a listed central station is permitted for monitoring remote station signals but is not the only option. No substantiation has been provided that the other options should not be used.

Public Input No. 33-NFPA 72-2019 [Section No. 26.5.3.1.1]

26.5.3.1.1

Alarm, supervisory, and trouble signals shall be permitted to be received at a communications center that complies with the requirements of ~~NFPA 1221.~~ 26.3.5.1.

Statement of Problem and Substantiation for Public Input

Any location that monitors alarm signals, whether Supervising Station Service or Remote Station Service, should be held to the same Standard. To ensure this level of security and service, the monitoring center should also be listed by a Nationally Recognized Testing Laboratory (NRTL).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 32-NFPA 72-2019 [Section No. 26.5.3.1 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Richard Kleinman
Organization: AFA Protective Systems Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 23 09:13:45 EST 2019
Committee: SIG-SSS

Committee Statement

Resolution: Central Station Service requirements are not applicable to Remote Supervising Station alarm systems. Currently, the use of a governmental communications center using NFPA 1221 is permitted for monitoring remote station signals but is not the only option. No substantiation has been provided that the other options should not be used.

Public Input No. 34-NFPA 72-2019 [Section No. 26.5.3.1.2]

26.5.3.1.2

Alarm, supervisory, and trouble signals shall be permitted to be received at the Listed fire station or at the Listed governmental agency that has public responsibility for taking prescribed action to ensure response upon receipt of an alarm signal.

Statement of Problem and Substantiation for Public Input

Any location that monitors alarm signals, whether Supervising Station Service or Remote Station Service, should be held to the same Standard. To ensure this level of security and service, the monitoring center should also be listed by a Nationally Recognized Testing Laboratory (NRTL).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 32-NFPA 72-2019 [Section No. 26.5.3.1 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Richard Kleinman
Organization: AFA Protective Systems Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 23 09:17:52 EST 2019
Committee: SIG-SSS

Committee Statement

Resolution: There is currently no listing for a fire station or other governmental agency monitoring fire alarm signals. Governmental monitoring centers are currently covered under the scope of NFPA 1221.

Public Input No. 35-NFPA 72-2019 [Section No. 26.5.3.1.3]

26.5.3.1.3

~~Where permitted by the authority having jurisdiction, alarm,~~ Alarm, supervisory, and trouble signals shall be permitted to be received at a listed central supervising station.

Statement of Problem and Substantiation for Public Input

A listed central supervising station has shown an independent nationally recognized testing laboratory (NRTL) that it meets the requirements of NFPA 72 and UL827 and/or Factory Mutual's testing procedures. An end user should be able to choose to have their premise's fire alarm system monitored by a listed entity. While some jurisdictions have requirements that exceed those of NFPA 72, those requirements would need to be met, in addition to being Listed, in order for a listed central supervising station, or AHJ, to provide service in that jurisdiction.
This issue was debated before the technical committee for the 2019 edition. Language that permits a local AHJ to provide service to the premises in its jurisdiction, without having to be Listed, and to not permit Listed monitoring centers to provide service is unconscionable. This change will permit Listed or qualified entities to provide service....as long as they meet the Standard by being Listed for the purpose.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 32-NFPA 72-2019 [Section No. 26.5.3.1 [Excluding any Sub-Sections]]	
Public Input No. 36-NFPA 72-2019 [Section No. 26.5.3.1.4]	

Submitter Information Verification

Submitter Full Name: Richard Kleinman
Organization: AFA Protective Systems Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 23 09:19:57 EST 2019
Committee: SIG-SSS

Committee Statement

Resolution: Section 26.5 (and previous like sections in prior editions of the code) has long established requirements for governmental monitoring in Sections 26.5.3.1.1, and 26.5.3.1.2, except where an alternate location is permitted by the AHJ (26.5.3.1.3). Listed central stations provide a valuable service and the language of the 2019 edition, as well as previous editions, of NFPA 72 would allow their use in the Remote Supervising Station monitoring process where approved by the AHJ. Listed central stations are also an element of Central Station Service where no other type of supervising station is permitted. National model codes specifically permit monitoring by an approved supervising station in accordance with NFPA 72. Depending on several factors, some AHJ's may be able to specifically name their approved supervising station of choice and others can’t.

Public Input No. 527-NFPA 72-2019 [Section No. 26.5.3.1.3]

26.5.3.1.3

~~Where permitted by the authority having jurisdiction, alarm, supervisory, and~~ Alarm, supervisory and trouble signals shall be permitted to be received at a listed central supervising station.

Statement of Problem and Substantiation for Public Input

The removal of the modifier, “where permitted by the AHJ” addresses the current imbalance of facilities as defined in Section 26.5.3. Facility types should be considered equivalent to each other. This proposed change accomplishes this. A listed central station, or supervising station is required to meet the following standards: UL 827, and UL 1981. 827 identifies the physical requirements of the facility, and 1981 identifies the hardware and software associated with fire alarm signals. Once an organization meets the listing requirements, a contractual relationship exists between a NRTL, and the listed supervising station, to build, maintain, and operate in compliance with UL 827, Central Station Services, and UL 1981. Mandatory annual site visits are designed to ensure facilities adhere to the contractual requirements of the listing. The initial requirements and the ongoing audits provide a level of security that exceeds the minimum requirements in the Facilities Section, located in 26.5.3. Listed central supervising station meet the requirements of listed as defined in Section 3.2.5 of the 2016 NFPA 72 edition. Exceeding the minimum requirements of the Facilities Section of 26.5.3, and also meeting the listed definitions should provide to the AHJ the necessary requirements for the monitoring of remote supervising station service. All listed central supervising stations meet the same UL 827 and 1981 requirements. There are over 400 listed supervising stations operating in the United States today. I'm a Committee member of the HouseHold Fire Chapter NFPA 72 for 18 the last 18 years. Household Fire Chapter filed the facilities requirements in Section 26.5.3 of 20 NFPA 72, 2016. In 2019, the Household fire Committee accepted public input, thereby removing the clause where permitted by the AHJ, and now allows listed central supervising stations to monitor household fire alarm systems.

The Sig-SSS Committee rejected this same public input at the Salt Lake City NFPA 72 Meetings. This input was voted down 19-1. At the 2018 NFPA Technical meeting held in Las Vegas June 2018, CAM 72-6 was discussed by the general membership, the result of the vote was in support of the CAM 304-128.

SIG-SSS reviewed the CAM and rejected the motion. The committee vote was 10-9 to reject the general membership support of the CAM. I'm requesting the committee review the facilities section to restore a balance between public and private facilities. There is no process in place for approving UL Listed facilities currently the approval method is approved or not approved without any technical guidance.

Currently UL Listed facilities can supervise Central Station Fire Alarm Systems, Household Fire systems without AHJ Approval. Non supervised stations can supervise household fire systems. A Remote Station fire alarm system which is transmitting alarm events to the same facility supervising both Central Station Systems and Household Fire systems requires AHJ Approval.

Submitter Information Verification

Submitter Full Name: Richard Simpson
Organization: Vector Security Inc.
Affiliation: Vector Security
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 06:44:17 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: Section 26.5 (and previous like sections in prior editions of the code) has long established requirements for governmental monitoring in Sections 26.5.3.1.1, and 26.5.3.1.2, except where an alternate location is permitted by the AHJ (26.5.3.1.3). Listed central stations provide a valuable service and the language of the 2019 edition, as well as previous editions, of NFPA 72 would allow their use in the Remote Supervising Station monitoring process where approved by the AHJ. Listed central stations are also an element of Central Station Service where no other type of supervising station is permitted. National model codes specifically permit monitoring by an approved supervising station in accordance with NFPA 72. Depending on several factors, some AHJ's may be able to specifically name their approved supervising station of choice and others can’t.

Public Input No. 36-NFPA 72-2019 [Section No. 26.5.3.1.4]

26.5.3.1.4*

~~Where permitted by the authority having jurisdiction, alarm,~~ Alarm, supervisory, and trouble signals shall be permitted to be received at an alternate location that is Listed and approved by the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

A listed central supervising station has shown an independent nationally recognized testing laboratory (NRTL) that it meets the requirements of NFPA 72 and UL827 and/or Factory Mutual's testing procedures. An end user should be able to choose to have their premise's fire alarm system monitored by a listed entity. While some jurisdictions have requirements that exceed those of NFPA 72, those requirements would need to be met, in addition to being Listed, in order for a listed central supervising station, or AHJ, to provide service in that jurisdiction.
This change will permit Listed or qualified entities to provide service....as long as they meet the Standard by being Listed for the purpose.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 35-NFPA 72-2019 [Section No. 26.5.3.1.3]	
Public Input No. 37-NFPA 72-2019 [Section No. A.26.5.3.1.4]	

Submitter Information Verification

Submitter Full Name: Richard Kleinman
Organization: AFA Protective Systems Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 23 09:33:48 EST 2019
Committee: SIG-SSS

Committee Statement

Resolution: The AHJ needs flexibility to permit nonlisted monitoring entities.

Public Input No. 417-NFPA 72-2019 [New Section after 26.6.2.2]

TITLE OF NEW CONTENT

26.6.2.3 Remote Programming of Transmitting Technologies . Remote programming of protected premises transmission technologies covered by Sections 26.6.3, 26.6.4, and 26.6.5 shall be permitted under the following conditions:

(1) A qualified person in accordance with 10.5.3.2 or 10.5.3.3 shall be on the protected premises at all times during the remote programming.

(2) The fire department communications center shall be notified of the potential loss of connectivity between the protective premises and the supervising station.

(3) The supervising station shall be notified of the potential loss of connectivity between the protective premises and the supervising station.

(4) The responsible party for the alarm system shall be notified that alarm signals may not automatically transmit to the supervising station during the remote programming process.

(5) A mitigation plan shall be initiated by the responsible party for the alarm system which assigns an individual, or individuals, who will be charged with contacting the communications center in the event that an actual alarm occurs during the remote programming of the transmitting equipment.

(6) Where the transmission technology is integral to the control unit, reacceptance testing shall occur in accordance with 14.4.2.5 and Table 14.4.3.2(4) where executive software for the transmission technology is changed.

(7) Where the transmission technology is integral to the control unit, reacceptance testing shall occur in accordance with 14.4.2.4 and Table 14.4.3.2(4) where site specific software for the transmission technology is changed.

(8) Where the transmission technology is not integral to the control unit, testing shall occur in accordance with Table 14.4.3.2(4).

(9) Parties notified in (2), (3), and (4) shall be notified when remote programming and testing has been completed.

Statement of Problem and Substantiation for Public Input

As past chair of Chapter 26 I have seen requests come to NFPA for interpretation of NFPA 72 as it relates to remote programming of transmission equipment. Currently, there are no specific requirements in place. Remote programming is being looked at by UL through an STP for control unit equipment but does not seem to be close to coming to fruition due to many concerns raised by STP members. The PI submitted is intended to open a dialog among SIG-SSS technical committee members and the public on the potential use of remote programming of communications technologies equipment.
Passage of this PI, or a variation of the proposal, may likely result in the need to provide testing language to Chapter 14.

Submitter Information Verification

Submitter Full Name: Warren Olsen
Organization: Fire Safety Consultants, Inc.
Affiliation: Illinois Fire Inspectors Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 20:43:23 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5220-NFPA 72-2019

Statement: Remote programming and firmware updating is gaining popularity and code language needs to be in place to regulate remote programming. The Correlating Committee should coordinate this with SIG-FUN and SIG-PRO.

Public Input No. 498-NFPA 72-2019 [New Section after 26.6.3.2]

26.6.3.2.1

Prior to any cellular module firmware update, a signal transmission trouble signal shall be annunciated at the protected premises in accordance with Section 10.15.

Statement of Problem and Substantiation for Public Input

1. For consideration as directed by the TCC.
2. During a firmware update, the installed local system would keep operating as expected and alarm locally, but not be able to send an alarm event signal to the central monitoring station via the cellular module connection until after the firmware update is complete.

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 09:46:57 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: This proposed language has been addressed by the Technical Committee action on PI 417. A new section on Remote Programming of Transmitting Technologies has been added to 26.6.2.3.

Public Input No. 332-NFPA 72-2019 [Section No. 26.6.3.12]

26.6.3.12 * _ Sharing Communications Equipment On-Premises.

26.6.3.12.1* If the fire alarm transmitter is sharing on-premises communications equipment, the shared equipment shall be listed as communications or information technology equipment.

26.6.3.12.2 If the communications methodology is shared with any other usage, all alarm transmissions shall preempt and take precedence over any other usage, including transmission over all on-premises communications equipment.

Statement of Problem and Substantiation for Public Input

Task Group work to correlate code text with text in annex table.

Submitter Information Verification

Submitter Full Name: Art Black
Organization: Carmel Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 10:38:21 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: The Technical Committee recognizes that digital communications are fast enough without the need for prioritization of alarm signals. Table A.26.6.1 is revised accordingly. See FR 5252.

Public Input No. 147-NFPA 72-2019 [Section No. 26.6.4.1]

26.6.4.1 Digital Alarm Communicator Transmitter (DACT).

26.6.4. 1 Where a DACT is being used to interface with other listed communications means, it does not need to meet the requirements of 26. 1. 6.4 and is to comply with 26.6.3.4 or 26.6.3.5

26.6.4. 1.1 * Managed Facilities-Based Voice Network.

A DACT shall be connected to a managed facilities-based voice network upstream of any private telephone system at the protected premises.

(A)

The connections to a managed facilities-based voice network shall be under the control of the subscriber for whom service is being provided by the supervising station alarm system.

(B)

Special attention shall be required to ensure that this connection is made only to a loop start telephone circuit and not to a ground start telephone circuit.

26.6.4.1.2 Signal Verification.

All information exchanged between the DACT at the protected premises and the digital alarm communicator receiver (DACR) at the supervising or subsidiary station shall comply with 26.6.4.1.2.1 and 26.6.4.1.2.2.

26.6.4.1.2.1

Information exchanged shall be by digital code or some other approved means.

26.6.4.1.2.2

Signal verification shall be by signal repetition, digital parity check, or other approved means.

26.6.4.1.3* Requirements for DACTs.

(A)

A DACT shall be configured so that, when it is required to transmit a signal to the supervising station, it shall seize the telephone line (going off-hook) at the protected premises and disconnect an outgoing or incoming telephone call and prevent use of the telephone line for outgoing telephone calls until signal transmission has been completed. A DACT shall not be connected to a party line telephone facility.

(B)

A DACT shall have the means to satisfactorily obtain a dial tone, dial the number(s) of the DACR, obtain verification that the DACR is able to receive signals, transmit the signal, and receive acknowledgment that the DACR has accepted that signal. In no event shall the time from going off-hook to on-hook exceed 90 seconds per attempt.

(C)*

A DACT shall have means to reset and retry if the first attempt to complete a signal transmission sequence is unsuccessful. A failure to complete connection shall not prevent subsequent attempts to transmit an alarm where such alarm is generated from any other initiating device circuit or signaling line circuit, or both. Additional attempts shall be made until the signal transmission sequence has been completed, up to a minimum of 5 and a maximum of 10 attempts.

(D)

If the maximum number of attempts to complete the sequence is reached, an indication of the failure shall be made at the premises.

26.6.4.1.4 Transmission Channels.

(A)

A system employing a DACT shall employ a single telephone line (number) and one of the following transmission means:

(1) One-way private radio alarm system

(2) Two-way RF multiplex system

(3) Transmission means complying with 26.6.3

(4) A second telephone line (number), where all of the following are met:

(a) Access to one of the technologies in (1), (2), or (3) is not available at the protected premises.

(b) The authority having jurisdiction approves the arrangement.

(c) The DACT is programmed to call a second DACR line (number) when the signal transmission sequence to the first called line (number) is unsuccessful.

(d) The DACT is capable of selecting the operable means of transmission in the event of failure of the other means.

(e) Each telephone line is tested in accordance with 26.6.4.1.4(B) or at alternating 6-hour intervals.

(B)

The following requirements shall apply to all combinations listed in 26.6.4.1.4(A):

(1) The means for supervising each channel shall be in a manner approved for the method of transmission employed.

(2) If a signal has not been processed over the subject channel in the previous 6 hours, a test signal shall be processed.

(3) The failure of either channel shall send a trouble signal on the other channel within 4 minutes.

(4) When one transmission channel has failed, all status change signals shall be sent over the other channel.

(5) The primary channel shall be capable of delivering an indication to the DACT that the message has been received by the supervising station.

(6)* Unless the primary channel is known to have failed, the first attempt to send a status change signal shall use the primary channel.

(7) Simultaneous transmission over both channels shall be permitted.

(8) Failure of telephone lines (numbers) shall be annunciated locally.

26.6.4.1.5 DACT Transmission Means.

The following requirements shall apply to all DACTs:

(1) A DACT shall be connected to two separate means of transmission at the protected premises so that a single point of failure on one means of transmission shall not affect the second means of transmission.

(2) The DACT shall be capable of selecting the operable means of transmission in the event of failure of the other means.

(3) The primary means of transmission shall be a telephone line (number) connected to a managed facilities-based voice network.

(4)* The first transmission attempt shall utilize the primary means of transmission.

(5) Each DACT shall be programmed to call a second receiver when the signal transmission sequence to the first called line (number) is unsuccessful.

(6) Each transmission means shall automatically initiate and complete a test signal transmission sequence to its associated receiver at least once every 6 hours.

(7) A successful signal transmission sequence of any other type, within the same 6-hour period, shall fulfill the requirement to verify the integrity of the reporting system, provided that signal processing is automated so that 6-hour delinquencies are individually acknowledged by supervising station personnel.

(8)* If a DACT is programmed to call a telephone line (number) that is call forwarded to the line (number) of the DACR, a means shall be implemented to verify the integrity of the call forwarding feature every 4 hours.

Statement of Problem and Substantiation for Public Input

DACTs are being utilized in existing installations to take data from a fire alarm control unit and convert it to Contact ID format to be utilized by a cellular communicator or IP communicator. The DACT then becomes an interface piece of equipment and no longer needs to conform to the DACT section of chapter 26. The installation then needs to conform to either section 26.6.3.4 or 26.6.3.5.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 07 11:00:54 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5245-NFPA 72-2019

Statement: As has been documented, the use of phone lines is going away as a means of signal transport from the protected premises to the supervising station. This Standard for a number of cycles has now allowed the use of either a performance based means or via a radio for the transmission of signals. The majority of control units that are on the market today transmit signals in several different formats, with the most common being either Ademco Contact ID or SIA. In order the transfer this data stream from the Fire Alarm Control Unit to one a transmission means other than a telephone line, a DACT is still used. However, in these cases, the DACT is not connected to a phone line, but is directly connected to a listed transmitter that uses one of the other approved means by this Standard. In these cases, the DACT is acting as an interface between the Fire Alarm Control Unit and the means of signal transport.

A number of plan examiners are still confused by this, and when they see that a DACT is being used, they are requiring that provision of Section 26.6.4.2 (previously 26.6.4.1) be met. This is problematic when there are no phone lines to connect to. This addition to the Standard and to the Annex is intended to resolve this conflict so that it is clear to the user of the Standard that if the DACT is being used as described within this revision, that the provisions within 26.6.4.2 do not apply.

Public Input No. 503-NFPA 72-2019 [Section No. 27.1.1.1]

27.1.1.1

Public emergency alarm reporting systems shall consist of alarm boxes, other singal initiating devices and alarm processing equipment that communicate on a wired or wireless network(s), one-way or two-way, meeting the requirements of this chapter.

Statement of Problem and Substantiation for Public Input

Public Emergency Alarm Reporting Systems are permitted to allow the transmission and receipt of "other signals or calls of a public emergency nature" (see 27.2.2). In current practice initiating devices other than alarm boxes may be used to initiate these signals. 7.1.1.1 should be revised to allow other initiating devices.

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 12:07:30 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5146-NFPA 72-2019
Statement: New technologies can provide enhanced emergency messaging to communications centers and the requirement now allows for that.

Public Input No. 631-NFPA 72-2019 [New Section after 27.2.4]

27.2.5 Cybersecurity design standards and certification requirements shall be in accordance with 10.4.8.

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	Part of a broader public input intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:28:34 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: The Technical Committee agrees that cyber security is an important issue but believes that this issue is outside the scope of solely this committee and is better suited for the Correlating Committee to address for the entire document.

Public Input No. 546-NFPA 72-2019 [Section No. 27.4.3.5]

27.4.3.5

The wireless network capacity for the number of alarm boxes permitted on a single radio frequency shall comply with one of the following:

(1) For networks that use one-way transmission ~~in which the individual alarm box automatically initiates the required message *(see 27.5.5.3.3)* using circuitry integral to the alarm box~~ , not more than 500 alarm boxes are permitted on a single radio frequency.

(2) For networks that use ~~a~~ two-way ~~concept in which interrogation signals *(see 27.5.5.3.3)* are transmitted to the individual alarm boxes from the communications center on the same radio frequency used for receipt of alarms~~ radio communication , not more than 250 alarm boxes are permitted on a single radio frequency.

(3) For networks that use ~~a~~ two-way ~~concept where interrogation signals are transmitted on~~ radio communication where a radio frequency that differs from that used for receipt of alarms is used for the back channel , not more than 500 alarm boxes are permitted on a single radio frequency.

Statement of Problem and Substantiation for Public Input

The intent of this section is to limit the number of transmissions on a shared frequency so that the probability of a signal being missed due to multiple transmissions occurring at the same time is limited. The previous wording defined a "two-way" system only as when the communications center sends interrogation signals to the alarm boxes, which then respond with test messages. However, there are other examples of two-way systems. For instance, if the communications center sends an acknowledge signal to each alarm box message, the same number of transmissions takes place. However, this would not have been considered a two-way system based on the previous wording.
Also, in this section, it is unnecessary to restate 27.5.5.3.3, so that was also removed.
This change is also related to the addition of definitions of one-way and two-way radio transmissions, which are proposed for Chapter 3.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 561-NFPA 72-2019 [New Section after 3.3.47]	

Submitter Information Verification

Submitter Full Name: Gregory Lapin
Organization: King-Fisher Company, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:03:47 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5151-NFPA 72-2019
Statement: The requirements changed to include all cases when two-way radio communication is used. The Technical Committee deletes the text as it was redundant to 27.5.5.3.3.

Public Input No. 511-NFPA 72-2019 [New Section after 27.5.2.1.3]

Type B System

A Type B system shall be permitted where the number of alarms from alarm boxes are 2500 or less per year provided the following conditions are met:

(1) Alarms from an alarm boxes are automatically transmitted to an emergency response facility where approved equipment is provided for the automatic receipt, storage, retrieval of alarms.

(2) Audible and visual alerting devices are provided at the emergency communications center and the emergency response facility.

(3) All circuits and pathways used for alarm receiving and alerting equipment are monitored for integrity between the emergency communications center and the emergency response facility.

(4) An audible and visual trouble signal shall be provided at both the emergency communications center and the emergency response facility to indicate the failure of the circuit or pathway.

Statement of Problem and Substantiation for Public Input

Currently there are no specific requirements for a Type B Public Emergency Alarm Reporting System in section 27.5.2.1. This PI provides clear requirements for a Type B system.

Submitter Information Verification

Submitter Full Name: Jeffrey Knight
Organization:
Affiliation: International Municipal Signal Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 12:58:02 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5154-NFPA 72-2019
Statement: Currently there are no specific requirements for a Type B Public Emergency Alarm Reporting System in Section 27.5.2.1. This revision provides requirements for a Type B system.

Public Input No. 523-NFPA 72-2019 [Section No. 27.5.2.5.1]

27.5.2.5.1

Each box circuit or wireless receiving system shall be powered by one of the following:

(1)* Form 4A, which is an inverter, powered from a common rectifier, receiving power by a single source of alternating current with a floating storage battery having a 24-hour standby capacity

(2)* Form 4B, which is an inverter, powered from a common rectifier, receiving power from two sources of alternating current with a floating storage battery having a 4-hour standby capacity

(3)* Delete 27.5.2.5.1 (3) and associated Annex material. Form 4C, which is a rectifier, converter, or motor generator receiving power from two sources of alternating current with transfer facilities to apply power from the secondary source to the system within 30 seconds

Statement of Problem and Substantiation for Public Input

27.5.2.5.1 (3) Form 4C power supplies are not practical and are no longer used for Public Emergency Alarm Reporting Systems. All references to Form 4C power supplies should be removed from Chapter 27.

Submitter Information Verification

Submitter Full Name: Jeffrey Knight
Organization:
Affiliation: International Municipal Signal Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 20:55:23 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5155-NFPA 72-2019
Statement: The Technical Committee deletes the text of 27.5.2.5.1(3) as Form 4C power supplies are not practical and are no longer used for Public Emergency Alarm Reporting Systems.

Public Input No. 524-NFPA 72-2019 [New Section after 27.5.2.8.5]

Overcurrent Protection for Batteries and Rectifier/chargers

Overcurrent protection shall be provided and arrainged in such a manner that the intentional or unintentional opening of the overcurrent devices between either the batteries or rectifiers shall not render Public Emergency Alarm Reporting System inoperable.

Statement of Problem and Substantiation for Public Input

This PI is to provide clear instructions on the requirement for overcurrent protection and proper placement for the overcurrent devices between batteries and charging systems to prevent interruption of service for the Public Emergency Alarm Reporting system.

Submitter Information Verification

Submitter Full Name: Jeffrey Knight
Organization:
Affiliation: International Municipal Siganl Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 21:14:36 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5156-NFPA 72-2019
Statement: This revision provides instructions on the requirement for overcurrent protection and proper placement for the overcurrent devices between batteries and charging systems to prevent interruption of service for the Public Emergency Alarm Reporting system.

Public Input No. 550-NFPA 72-2019 [Section No. 27.5.4.2]

27.5.4.2 Constant-Current ~~(100 milliampere)~~ Systems.

Constant-current systems shall comply with the requirements of 27.5.4.2.1 through 27.5.4.2.6.

27.5.4.2.1

Means shall be provided for manually regulating the current in box circuits so that the operating current is maintained within 10 percent of normal throughout changes in external circuit resistance from 20 percent above normal to 50 percent below normal.

27.5.4.2.2

The voltage supplied to maintain normal line current on box circuits shall not exceed 150 volts, measured under no-load conditions, and shall be such that the line current cannot be reduced below the approved operating value by the simultaneous operation of four boxes.

27.5.4.2.3

Visual and audible means to indicate a 20 percent or greater reduction in the normal current in any alarm circuit shall be provided.

27.5.4.2.4

All devices connected in series with any alarm circuit shall function when the alarm circuit current is reduced to 70 percent of normal.

27.5.4.2.5

Meters shall comply with 27.5.4.2.5.1 and 27.5.4.2.5.2.

27.5.4.2.5.1

Meters shall be provided to indicate the current in any box circuit and the voltage of any power source.

27.5.4.2.5.2

Meters used in common for two or more circuits shall be provided with cut-in devices designed to reduce the probability of cross-connecting circuits.

27.5.4.2.6

Necessary switches, testing, and signal transmitting and receiving devices shall be provided to allow the isolation, control, and test of each circuit up to at least 10 percent of the total number of box and dispatch circuits, but never less than two circuits.

Statement of Problem and Substantiation for Public Input

Not all constant current systems use 100 mA. For instance, the city of Chicago maintains one hundred 60 mA constant current loops.

Submitter Information Verification

Submitter Full Name: Gregory Lapin
Organization: King-Fisher Company, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:45:45 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5158-NFPA 72-2019

Statement: Not all constant current systems use 100 mA.

Public Input No. 346-NFPA 72-2019 [Section No. 27.6.3.1.1]

27.6.3.1.1

The authority having jurisdiction shall designate the location of the auxiliary box. The location shall comply with the Americans with Disabilities Act (ADA).

Statement of Problem and Substantiation for Public Input

The location of all boxes/equipment intended for public use is required by federal law to be ADA compliant.

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Affiliation: none
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 16:31:13 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: Auxiliary boxes are not publicly accessible and therefore do not have to comply with the ADA. The ADA is also not applicable internationally or in all jurisdictions.

Public Input No. 347-NFPA 72-2019 [Section No. 27.6.3.1.2]

27.6.3.1.2*

Outside plant cables entering buildings or other structures shall be installed in rigid metal conduit, intermediate metal conduit, or electrical metallic tubing. The total length of unlisted outside plant Fire Alarm cables installed within the building, measured from its point of entrance, shall not exceed 15 m (50 ft).

27.6.3.1.2.1

Schedule 80 PVC or RTRC rigid nonmetallic conduit shall be permitted for underground installations, provided that all elbows are rigid or intermediate metal conduit.

27.6.3.1.2.2

The installation shall comply with the requirements of the applicable raceway article of *NFPA 70*.

Statement of Problem and Substantiation for Public Input

Cables that do not meet the listing requirements of a NRTL may present other life safety issues and may provide unwanted consequenses

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 16:36:57 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: The requirement requires all cables to be in rigid metal conduit, intermediate metal conduit, or electrical metallic tubing regardless of length of listed or unlisted and would be protected. This requirement is also in the National Electrical Code and is not appropriate here.

Public Input No. 348-NFPA 72-2019 [Section No. 27.6.3.1.2.1]

27.6.3.1.2.1

Schedule 80 PVC or RTRC rigid nonmetallic conduit shall be permitted for underground installations, provided that all elbows are rigid or intermediate metal conduit. The use of schedule 40 PVC shall be permited where encased by not less than 2" of concrete

Statement of Problem and Substantiation for Public Input

Concrete encasement provides the same or better protection as is provided by the use of schedule 80 PVC

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 16:47:42 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5160-NFPA 72-2019
Statement: Concrete encasement provides the same or better protection as is provided by the use of schedule 80 PVC.

Public Input No. 505-NFPA 72-2019 [Section No. 27.6.3.2.2.1]

27.6.3.2.2.1

Auxiliary alarm systems shall be ~~one of~~ local energy type with the following ~~types~~ requirements :

(1)*

(a) Local energy–type

~~Local energy–type~~

(a) systems shall be permitted to be of the coded or noncoded type.

(b) Power supply sources for local energy–type systems shall conform to Chapter 10 .

(c) Transmitter trouble signals shall be indicated at the control unit and the building fire command center in accordance with 10.15.7 .

(2)* ~~Shunt-type~~

(3) ~~Shunt-type systems shall be noncoded with respect to any remote electrical tripping or activating devices.~~

(4) ~~All conductors of the shunt circuit shall be installed in accordance with *NFPA 70* , Article 344, for rigid metal conduit, or Article 358, for electrical metallic tubing.~~

(5) ~~Both sides of the shunt circuit shall be in the same conduit.~~

(6) ~~Where a shunt loop is used, it shall not exceed a length of 750 ft (230 m) and shall be in conduit.~~

(7) ~~Conductors of the shunt circuits shall not be smaller than 14 AWG and shall be insulated as prescribed in *NFPA 70* , Article 310.~~

(8) ~~The power for shunt-type systems shall be provided by the public emergency alarm reporting system.~~

(9)* ~~A local system made to an auxiliary alarm system by the addition of a relay whose coil is energized by a local power supply and whose normally closed contacts trip a shunt-type master box shall not be permitted.~~

(10)

Statement of Problem and Substantiation for Public Input

Shunt type auxiliary systems are no longer used. All reference to shunt type systems should be removed from Chapter 27.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 506-NFPA 72-2019 [Section No. 27.6.3.2.2.2]	
Public Input No. 508-NFPA 72-2019 [Section No. 27.6.3.2.2.3]	
Public Input No. 509-NFPA 72-2019 [Section No. 27.6.3.2.3]	
Public Input No. 510-NFPA 72-2019 [Section No. 3.3.221.1.2]	
Public Input No. 519-NFPA 72-2019 [Section No. A.27.6.3.2.2.1(2)]	

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid
Street Address:

City:
State:
Zip:
Submittal Date: Tue Jun 25 12:28:59 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5166-NFPA 72-2019
Statement: The Technical Committee deletes the text as new shunt-type auxiliary systems are no longer installed.

Public Input No. 506-NFPA 72-2019 [Section No. 27.6.3.2.2.2]

27.6.3.2.2.2

The interface of ~~the two types of~~ auxiliary alarm systems with the three types of public emergency alarm reporting systems shall be in accordance with Table 27.6.3.2.2.2.

Table 27.6.3.2.2.2 Application of Public Emergency Alarm Reporting Systems with Auxiliary Alarm Systems

Reporting Systems	Local Energy-Type	~~Shunt-Type~~
Wired	Yes	~~Yes~~
Wireless	Yes	~~No~~
Telephone series	Yes	~~No~~

Statement of Problem and Substantiation for Public Input

Shunt type auxiliary systems are no longer used. All reference to shunt type systems should be removed from Chapter 27.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 505-NFPA 72-2019 [Section No. 27.6.3.2.2.1]	

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 12:41:55 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5166-NFPA 72-2019
Statement: The Technical Committee deletes the text as new shunt-type auxiliary systems are no longer installed.

Public Input No. 508-NFPA 72-2019 [Section No. 27.6.3.2.2.3]

27.6.3.2.2.3

The application of ~~the two types of~~ auxiliary alarm systems shall be limited to the initiating devices specified in Table 27.6.3.2.2.3.

Table 27.6.3.2.2.3 Application of Initiating Devices with Auxiliary Alarm Systems

Initiating Devices	Local Energy-Type	~~Shunt-Type~~
Manually actuated alarm-initiating device	Yes	~~Yes~~
Waterflow or actuation of the fire extinguishing system(s) or suppression system(s)	Yes	~~Yes~~
Automatic detection devices	Yes	~~No~~

Statement of Problem and Substantiation for Public Input

Shunt type auxiliary systems are no longer used. All reference to shunt type systems should be removed from Chapter 27.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 505-NFPA 72-2019 [Section No. 27.6.3.2.2.1]	

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 12:44:33 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5166-NFPA 72-2019
Statement: The Technical Committee deletes the text as new shunt-type auxiliary systems are no longer installed.

Public Input No. 509-NFPA 72-2019 [Section No. 27.6.3.2.3]

27.6.3.2.3 System Arrangement and Operation.

27.6.3.2.3.1

~~Shunt-type auxiliary alarm systems shall be arranged so that one auxiliary transmitter does not serve more than 100,000 ft^2 (9290 m^2) total area or as otherwise permitted by the authority having jurisdiction.~~

27.6.3.2.3.2 _

A separate auxiliary transmitter shall be provided for each building, or where permitted by the authority having jurisdiction, for each group of buildings of single ownership or occupancy.

27.6.3.2.3.3 _

The same box shall be permitted to be used as a public emergency alarm reporting system box and as a transmitting device for an auxiliary alarm system where permitted by the authority having jurisdiction, provided that the box is located at the outside of the entrance to the protected property.

27.6.3.2.3.4 _

Where 27.6.3.2.3.3 is applied, the authority having jurisdiction shall be permitted to require the box to be equipped with a signal light to differentiate between automatic and manual operation, unless local outside alarms at the protected property serve the same purpose.

27.6.3.2.3.5 _

The transmitting device shall be located as required by the authority having jurisdiction.

27.6.3.2.3.6 _

Unless otherwise modified by 27.6.3.2.3.7 , the system shall be designed and arranged so that a single fault on the auxiliary alarm system shall not jeopardize operation of the public emergency alarm reporting system and shall not, in case of a single fault on either the auxiliary or public emergency alarm reporting system, transmit a false alarm on either system.

27.6.3.2.3.7 _

~~The requirements of~~

27.6.3.2.3.

~~6 shall not apply to shunt systems complying with 27.6.3.2.2.1(2) .~~

~~27.6.3.2.3.~~

8 _

A means that is available only to the agency responsible for maintaining the public emergency alarm reporting system shall be provided for disconnecting the auxiliary loop to the connected property.

27.6.3.2.3.9 _

Notification shall be given to the designated representative of the property when the auxiliary box is not in service.

27.6.3.2.3.10 _

An auxiliary alarm system shall be used only in connection with a public emergency alarm reporting system that is approved for the service.

27.6.3.2.3.11 _

A system approved by the authority having jurisdiction shall meet the requirement in 27.6.3.2.3.10 .

27.6.3.2.3.12 _

Permission for the connection of an auxiliary alarm system to a public emergency alarm reporting system, and acceptance of the type of auxiliary transmitter and its activating mechanism, circuits, and components connected thereto, shall be obtained from the authority having jurisdiction.

27.6.3.2.3.13 _

Paragraph 27.6.3.2 shall not require the use of audible alarm signals other than those necessary to operate the auxiliary alarm system.

27.6.3.2.3.14 _

Where it is desired to provide evacuation signals in the protected property, the notification appliances, circuits, and controls shall comply with the provisions of Chapter 23 in addition to the provisions of 27.6.3.2 .

27.6.3.2.3.15 _

Where an auxiliary alarm system is in an alarm condition that has been acknowledged, deactivated, or bypassed, subsequent actuation of initiating devices on other initiating device circuits or subsequent actuation of addressable initiating devices on signaling line circuits shall cause an alarm signal to be transmitted to the communications center.

27.6.3.2.3.16 _

Where an auxiliary transmitter is located within a private premises, it shall be installed in accordance with 27.6.2.1.11 and 27.7.2 .

27.6.3.2.3.17 _

Where data communications between a microprocessor-based control unit and an auxiliary alarm system are utilized, they shall comply with all of the requirements in 27.6.3.2.3.17(A) through 27.6.3.2.3.17(C) .

(A) _

The monitoring for integrity shall include communications test messages transmitted between the control unit and the auxiliary alarm system.

(B) _

The communications test message shall be initiated by either the control unit or the auxiliary alarm system and shall require a response from the corresponding unit, and the following shall apply:

(1) An invalid response or no response from the control unit or the auxiliary alarm system shall be recognized as a communications failure.

(2) A communications failure shall initiate a specific communications failure trouble message, which shall be transmitted from the auxiliary alarm system and shall be automatically indicated within 200 seconds at the communications center.

(3) A trouble condition in 27.6.3.2.3.17(B) (2) shall activate an audible and distinctive visual signal at the auxiliary box indicating a communications failure.

(4) A trouble condition shall be indicated at the control unit and the building fire command center in accordance with 10.15.7 .

(C) _

Where a separate device is required to interface the control unit to the auxiliary alarm system, all communication paths shall be monitored for integrity and shall comply with 27.6.3.2.3.17 .

Statement of Problem and Substantiation for Public Input

Shunt type auxiliary systems are no longer used. All reference to shunt type systems should be removed from Chapter 27.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 505-NFPA 72-2019 [Section No. 27.6.3.2.2.1]	

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 12:46:36 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5167-NFPA 72-2019
Statement: The Technical Committee deletes the text as new shunt-type auxiliary systems are no longer installed.

Public Input No. 349-NFPA 72-2019 [Section No. 27.6.3.2.3.3]

27.6.3.2.3.3

The same box shall be permitted to be used as a public emergency alarm reporting system box and as a transmitting device for an auxiliary alarm system where permitted by the authority having jurisdiction, provided that the box is located at the outside of the primary entrance to the protected property.

Statement of Problem and Substantiation for Public Input

The box should be located where it will be widely visable

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 16:51:33 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: 27.6.3.2.3 needs to be reviewed following the deletion of shunt systems and is confusing as currently worded. A task group has been created to resolve this issue and correlate the requirements between auxiliary and master boxes.

Public Input No. 350-NFPA 72-2019 [Section No. 27.6.3.2.3.4]

27.6.3.2.3.4

Where 27.6.3.2.3.3 is applied, the authority having jurisdiction shall be permitted to require the box to be equipped with a signal light, or other approved means, to differentiate between automatic and manual operation, unless local outside alarms at the protected property serve the same purpose.

Statement of Problem and Substantiation for Public Input

other means are available

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 16:57:24 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: 27.6.3.2.3 needs to be reviewed following the deletion of shunt systems and is confusing as currently worded. A task group has been created to resolve this issue and correlate the requirements between auxiliary and master boxes.

Public Input No. 351-NFPA 72-2019 [Section No. 27.6.3.2.3.9]

27.6.3.2.3.9

Notification shall be given to the designated representative of the property when the auxiliary box is not in service. The notification shall provide a receipt

Statement of Problem and Substantiation for Public Input

It should be acknowledged

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 16:59:07 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: 27.6.3.2.3 needs to be reviewed following the deletion of shunt systems and is confusing as currently worded. A task group has been created to resolve this issue and correlate the requirements between auxiliary and master boxes.

Public Input No. 352-NFPA 72-2019 [Section No. 27.6.3.2.3.10]

27.6.3.2.3.10

An auxiliary alarm system shall be used only in connection with a public emergency alarm reporting system that is approved by the AHJ for the service.

Statement of Problem and Substantiation for Public Input

the ahj should be the designated reciever

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 17:01:04 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: 27.6.3.2.3 needs to be reviewed following the deletion of shunt systems and is confusing as currently worded. A task group has been created to resolve this issue and correlate the requirements between auxiliary and master boxes.

Public Input No. 353-NFPA 72-2019 [Section No. 27.6.3.2.3.12]

27.6.3.2.3.12

Documented Permission for the connection of an auxiliary alarm system to a public emergency alarm reporting system, and acceptance of the type of auxiliary transmitter and its activating mechanism, circuits, and components connected thereto, shall be obtained from the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

The permission should be documented

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 17:03:08 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: 27.6.3.2.3 needs to be reviewed following the deletion of shunt systems and is confusing as currently worded. A task group has been created to resolve this issue and correlate the requirements between auxiliary and master boxes.

Public Input No. 355-NFPA 72-2019 [Section No. 27.7.1.2.2]

27.7.1.2.2

Overhead ~~,~~ or underground ~~, or direct burial cables~~ shall be specifically approved for the purpose. Direct buried cables shall not be permitted

Statement of Problem and Substantiation for Public Input

These cables must have additional protection

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 17:06:12 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: Prohibiting direct buried cables would be prohibitive for some installation locations and it should be up to the AHJ to approve permissible cable installations.

Public Input No. 356-NFPA 72-2019 [Section No. 27.7.1.2.3]

27.7.1.2.3

Metallic and fiber-optic cables used in interior installations shall comply with *NFPA 70* and shall be installed in accordance with the manufacturer's installation instructions and practices. The total length of the cable installed inside the building shall not exceed 50 ft as measured from the point of entrance

Statement of Problem and Substantiation for Public Input

These cables may not be listed for use on the interior of the building

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 17:09:13 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: The proposed revision does not make sense with the section as the the requirement refers to interior wiring and the revision refers to outside cable.

Public Input No. 357-NFPA 72-2019 [Section No. 27.7.1.6.4.2]

27.7.1.6.4.2

Splices or joints shall be permitted only in listed junction ~~or~~ boxes, terminal boxes~~.~~ , or other enclosures acceptable to the AHJ

Statement of Problem and Substantiation for Public Input

If the AHJ feels as though other enclosures will provide the same or better protection then they should be permitted

Submitter Information Verification

Submitter Full Name: Leo Martin
Organization: Martin Electrical Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 17:14:13 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5180-NFPA 72-2019
Statement: Splices or joints should be made only in enclosures approved by the AHJ.

Public Input No. 314-NFPA 72-2019 [Section No. 29.3.1]

29.3.1

All devices, combinations of devices, and equipment to be installed in conformity with this chapter shall be approved, certified, or listed for the purposes for which they are intended.

Additional Proposed Changes

File Name	Description	Approved
UL_certified_logo.jpg	UL certified logo	

Statement of Problem and Substantiation for Public Input

Some of the new 8th edition smoke alarms (meeting the new Polyurethane fire and nuisance requirements) have reached the market and are being refused by some of the AHJ's. They are used to seeing and are looking for the term "listed" on the labeling or packaging. UL has assigned new marking for the 8th edition of alarms for both the product label and the packaging which no longer use the word "listed" and instead use the term "Certified"
The current reference in NFPA states the product "shall be approved or listed". Adding the work "Certified" would provide some backing to those who state the product must state "listed".

Submitter Information Verification

Submitter Full Name: Larry Ratzlaff
Organization: UTC/Kidde Safety
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 20 10:23:00 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5075-NFPA 72-2019
Statement: Labeled is defined by this Code and can include the use of a "certified" mark or label from a recognized testing laboratory. Also refer to CI-5081.

Public Input No. 297-NFPA 72-2019 [New Section after 29.3.3]

TITLE OF NEW CONTENT

The installation of a single smoke, heat, fire or cabon monoxide (CO alarms or systems, or combinations of these shall be permitted in existing construction.

Statement of Problem and Substantiation for Public Input

Many earlier constructed homes do not have any smoke detection devices. Adding even a single detection device to these residences will provide a modicum of safety for those residing in a residence. Requiring a complete system as listed in 29.3.3 may be in some cases cost prohibitive for a consumer. Allowing added devices can provide some necessary early warning rather than none at all.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 296-NFPA 72-2019 [Section No. 29.3.3]	
Public Input No. 298-NFPA 72-2019 [Section No. 29.8.1.1]	
Public Input No. 296-NFPA 72-2019 [Section No. 29.3.3]	
Public Input No. 298-NFPA 72-2019 [Section No. 29.8.1.1]	

Submitter Information Verification

Submitter Full Name: Roy Pollack
Organization: Comcast Xfinity Home
Affiliation: None
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 12:44:46 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: NFPA 72 is an installation code, not an occupancy code. Existing building codes or state and local requirements may well choose to reference NFPA 72 as the applicable standard. While one device is better than none, it is insufficient protection for today's dwelling units.

Public Input No. 296-NFPA 72-2019 [Section No. 29.3.3]

29.3.3*

The installation of smoke, heat, fire, or carbon monoxide (CO) alarms or systems, or combinations of these, in new construction, shall comply with the requirements of this chapter and shall satisfy the minimum requirements for number and location of alarms or detectors by one of the following arrangements:

(1) The required minimum number and location of detection devices shall be satisfied (independently) through the installation of alarms. The installation of additional alarms shall be permitted. The installation of additional system-based detectors, including partial or complete duplication of the alarms satisfying the required minimum, shall be permitted.

(2) The required minimum number and location of detection devices shall be satisfied (independently) through the installation of system detectors. The installation of additional detectors shall be permitted. The installation of additional alarms, including partial or complete duplication of the detectors satisfying the required minimum, shall be permitted.

Statement of Problem and Substantiation for Public Input

The current text does not identify the requirements for new or existing construction. It is quite evident, from practice, that many homes have no smoke alarms or detectors. Smoke detectors installed as a part of a security system (even 1 single one) provides detection coverage that would not otherwise exist. Fire departments routinely provide (usually at no charge) smoke alarms at no charge, whereby even 1 smoke alarm provides some notification to a potential fire or smoke condition. Some detection is better than nothing.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 297-NFPA 72-2019 [New Section after 29.3.3]	
Public Input No. 298-NFPA 72-2019 [Section No. 29.8.1.1]	
Public Input No. 297-NFPA 72-2019 [New Section after 29.3.3]	
Public Input No. 298-NFPA 72-2019 [Section No. 29.8.1.1]	

Submitter Information Verification

Submitter Full Name: Roy Pollack
Organization: Comcast Xfinity Home
Affiliation: None
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 12:37:24 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: NFPA 72 is an installation code, not an occupancy code. Existing building codes or state and local requirements may well choose to reference NFPA 72 as the applicable standard. While one device is better than none, it is insufficient protection for today's dwelling units.

Public Input No. 284-NFPA 72-2019 [Section No. 29.5]

29.5 Notification.

29.5.1*

Unless otherwise permitted by 29.5.~~2~~ 3 , fire-warning equipment to be installed in residential occupancies shall produce the audible emergency evacuation signal described in ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)*, whenever the intended response is to evacuate the building.

29.5.2

The audible emergency evacuation signal shall be permitted to be used for other devices as long as the desired response is immediate evacuation.

29.5.3

Where mechanically powered single-station heat alarms are used as supplementary devices, unless required by applicable laws, codes, or standards, such devices shall not be required to produce the emergency evacuation signal described in ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)* .

29.5.

~~3~~

4 *****

~~**29.5.3.1**~~

Carbon

~~monoxide alarms shall have a minimum rating of 85 dBA at 10 ft (3 m).~~

~~**29.5.3.2**~~

~~Carbon~~

monoxide–warning equipment to be installed in residential occupancies shall produce the T-4 signal. After the initial 4 minutes of alarm, the 5-second "off" time of the alarm signal shall be permitted to be changed to 60 seconds ± 10 percent.

29.5.

~~4~~

~~The audible emergency evacuation signal shall be permitted to be used for other devices as long as the desired response is immediate evacuation.~~

~~29.~~

5

~~.5~~

*****

Fire-warning equipment producing the audible emergency evacuation signal shall be permitted to incorporate voice notification under either or both of the following conditions:

(1) Where the voice message is contained completely within the 1.5-second pause period of the audible emergency evacuation signal

(2) Where the voice message complies with 29.5.5(2)(a) and 29.5.5(2)(b) as follows:

(3) The voice message is first preceded by a minimum of eight cycles of the audible emergency evacuation signal.

(4) The voice message periodically interrupts the signal for no longer than 10 seconds, followed by a minimum of two cycles of the audible emergency evacuation signal between each voice message. The initial eight-cycle period shall not be required to be repeated.

29.5.6 * _

Carbon monoxide–warning equipment producing the audible notification signal shall be permitted to incorporate voice notification under either or both of the following:

(1) Where the voice message is contained completely within the 5-second pause period of the audible notification signal

(2) Where the voice message complies with 29.5.6(2)(a) and 29.5.6(2)(b) as follows:

(3) The voice message is first preceded by a minimum of 6 cycles of the audible notification signal.

(4) The voice message periodically interrupts the signal for no longer than 10 seconds, followed by a minimum of two cycles of the audible notification signal between each voice message. The initial 6-cycle period shall not be required to be repeated.

29.5.7 _

All audible notification signals installed shall meet the performance requirements of 18.4.4 , 18.4.6.1 , 18.4.6.2 , and 29.5.10 .

29.5.8 * _

Where visual appliances are provided, they shall meet the requirements of Section 18.5 .

29.5.9 _

Since hearing deficits are often not apparent, the responsibility for advising the appropriate person(s) of the existence of this deficit shall be that of the party with hearing loss.

29.5.10 _

Notification appliances provided in sleeping rooms and guest rooms for those with hearing loss shall comply with 29.5.10.1 and 29.5.10.2 , as applicable.

29.5.10.1 * _ Mild to Severe Hearing Loss.

Notification appliances provided for those with mild to severe hearing loss shall comply with the following:

(1) An audible notification appliance producing a low frequency alarm signal shall be installed in the following situations:

(2) Where required by governing laws, codes, or standards for people with hearing loss

(3) Where provided voluntarily for those with hearing loss

(4)* The low frequency alarm signal output shall comply with the following:

(5) The waveform shall have a fundamental frequency of 520 Hz ± 10 percent.

(6) The minimum sound level at the pillow shall be 75 dBA, or 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater.

29.5.10.2 * _ Moderately Severe to Profound Hearing Loss.

Visual notification appliances in accordance with the requirements of 18.5.5.8 and tactile notification appliances in accordance with the requirements of Section 18.10 shall be required for those with moderately severe to profound hearing loss in the following situations:

(1)* Where required by governing laws, codes, or standards for people with hearing loss

(2) Where provided voluntarily for those with hearing loss

29.5.11 _

Signals from notification appliances shall not be required to be synchronized.

Statement of Problem and Substantiation for Public Input

Committee task group recommendation based on correlating committee comment. The structure of 29.5 did not seem optimal and or organized and was rearranged for improved flow and grouping of similar requirements.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 289-NFPA 72-2019 [Section No. A.29.5.3]	

Submitter Information Verification

Submitter Full Name: Cory Ogle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 12:56:48 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5025-NFPA 72-2019
Statement: Section 29.5 was reorganized to improve flow and grouping of similar requirements. The minimum dB level for CO alarms was removed because it is part of the product standard. For A.29.5.1, the text was updated to replace the address with the website at which the standards can be purchased.

Public Input No. 201-NFPA 72-2019 [New Section after 29.5.3]

TITLE OF NEW CONTENT

The audible signal of carbon monoxide alarms and systems installed to meet the requirements of this chapter shall not be required to be synchronized.

Statement of Problem and Substantiation for Public Input

This language was added to Chapter 18 (18.4.3.4) in the second draft of the last cycle. Since this is specific to CO systems designed in accordance with Chapter 29 it should be located in this 29. It is out of place in Chapter 18 and not where one would go to find that requirement.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 200-NFPA 72-2019 [Section No. 18.4.3.4]	

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 29 18:52:33 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: Section 29.5.11 already states that signals from notification appliances are not required to be synchronized.

Public Input No. 336-NFPA 72-2019 [Section No. 29.5.3.2]

29.5.3.2

Carbon monoxide–warning equipment to be installed in residential occupancies shall produce the ~~T~~ four ~~-~~4 ~~signal. After the initial 4 minutes of alarm, the 5-second "off" time of the alarm signal shall be permitted to be changed to 60 seconds ± 10 percent.~~ pulse temporal pattern signal as specified in 18.4.3.

Statement of Problem and Substantiation for Public Input

This is the only reference in NFPA 72 to a "T-4" signal. Since a full definition and description of the four-pulse temporal pattern signal is provided in 18.4.3, reference should be provided to that section for consistency and accuracy.

The last sentence of 29.5.3.2 is a duplicate of the allowance at 18.4.3.2(2), and thus can be eliminated as duplicate material as long as reference is made to 18.4.3 in the text.

Submitter Information Verification

Submitter Full Name: Larry Rietz
Organization: JENSEN HUGHES
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 12:18:19 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A full definition and description of the four-pulse temporal (T-4) pattern signal should not only be provided in 18.4.3. The text proposed for deletion is in the product standard.

Public Input No. 206-NFPA 72-2019 [Section No. 29.5.9]

29.5.9

Since hearing deficits are often not apparent, the responsibility for advising the appropriate person(s) of the existence of this deficit shall be that of the party with hearing loss.

Additional Proposed Changes

File Name	Description	Approved
SIG-HOU_Low_Frequency_PI_DRAFT.docx	proposed changes to 29.5.9 and 29.5.10	

Statement of Problem and Substantiation for Public Input

Statement of Problem and Substantiation of Public Input……
This public input is for the purpose of demonstrating the National Disability Rights Network (the nations largest group of state based legal advocates for individuals with disabilities) support for mandating the smoke alarm to produce the low frequency audible fire alarm signals in all sleeping rooms.
While this requirement will be in the newer editions of the International Fire Code and NFPA 101, including this provision in Chapter 29 of the 2022 edition of NFPA 72 will help to ensure no segment of the population will fall through a code / standard adoption gap.
We have read the peer reviewed research on this matter and are aware of the statistics indicating the significant percentage of the population impacted by hearing loss. Some studies show that 40 million Americans will be identified with a hearing loss by 2025 with that number growing to 53 million by 2050.
This public input is a continuation of the support we have demonstrated in the past at the ICC Fire Code Action Council during their deliberations on the is matter.
Peer-Reviewed Research: Ian R. Thomas and Dorothy Bruck, Waking Effectiveness of Alarms for Adults Who Are Hard of Hearing (Melbourne, Australia: Victoria University), National Fire Protection Association, 2007

Submitter Information Verification

Submitter Full Name: Mark Larson
Organization: Mark Larson And Associates LLC
Affiliation: National Disability Rights Network (NDRN)
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 30 15:29:36 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A full mandate for 520 Hz has not been demonstrated to substantially increase overall occupant safety when considering other potential technical and application issues, such as limitations on being able to provide product that meets the full suite of requirements, and the cost-benefit to the consumer and general public safety. A Fire Protection Research Foundation study is currently underway to evaluate low-frequency signals at varying sound pressure levels.

Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]

* Notification appliances and smoke alarms __ provided in sleeping rooms and guest rooms ~~for those with hearing loss shall comply~~ shall be a 520 Hz low-frequency audible alarm signal in accordance with 29.5.10.1 and 29 . ~~5.10.2, as applicable.~~

Statement of Problem and Substantiation for Public Input

This Public Input (PI) seeks to enhance the waking effectiveness of high risk segments of the population (over 65, people who are hard of hearing, school age children and people who are alcohol impaired) by providing a requirement for the 520 Hz low frequency audible fire alarm signal in all sleeping rooms. The requirement in this PI won't become widely enforced until 2025 or 2026 because the 2022 edition of NFPA 72 will be referenced in the 2024 edition of the ICC and NFPA model codes.

Smoke alarm manufacturers will be working to develop a product that will produce the 520 Hz low-frequency audible alarm signal because the 2021 edition of the International Fire Code will require smoke alarms that are installed in sleeping rooms of new hotels, dormitories and apartment buildings to produce the 520 Hz low-frequency audible alarm signal. Also, the NFPA 101 Residential Committee unanimously approved FR 6886 and FR 6892 that will require smoke alarms that are installed in sleeping rooms to produce the 520 Hz low-frequency audible alarm signal.

Any further delay in implementing a technology that is proven to enhance public life safety needs to be avoided. Peer-reviewed research has concluded the wakening effectiveness of the 520 Hz low-frequency signal is superior to standard 3KHz audible alarm signal for awakening high-risk segments of the population such as such as people over 65, people who are hard of hearing, school age children and people who are alcohol impaired.

Peer-Reviewed Research: Ian R. Thomas and Dorothy Bruck, Waking Effectiveness of Alarms for Adults Who Are Hard of Hearing (Melbourne, Australia: Victoria University), National Fire Protection Association, 2007

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]	
Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]	
Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]	
Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]	
Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]	
Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]	

Submitter Information Verification

Submitter Full Name: Isaac Papier
Organization: Papier Consulting Group LLC
Street Address:
City:
State:
Zip:
Submittal Date: Sat May 18 15:01:24 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A full mandate for 520 Hz has not been demonstrated to substantially increase overall occupant safety when considering other potential technical and application issues, such as limitations on being able to provide product that meets the full suite of requirements, and the cost-benefit to the consumer and general public safety. A Fire Protection Research Foundation study is currently underway to evaluate low-frequency signals at varying sound pressure levels.

Public Input No. 216-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]

Notification appliances provided in sleeping ~~rooms~~ areas and guest rooms for those with hearing loss shall comply with 29.5.10.1 and 29.5.10.2, as applicable.

Statement of Problem and Substantiation for Public Input

Would like to replace the word "rooms" with "areas" in order for the user of the code to consider areas of the dwelling unit where someone could be sleeping. A room is very defining and limits the low frequency sounders to what is typically thought of as a bedroom. It's common for individuals to sleep in other areas of the dwelling such as living room areas, an office converted to a bedroom, basements. . . A.18.4.6.3 provides guidance for what Chapter 18 intent was for where low frequency sounders should be installed considering where someone could be sleeping. A PI was also submitted for Chapter 29 to point the user back to A.18.4.6.1 as the intent for what should be considered an area where someone could be sleeping.

Consistency between Chapter 18 and 29 with the words used within the document is important and perhaps prevent less confusion to the user of our document.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 215-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 215-NFPA 72-2019 [New Section after A.29.5.10.1]	

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 16:18:00 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: The definition of a “sleeping area” in Section 3.3.258 does not consider a living room as a sleeping area. SIG-HOU requests the Correlating Committee to review recommendations in A.18.4.6.3 regarding the application of "sleeping rooms" to living room areas.

Public Input No. 177-NFPA 72-2019 [Section No. 29.5.10.1]

29.5.10.1* ~~Mild to Severe Hearing Loss.~~ **520Hz Low Frequency Audible Alarm Signal**

Notification appliances ~~provided for those with mild to severe hearing loss shall comply with the following:~~

- ~~An audible notification appliance producing a low frequency alarm signal shall be installed in the following situations:~~

(1) ~~Where required by governing laws, codes, or standards for people with hearing loss~~

(2) ~~Where provided voluntarily for those with hearing loss~~

* ~~The low frequency alarm signal output shall comply with~~ or smoke alarms provided in sleeping rooms and guest rooms shall produce a 520Hz low frequency audible alarm signal complying with the following :

(1) The waveform shall have a fundamental frequency of ~~520 Hz ± 10 percent~~

(2) 520 Hz ? ± 10 percent .

(3) The minimum sound level at the pillow shall be 75 dBA, or 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least ~~60 seconds~~

(4) 60 seconds , whichever is greater.

Statement of Problem and Substantiation for Public Input

This Public Input (PI) seeks to enhance the waking effectiveness of high risk segments of the population (over 65, people who are hard of hearing, school age children and people who are alcohol impaired) by providing a requirement for the 520 Hz low frequency audible fire alarm signal in all sleeping rooms. The requirement in this PI won't become widely enforced until 2025 or 2026 because the 2022 edition of NFPA 72 will be referenced in the 2024 edition of the ICC and NFPA model codes.

Smoke alarm manufacturers will be working to develop a product that will produce the 520 Hz low-frequency audible alarm signal because the 2021 edition of the International Fire Code will require smoke alarms that are installed in sleeping rooms of new hotels, dormitories and apartment buildings to produce the 520 Hz low-frequency audible alarm signal. Also, the NFPA 101 Residential Committee unanimously approved FR 6886 and FR 6892 that will require smoke alarms that are installed in sleeping rooms to produce the 520 Hz low-frequency audible alarm signal.

Any further delay in implementing a technology that is proven to enhance public life safety needs to be avoided. Peer-reviewed research has concluded the wakening effectiveness of the 520 Hz low-frequency signal is superior to standard 3KHz audible alarm signal for awakening high-risk segments of the population such as such as people over 65, people who are hard of hearing, school age children and people who are alcohol impaired.

Peer-Reviewed Research: Ian R. Thomas and Dorothy Bruck, Waking Effectiveness of Alarms for Adults Who Are Hard of Hearing (Melbourne, Australia: Victoria University), National Fire Protection Association, 2007

Submitter Information Verification

Submitter Full Name: Isaac Papier
Organization: Papier Consulting Group LLC
Street Address:
City:
State:
Zip:

Submittal Date: Sat May 18 15:22:50 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A full mandate for 520 Hz has not been demonstrated to substantially increase overall occupant safety when considering other potential technical and application issues, such as limitations on being able to provide product that meets the full suite of requirements, and the cost-benefit to the consumer and general public safety. A Fire Protection Research Foundation study is currently underway to evaluate low-frequency signals at varying sound pressure levels.

Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]

29.5.10.1* ~~Mild to Severe Hearing Loss~~ **520Hz Low Frequency Audible Alarm Signal** .

Notification appliances ~~provided for those with mild to severe hearing loss shall comply with the following:~~

- ~~An audible notification appliance producing a low frequency alarm signal shall be installed in the following situations:~~

(1) ~~Where required by governing laws, codes, or standards for people with hearing loss~~

(2) ~~Where provided voluntarily for those with hearing loss~~

* ~~The low frequency alarm signal output shall comply with~~ or smoke alarms provided in sleeping rooms and guest rooms shall produce a 520Hz low frequency audible alarm signal complying with the following :

(1) The waveform shall have a fundamental frequency of ~~520 Hz~~

(2) 520 Hz ± ~~10 percent~~

(3) 10 percent .

(4) The minimum sound level at the pillow shall be 75 dBA, or 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least ~~60 seconds~~

(5) 60 seconds , whichever is greater.

Additional Proposed Changes

File Name	Description	Approved
SIG-HOU_Low_Frequency_PI_DRAFT.docx	document attached in legislative text for reference.	

Statement of Problem and Substantiation for Public Input

This Public Input (PI) seeks to enhance the waking effectiveness of high risk segments of the population (over 65, people who are hard of hearing, school age children and people who are alcohol impaired) by providing a requirement for the 520 Hz low frequency audible fire alarm signal in all sleeping rooms. The requirement in this PI won't become widely enforced until 2025 or 2026 because the 2022 edition of NFPA 72 will be referenced in the 2024 edition of the ICC and NFPA model codes.

Smoke alarm manufacturers will be working to develop a product that will produce the 520 Hz low-frequency audible alarm signal because the 2021 edition of the International Fire Code will require smoke alarms that are installed in sleeping rooms of new hotels, dormitories and apartment buildings to produce the 520 Hz low-frequency audible alarm signal. Also, the NFPA 101 Residential Committee unanimously approved FR 6886 and FR 6892 that will require smoke alarms that are installed in sleeping rooms to produce the 520 Hz low-frequency audible alarm signal.

Any further delay in implementing a technology that is proven to enhance public life safety needs to be avoided. Peer-reviewed research has concluded the wakening effectiveness of the 520 Hz low-frequency signal is superior to standard 3KHz audible alarm signal for awakening high-risk segments of the population such as such as people over 65, people who are hard of hearing, school age children and people who are alcohol impaired.

Peer-Reviewed Research: Ian R. Thomas and Dorothy Bruck, Waking Effectiveness of Alarms for Adults Who Are Hard of Hearing (Melbourne, Australia: Victoria University), National Fire Protection Association, 2007

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]	
Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]	
Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]	
Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]	

Submitter Information Verification

Submitter Full Name: Isaac Papier
Organization: Papier Consulting Group LLC
Street Address:
City:
State:
Zip:
Submittal Date: Sat May 18 15:34:34 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A full mandate for 520 Hz has not been demonstrated to substantially increase overall occupant safety when considering other potential technical and application issues, such as limitations on being able to provide product that meets the full suite of requirements, and the cost-benefit to the consumer and general public safety. A Fire Protection Research Foundation study is currently underway to evaluate low-frequency signals at varying sound pressure levels.

Public Input No. 151-NFPA 72-2019 [New Section after 29.5.10.2]

TITLE OF NEW CONTENT

Type your content here ...

29.5.11 Signal appliances connected to notification appliance circuit(s) that services more than one suite, apartment or dwelling may have provisions to temporarily silence the notification appliances within an individual suite, apartment or dwelling. The silence feature shall be limited to 10 minutes or less and requires manual operation only if the notification appliance circuit is active.

Statement of Problem and Substantiation for Public Input

This aligns with Canadian requirements for suits and US smoke alarms which allow for local silence if the alarm is active. This feature may also be used to calm at risk population in the event of a fire or CO alarm.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 07 12:16:20 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: The public input relates to protected premises fire alarms systems not to household systems covered by Chapter 29.

Public Input No. 136-NFPA 72-2019 [Section No. 29.6.1.1]

29.6.1.1

The requirements of this chapter shall assume that occupants are capable of effective self-rescue.

Statement of Problem and Substantiation for Public Input

Occupants may be capable of normal egress during their daily lives, and may assume that this satisfies the code requirement for self-rescue. However, occupants with physical or other impairments may not be capable of effective self-rescue under emergency conditions. An industry panel at the Vision 20/20 symposium in Baltimore, MD in April 2019 recommended that further efforts to improve the effectiveness of smoke alarms during fires include an emphasis on effective self-rescue, as well as further study on conditions affecting occupants ability to self rescue, including conditions related to chemical impairment, youth, and advancing age.

Submitter Information Verification

Submitter Full Name: Laurence Dallaire
Organization: Architect of the Capitol
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 26 14:18:06 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: The proposed change introduces a term that is not defined and thus, does not provide an improvement. Refer to the Manual of Style, 2.2.2.3, for possibly unenforceable vague terms such as "effective" and "effectively."

Public Input No. 298-NFPA 72-2019 [Section No. 29.8.1.1]

29.8.1.1*

Where required by other governing laws, codes, or standards for a specific type of new construction occupancy, listed single- and multiple-station smoke alarms shall be installed as follows:

(1)* In all sleeping rooms and guest rooms

(2)* Outside of each separate dwelling unit sleeping area, within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel

(3) On every level of a dwelling unit, including basements

(4) On every level of a residential board and care occupancy (small facility), including basements and excluding crawl spaces and unfinished attics

(5)* In the living area(s) of a guest suite

(6) In the living area(s) of a residential board and care occupancy (small facility)

Statement of Problem and Substantiation for Public Input

The current text does not identify new or existing household applications. This change specifies that the requirement is for new construction, thereby (along with PI 296 and 297) will permit the installation of a single or multiple smoke detectors as part of a security system in residences that have no detection devices at all.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 296-NFPA 72-2019 [Section No. 29.3.3]	
Public Input No. 297-NFPA 72-2019 [New Section after 29.3.3]	
Public Input No. 296-NFPA 72-2019 [Section No. 29.3.3]	
Public Input No. 297-NFPA 72-2019 [New Section after 29.3.3]	

Submitter Information Verification

Submitter Full Name: Roy Pollack
Organization: Comcast Xfinity Home
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 13:23:26 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: The standard applies to both existing and new construction as required by applicable codes and laws.

Public Input No. 468-NFPA 72-2019 [Section No. 29.10.6]

29.10.6– _ **Combination System** _ Control Unit.

29.10.6.1

The combination system control unit shall be automatically restoring upon restoration of electrical power.

29.10.6.2*

The combination system control unit shall be of a type that “locks in” on an alarm condition.

29.10.6.3

Smoke detection circuits shall not be required to lock in.

29.10.6.4

If a reset switch is provided, it shall be of a self-restoring (momentary operation) type.

29.10.6.5

A means for silencing the trouble notification appliance(s) shall be permitted only if the following conditions are satisfied:

(1) The means is key-operated or located within a locked enclosure, or arranged to provide equivalent protection against unauthorized use.

(2) The means transfers the trouble indication to an identified lamp or other acceptable visible indicator, and the visible indication persists until the trouble condition has been corrected.

29.10.6.6

A means for turning off actuated alarm notification appliances shall be permitted only if the following conditions are satisfied:

(1) The means is key-operated or located within a locked cabinet or arranged to provide equivalent protection against unauthorized use.

(2) The means includes the provision of a visible alarm silence indication.

(3) The silenced position is indicated by a distinctive signal.

(4) The switch is a momentary or self-restoring switch.

29.10.6.7

Initiating devices and notification appliances connected to household combination system control units shall be monitored for integrity so that the occurrence of a single open or single ground fault in the interconnection, which prevents normal operation of the interconnected devices, is indicated by a distinctive trouble signal.

29.10.6.8

The combination system control unit shall be in compliance with applicable standards such as ANSI/UL 985, *Standard for Household Fire Warning System Units*; ANSI/UL 1730, *Standard for Smoke Detector Monitors and Accessories for Individual Living Units of Multifamily Residences and Hotel/Motel Rooms*; or ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*.

29.10.6.9

Any data exchange between the combination system control unit and separate independent devices via remote access shall not compromise the integrity of the fire alarm system.

29.10.6.10

Remote resetting and silencing of a combination system control unit from other than the protected premises shall be inhibited for a minimum of 4 minutes from the initial activation of the fire alarm signal.

29.10.6.11

Each electrical carbon monoxide detection system shall have an integral test means to allow testing of the system operation.

Statement of Problem and Substantiation for Public Input

As defined in Chapter 3, "Control Unit" can refer to a number of different devices. A new definition of "Combination System Control Unit" has been submitted to Chapter 3 so it can be used more precisely in Chapter 29, as proposed here. A change is also being submitted to 23.8.4.9.4 which uses "combination control unit," (undefined.)

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 466-NFPA 72-2019 [Section No. 3.3.63]	Definition

Submitter Information Verification

Submitter Full Name: Wendy Gifford
Organization: Consultant
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 17:07:32 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: The need for such a change is not provided and the additional wording provides no apparent benefit. Control unit adequately covers combination and non-combination control units.

Public Input No. 532-NFPA 72-2019 [Section No. 29.10.6.8]

29.10.6.8

The control unit shall be in compliance with applicable standards such as ANSI/UL 985, *Standard for Household Fire Warning System Units*; ANSI/UL 1730, *Standard for Smoke Detector Monitors and Accessories for Individual Living Units of Multifamily Residences and Hotel/Motel Rooms*; or ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems* and CP-01 Standard . .

Additional Proposed Changes

File Name	Description	Approved
CP-01-2019_Final_Draft_04232019.pdf	CP-01 False Alarm Standard	

Statement of Problem and Substantiation for Public Input

submitting CP-01 as there are changes in the document adding definitions for mobility and remote connections.

Submitter Information Verification

Submitter Full Name: Richard Simpson
Organization: Vector Security Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 08:34:27 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: Security Industry Association (SIA) standards, such as CP-01, are voluntary industry standards and need not be an example of a requirement.

Public Input No. 44-NFPA 72-2019 [Section No. 29.10.6.10]

29.10.6.10

Remote resetting and silencing of a control unit from other than the protected premises shall be inhibited for a minimum of 4 minutes from the initial activation of the fire alarm signal. Exception: When the system being remotely reset is a non required system and when the silencing of the fire alarm Control does not result in the silencing of the activated smoke and or CO alarm the system may be remotly reset without delay.

Statement of Problem and Substantiation for Public Input

With new technology being considered, the intent is to set a minimum standard for remote resetting of non-required fire alarm systems that are providing off site notification of smoke/CO Alarms. This change will allow for the silencing of the control unit while having no impact on the onsite required notification that the alarms provide thereby still allowing anyone on site to be notified and evacuate as expected.

Submitter Information Verification

Submitter Full Name: Michael G. Slossar
Organization: Ring Protect Inc.
Affiliation: None
Street Address:
City:
State:
Zip:
Submittal Date: Tue Mar 05 13:44:30 EST 2019
Committee: SIG-HOU

Committee Statement

Resolution: Substantiation is not clear as to why there should be an exception.

Public Input No. 565-NFPA 72-2019 [Section No. 29.10.7.8.2]

29.10.7.8.2

Single- or multiple-station smoke alarms shall be permitted to be connected to system control ~~equipment located~~ units located within the dwelling unit.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:33:53 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5092-NFPA 72-2019
Statement: The term "control equipment" is not defined in the Code. The term "control unit" is defined and is the term that is appropriate to convey the intended meaning.

Public Input No. 567-NFPA 72-2019 [Section No. 29.10.7.8.3]

29.10.7.8.3

When connected, the actuation of a single- or multiple-station smoke alarm shall initiate an alarm signal at the system control ~~equipment located~~ units located within the dwelling unit.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:37:02 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5094-NFPA 72-2019
Statement: The term "control equipment" is not defined in the Code. The term "control unit" is defined and is the term that is appropriate to convey the intended meaning.

Public Input No. 575-NFPA 72-2019 [Section No. 29.10.7.8.3]

29.10.7.8.3

When connected, the actuation of a single- or multiple-station smoke alarm shall initiate an alarm signal at the system control ~~equipment located~~ units located within the dwelling unit.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:01:02 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5094-NFPA 72-2019
Statement: The term "control equipment" is not defined in the Code. The term "control unit" is defined and is the term that is appropriate to convey the intended meaning.

Public Input No. 533-NFPA 72-2019 [Section No. 29.10.8.2]

29.10.8.2 Nonsupervised Wireless Interconnected Alarms.

29.10.8.2.1*

To ensure adequate transmission and reception capability, nonsupervised, low-power wireless alarms shall be capable of reliably communicating at a distance of 100 ft (30.5 m) indoors as tested to an equivalent open area test distance, D_{EOAT}, between two devices in accordance with Equations 29.10.8.2.1a and 29.10.8.2.1b.

$$D_{EOAT} = 30.5 \times \left(10^{\frac{L_b}{40}} \right) \quad \textbf{[29.10.8.2.1a]}$$

where:

L_b = the building attenuation factor

$$L_b = 4 \times L_w + 2 \times L_f \quad \textbf{[29.10.8.2.1b]}$$

where:

L_W = attenuation value of a wall

$= 2 \times L_1 + L_2$

L_f = attenuation value of a floor

$= L_1 + L_2 + L_3 + L_4$

L_1 = frequency-dependent attenuation value for $^1/_2$ in. (13 mm) drywall

L_2 = frequency-dependent attenuation value for $1^1/_2$ in. (38 mm) structural lumber

L_3 = frequency-dependent attenuation value for $^3/_4$ in. (19 mm) plywood

L_4 = frequency-dependent attenuation value for $^1/_2$ in. (13 mm) glass/tile floor

29.10.8.2.2

Fire alarm signals shall have priority over all other signals.

29.10.8.2.3

The maximum allowable response delay from activation of an initiating device to receipt and alarm/display by the receiver/control unit shall be 20 seconds.

29.10.8.2.4*

Wireless interconnected smoke alarms (in receive mode) shall remain in alarm as long as the originating unit (transmitter) remains in alarm.

29.10.8.2.5

The occurrence of any single fault that disables a transceiver shall not prevent other transceivers in the system from operating.

Statement of Problem and Substantiation for Public Input

Remove Section 29.10.8.2.1

29.10.8.2.1*
To ensure adequate transmission and reception capability, nonsupervised, low-power wireless alarms shall be capable of reliably communicating at a distance of 100 ft (30.5 m) indoors as tested to an equivalent open area test distance, DEOAT, between two devices in accordance with Equations 29.10.8.2.1a and 29.10.8.2.1b.
[29.10.8.2.1a]
where:
.

Lb = the building attenuation factor
[29.10.8.2.1b]
where:
Lw = attenuation value of a wall
= 2 × L1 + L2
Lf = attenuation value of a floor
= L1 + L2 + L3 + L4
L1 = frequency-dependent attenuation value for 1/2 in. (13 mm) drywall
L2 = frequency-dependent attenuation value for 11/2 in. (38 mm) structural lumber
L3 = frequency-dependent attenuation value for 3/4 in. (19 mm) plywood
L4 = frequency-dependent attenuation value for 1/2 in. (13 mm) glass/tile floor

Submitter Information Verification

Submitter Full Name: Richard Simpson
Organization: Vector Security Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 08:49:23 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5095-NFPA 72-2019
Statement: The detail on testing interconnection of nonsupervised wireless alarms was added to NFPA 72 in 2010 because there were products on the market at that time and no reference to testing the wireless interconnection in the UL 217 product standard. Since that time, wireless interconnection has been incorporated into UL 217 and is being further refined as part of the regular ANSI process. The text is modified to establish performance criteria and remove test details that are being incorporated into UL 217.

Public Input No. 149-NFPA 72-2019 [Section No. 29.10.8.2.1]

~~29.10.8.2.1 * –~~

~~To ensure adequate transmission and reception capability, nonsupervised, low-power wireless alarms shall be capable of reliably communicating at a distance of 100 ft (30.5 m) indoors as tested to an equivalent open area test distance, D_{EOAT}, between two devices in accordance with Equations 29.10.8.2.1a and 29.10.8.2.1b.~~

$$D_{EOAT} = 30.5 \times \left(10^{\frac{L_b}{40}} \right)$$ ~~[29.10.8.2.1a~~

~~where:~~

~~L_b = the building attenuation factor~~

$$L_b = 4 \times L_w + 2 \times L_f$$ ~~[29.10.8.2.1b~~

~~where: L_w = attenuation value of a wall = 2 × L_1 + L_2 L_f = attenuation value of a floor = L_1 + L_2 + L_3 + L_4 L_1 = frequency-dependent attenuation value for $\frac{1}{2}$ in. (13 mm) drywall L_2 = frequency-dependent attenuation value for 1 $\frac{1}{2}$ in. (38 mm) structural lumber L_3 = frequency-dependent attenuation value for $\frac{3}{4}$ in. (19 mm) plywood L_4 = frequency-dependent attenuation value for $\frac{1}{2}$ in. (13 mm) glass/tile floor~~

-

Statement of Problem and Substantiation for Public Input

All text in 29.10.8.2.1 is being proposed to be deleted. The strikeout for the formulas is not being shown correctly but all text including the formulas are proposed to be deleted in 29.10.8.2.1.

The detail on testing interconnection of unsupervised wireless alarms was added to NFPA 72 in 2010 because there were products on the market at that time and no reference to testing the wireless interconnection in the UL 217 product standard. Since that time, wireless interconnection has been incorporated into UL 217 and is being further refined as part of the regular ANSI process. Such product specific requirements properly belong in the product standard, not the installation standard. Since they now reside there, they can be removed from NFPA 72.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 07 11:12:34 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5095-NFPA 72-2019

Statement: The detail on testing interconnection of nonsupervised wireless alarms was added to NFPA 72 in 2010 because there were products on the market at that time and no reference to testing the wireless interconnection in the UL 217 product standard. Since that time, wireless interconnection has been incorporated into UL 217 and is being further refined as part of the regular ANSI process. The text is modified to establish performance criteria and remove test details that are being incorporated into UL 217.

Public Input No. 311-NFPA 72-2019 [Section No. 29.10.8.2.1]

29.10.8.2.1*

To ensure adequate transmission and reception capability, nonsupervised, low-power wireless alarms shall be capable of reliably communicating at a distance of 100 ft (30.5 m) indoors as tested to an equivalent open area test distance, ~~*D EOAT* , between two devices in accordance with Equations 29.10.8.2.1a and 29.10.8.2.1b.~~

$$D_{EOAT} = 30.5 \times \left(10^{\frac{L_b}{40}} \right)$$ ~~[29.10.8.2.1a]~~

~~where:~~

~~*L b* = the building attenuation factor~~

$$L_b = 4 \times L_w + 2 \times L_f$$ ~~[29.10.8.2.1b]~~

~~where: *L w* = attenuation value of a wall = 2 × *L* 1 + *L* 2 *L f* = attenuation value of a floor = *L* 1 + *L* 2 + *L* 3 + *L* 4 *L* 1 = frequency-dependent attenuation value for 1/2 in. (13 mm) drywall *L* 2 = frequency-dependent attenuation value for 1 1/2 in. (38 mm) structural lumber *L* 3 = frequency-dependent attenuation value for 3/4 in. (19 mm) plywood *L* 4 = frequency-dependent attenuation value for 1/2 in. (13 mm) glass/tile floor . Low-power wireless alarms shall be tested upon completion of installation to confirm connectivity of each device.~~

Statement of Problem and Substantiation for Public Input

The transmitter/receiver combination is tested as part of the NRTL Listing. The equations included in 29.10.8.2a and 29.10.8.2b are subject to interpretation and do not take into account variations in the actual building construction and materials used or even humidity conditions which make reproducible and repeatable testing nearly impossible. The most reproducible and repeatable method for transmitter/receiver testing is completed through unobstructed air. This is already stated in 29.10.8.2.1, so the equations only add complexity and confusion for manufacturers, installers, and the AHJ. To confirm connectivity of each device, all equipment shall be tested upon completion of installation.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 312-NFPA 72-2019 [Section No. A.29.10.8.2.1]	
Public Input No. 313-NFPA 72-2019 [Section No. I.1.2.16.9]	

Submitter Information Verification

Submitter Full Name: Greg Hansen
Organization: Vivint Inc.
Affiliation: SIG-HOU Task Group 2 input
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 19 18:07:42 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5095-NFPA 72-2019

Statement: The detail on testing interconnection of nonsupervised wireless alarms was added to NFPA 72 in 2010 because there were products on the market at that time and no reference to testing the wireless interconnection in the UL 217 product standard. Since that time, wireless interconnection has been incorporated into UL 217 and is being further refined as part of the regular ANSI process. The text is modified to establish performance criteria and remove test details that are being incorporated into UL 217.

Public Input No. 534-NFPA 72-2019 [New Section after 29.10.9.10.6]

TITLE OF NEW CONTENT: Cellular Service

Type your content here ... Cellular radio service shall connect to the cellullar network directly without a device that emulates an outdated technology.

Statement of Problem and Substantiation for Public Input

There are devices entering the market that will receive data signals from the panel from a sunsetted technology the retransmit these signals over the current cellular network. At minimum devices need to be listed and tested.

Submitter Information Verification

Submitter Full Name: Richard Simpson
Organization: Vector Security Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 08:55:09 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5098-NFPA 72-2019

Statement: There are devices entering the market that will receive data signals from the panel from a sunsetted technology then transmit these signals over the current cellular network. At minimum, devices need to be listed and tested.

Text has been added requiring transmission devices comply with UL 985 and be listed for its intended application.

Public Input No. 276-NFPA 72-2019 [Section No. 29.11.1.4]

29.11.1.4

The supplier or installing contractor shall provide the system owner or other responsible parties with the following:

(1) An instruction booklet illustrating typical installation layouts

(2) Instruction charts describing the operation, method, and frequency of testing and maintenance of the warning equipment

(3) Printed information for establishing an emergency evacuation plan

(4) Printed information to inform system owners where they can obtain repair or replacement service, and where and how parts requiring regular replacement, such as batteries or bulbs, can be obtained within 2 weeks

(5) Information noting both of the following:

(6) Unless otherwise recommended by the manufacturer's published instructions, smoke alarms shall be replaced when they fail to respond to tests.

(7) Smoke alarms shall not remain in service longer than 10 years from the date of manufacture unless otherwise provided by manufacturer's published instructions.

(8) The instructions required in 29.14.2 ~~and~~ ~~29.14.4~~

Statement of Problem and Substantiation for Public Input

Committee task group recommended changes based on a correlating committee comment: The reference is incorrect. The two sections referenced are not consistent (one refers to CO markings and one for household alarm control units, whereas the requirement refers to instructions. Other sections should probably be referenced to be complete and all inclusive.

Submitter Information Verification

Submitter Full Name: Cory Ogle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 11:54:28 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5108-NFPA 72-2019
Statement: The text in item (6) is edited to point to the general section on markings and instructions as opposed to specific subsections.

Public Input No. 23-NFPA 72-2018 [Section No. 29.11.2.1]

29.11.2.1*

The interconnection of alarms shall comply with the following:

(1) Alarms shall not be interconnected in numbers that exceed the manufacturer's published instructions.

(2) In no case shall more than 18 initiating devices be interconnected (of which 12 can be smoke alarms*heat detectors or CO detectors*) where the interconnecting means is not supervised. *Examples of initiation devices(CO,Smoke,Heat)(pull stations*)

(3) In no case shall more than 64 initiating devices be interconnected (of which 42 can be smoke alarms) where the interconnecting means is supervised. *this is the max per circuit, after number reached ,must use new circuit

(4) Alarms of different manufacturers shall not be interconnected unless listed as being compatible with the specific model.

(5) When alarms of different types are interconnected, all interconnected alarms shall produce the appropriate audible response for the phenomena being detected or remain silent.

Additional Proposed Changes

File Name	Description	Approved
ISSUES_WITH_NFPA72.docx	ISSUE WITH NFPA72	

Statement of Problem and Substantiation for Public Input

SHORT TERM HOME RENTAL COMMUNITIES SHOULD HAVE A STANDARD FIRE CODE TO PREVENT THE HUGE GRAY AREA THAT LEADS TO PROBLEMS FOR BUILDERS,INSTALLERS,COUNTY OFFICIALS, AND OWNERS. IF THIS AREA WAS CLEAR, WE CAN AVOID PROBLEMS IN THE WORLD OF TRANSIENT HOMES AND HOMES THAT ARE MEANT TO HOUSE MULTIPLE NUMBERS OF PEOPLE. THE PROBLEM STARTS WITH THE LAND DESCRIPTION/DEVELOPMENT IN SOME CASES. SO MUCH IS MISSING FOR CLARIFICATION TO BUILDING OFFICIALS. BRIAN ELG 407-290-5911

Submitter Information Verification

Submitter Full Name: brian elg
Organization: SOUTHEAST WIRING SOLUTIONS INC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Nov 26 16:01:00 EST 2018
Committee: SIG-HOU

Committee Statement

Resolution: Smoke, heat and CO alarm limits per circuit are covered in the existing language under "initiating devices". NFPA 72 does not state when a specific type of system is required, only how to install said system where required by state, local or municipal codes. This section does not address smoke detector/alarm spacing.

Public Input No. 583-NFPA 72-2019 [Section No. 29.11.3.4]

29.11.3.4 Specific Location Requirements.

The installation of smoke alarms and smoke detectors shall comply with the following requirements:

(1) Smoke alarms and smoke detectors shall not be located where ambient conditions, including humidity and temperature, are outside the limits specified by the manufacturer's published instructions.

(2) Smoke alarms and smoke detectors shall not be located within unfinished attics or garages or in other spaces where temperatures can fall below 40ºF (4.4ºC) or exceed 100ºF (38ºC).

(3)* Where the mounting surface could become considerably warmer or cooler than the room, such as a poorly insulated ceiling below an unfinished attic or an exterior wall, smoke alarms and smoke detectors shall be mounted on an inside wall.

(4)* Smoke alarms and smoke detectors shall not be installed within an area of exclusion determined by a 10 ft (3.0 m) radial distance along a horizontal flow path from a stationary or fixed cooking appliance, unless listed for installation in close proximity to cooking appliances. Smoke alarms and smoke detectors installed between 10 ft (3.0 m) and 20 ft (6.1 m) along a horizontal flow path from a stationary or fixed cooking appliance shall be equipped with an alarm-silencing means ~~or use photoelectric detection~~ .

(5) Smoke alarms or smoke detectors ~~that use photoelectric detection~~ shall be permitted for installation at a radial distance greater than 6 ft (1.8 m) from any stationary or fixed cooking appliance when both of the following conditions are met:

(a) The kitchen or cooking area and adjacent spaces have no clear interior partitions or headers.

(b) The 10 ft (3.0 m) area of exclusion would prohibit the placement of a smoke alarm or smoke detector required by other sections of this Code.

(6) ~~Effective January 1, 2022, smoke~~ Smoke alarms and smoke detectors installed between 6 ft (1.8 m) and 20 ft (6.1 m) along a horizontal flow path from a stationary or fixed cooking appliance shall be listed for resistance to common nuisance sources from cooking.

(7)* Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from a door to a bathroom containing a shower or tub unless listed for installation in close proximity to such locations.

(8) Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from the supply registers of a forced air heating or cooling system and shall be installed outside of the direct airflow from those registers.

(9)* Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from the tip of the blade of a ceiling-suspended (paddle) fan unless the room configuration restricts meeting this requirement.

(10) Where stairs lead to other occupiable levels, a smoke alarm or smoke detector shall be located so that smoke rising in the stairway cannot be prevented from reaching the smoke alarm or smoke detector by an intervening door or obstruction.

(11) For stairways leading up from a basement, smoke alarms or smoke detectors shall be located on the basement ceiling near the entry to the stairs.

(12)* For tray-shaped ceilings (coffered ceilings), smoke alarms and smoke detectors shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 in. (300 mm) vertically down from the highest point.

(13) Smoke alarms and detectors installed in rooms with joists or beams shall comply with the requirements of 17.7.3.2.4.

(14) Heat alarms and detectors installed in rooms with joists or beams shall comply with the requirements of 17.6.3.

Statement of Problem and Substantiation for Public Input

We are proposing to delete many of the references to specific technology with the next edition of NFPA 72 to align

with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268. End product safety standards such as UL 217 and UL 268 are technology independent. In addition, the performance requirements for detecting fire types and cooking nuisance mitigation are independent of technology. Calling out technology requirements in an installation standard does not consider innovative technology solutions that could otherwise be used to comply with these end product standards. As an example, UL cooking nuisance research demonstrated that independent of smoke detection technology, and placement, all smoke alarms produced an alarm signal during normal cooking. Placement of the alarms in reference to the broiling hamburger cooking source and by 1.5% OBS/ft, resulted in an increased or delayed response, based on location, in almost all smoke alarms with many different types of technologies being tested.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 581-NFPA 72-2019 [Section No. 17.7.5.6.4]	
Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]	
Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]	
Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:49:50 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: The 2022 Code will have an effective date of August/September, 2021. Therefore, the inclusion of an effective date is still necessary as are technology-specific requirements.

Public Input No. 649-NFPA 72-2019 [New Section after 29.12]

29.12.1 Cellular Technology. The use of cellular technology to silence or reset household fire alarm or carbon monoxide systems or to remotely modify system programming or functions shall not be permitted.

Statement of Problem and Substantiation for Public Input

This is a placeholder for subsequent modification by the cellular task group of the Correlating Committee.

Submitter Information Verification

Submitter Full Name: Art Black
Organization: Carmel Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 21:02:11 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: Section 29.10.6.10 already addresses the silence or reset of a household alarm system after a set amount of time. Remotely modifying system programming or functionality, via multiple technologies, is already allowed in products that exist and are currently installed. No technical justification was provided for prohibiting these features.

Public Input No. 308-NFPA 72-2019 [Section No. 29.13.1]

29.13.1

Fire and carbon monoxide alarm equipment shall be maintained and tested in accordance with the manufacturer's published instructions and per the requirements of 14.4.5 ~~and~~ , 14.4.6, and 14 . 4.8 .

Statement of Problem and Substantiation for Public Input

New paragraph 29.13.1 does not include the Chapter 14 reference for the testing of household carbon monoxide detection systems.

Submitter Information Verification

Submitter Full Name: Edward Fraczkowski
Organization: EBL Engineers, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 17 14:21:52 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5110-NFPA 72-2019
Statement: Text is added to point to the section on maintenance and testing of household carbon monoxide detection systems.

Public Input No. 129-NFPA 72-2019 [New Section after A.3.2.5]

TITLE OF NEW CONTENT

A.3.3.5 It is imporant that a responsible person is alerted to incoming alarm, trouble and supervisory signals. By acknowledging an incoming signal, the system may change what or how information is presented to a user. For example, on an incoming alarm, trouble or supervisory signal, a control unit will sound an audible alert. Acknowledging the signal is permitted to silence the audible provided a visual que is maintained (for example see 10.15.10 and 10.18.2.2) and provided that subsequent alarm, trouble or supervisory signals cause the audible signal to resound. If there are multiple signals, each might have to be indivisually viewed and acknowledged. As another example, 24.4.1.1 does not require an automatic response by an EVACS if a trained operator acknowledges receipt of a fire alarm or other emergency signal within 30 seconds. In some instances, bulk acknowledgement of multiple signals is permitted. The physical act of acknowleging a signal may be by the pressing of a button or the selection of a software command.

Statement of Problem and Substantiation for Public Input

The examples of how to acknowledge have been added here along with additional commentary. The examples were/need to be removed from the definition.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 128-NFPA 72-2019 [Section No. 3.3.5]	Parent
Public Input No. 128-NFPA 72-2019 [Section No. 3.3.5]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 23 15:29:44 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: In the opinion of the Technical Committee, this definition does not need additional explanation in the annex. The information is covered elsewhere in the code.

Public Input No. 403-NFPA 72-2019 [Section No. A.3.3.38.3]

A.3.3.38.3 Sloping Peaked-Type Ceiling.

Curved or domed ceilings can be considered peaked with the slope figured as the slope of the chord from highest to lowest point. Refer to Figure A.17.6.3.4(a) for an illustration of smoke or heat detector spacing on peaked-type sloped ceilings.

Statement of Problem and Substantiation for Public Input

Revised annex material to include explanatory material removed from the body of the code.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 400-NFPA 72-2019 [Section No. 3.3.38]	Annex material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 18:38:04 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5337-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 405-NFPA 72-2019 [New Section after A.3.3.38.4]

A 3.3.40.2 Girder

If the top of the girder is within 4 in. (100 mm) of the ceiling, the girder is a factor in determining the number of detectors and is to be considered a beam.

Statement of Problem and Substantiation for Public Input

Moved explanatory material from the body of the code to the Annex

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 404-NFPA 72-2019 [Section No. 3.3.40.2]	Annex Material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 18:52:16 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The language proposed for the annex remains under the definition.

Public Input No. 361-NFPA 72-2019 [Section No. A.3.3.61.1.2]

A.3.3.61.1.2 Pre-Alarm Condition.

Some examples of pre-alarm conditions include the following: the presence of a very small amount of visible smoke (at levels below listed initiating device alarm thresholds), the presence of a smoke-like odor, a somewhat elevated temperature, and a gradually increasing temperature. Any abnormal condition that typically precedes an alarm condition can be termed a *pre-alarm condition*.

The amount of time available for investigating the cause of a pre-alarm condition is not a known quantity. If conditions deteriorate to the point of alarm, time is no longer available for investigation. Pre-alarm conditions might or might not progress to alarm conditions.

The detection of pre-alarm conditions ~~may~~ be desirable in some occupancies, particularly if environmental conditions are ordinarily well controlled (e.g., integrated circuit fabrication facility) and personnel are trained to respond appropriately. In other occupancies, the detection of pre-alarm conditions ~~may~~ not be desirable or necessary.

The term *pre-alarm condition* is different from the terms *positive alarm sequence*, *alarm verification*, and *pre-signal*.

Statement of Problem and Substantiation for Public Input

the uses of "may" does not comply with MOS.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 10:59:19 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5074-NFPA 72-2019
Statement: The Technical Committee removes the word “may” in accordance with the Manual of Style.

Public Input No. 408-NFPA 72-2019 [New Section after A.3.3.69]

A 3.3.70 Detector
A physical stimulus could be gas, heat or smoke.

Statement of Problem and Substantiation for Public Input

Add new Annex material that was removed from the body of the code to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 407-NFPA 72-2019 [Section No. 3.3.70]	Annex Material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:24:40 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The language proposed for the annex remains under the definition.

Public Input No. 411-NFPA 72-2019 [New Section after A.3.3.69]

A 3.3.70.2 Automatic Fire Detector

For the purpose of this Code, automatic fire detectors are classified as follows: Automatic Fire Extinguishing or Suppression System Operation Detector, Fire–Gas Detector, Heat Detector, Other Fire Detectors, Radiant Energy–Sensing Fire Detector, and Smoke Detector

Statement of Problem and Substantiation for Public Input

Added the example list of automatic fire detectors that was removed from the body of the code to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 410-NFPA 72-2019 [Section No. 3.3.70.2]	Annex Material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:38:32 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5246-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 413-NFPA 72-2019 [Section No. A.3.3.70.4]

A.3.3.70.4 Combination Detector.

These detectors do not utilize a mathematical evaluation principle of signal processing more than a simple "or" function. Normally, these detectors provide a single response resulting from either sensing method, each of which operates independent of the other. These detectors can provide a separate and distinct response resulting from either sensing method, each of which is processed independent of the other. Typical examples are a combination of a heat detector with a smoke detector or a combination rate-of-rise and fixed-temperature heat detector. This device has listings for each sensing method employed.

Statement of Problem and Substantiation for Public Input

Added the list of examples that were removed from the body of the code to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 412-NFPA 72-2019 [Section No. 3.3.70.4]	Annex Material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:48:50 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5338-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 416-NFPA 72-2019 [New Section after A.3.3.70.8]

A 3.3.70.9 Gas Detector

Gas detectors can be either spot-type or line-type detectors.

Statement of Problem and Substantiation for Public Input

Examples of gas detectors removed from the body of the code to create a new annex material to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 415-NFPA 72-2019 [Section No. 3.3.70.9]	Create new Annex material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:57:21 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: It is not possible to list all types of detectors, therefore examples are not appropriate.

Public Input No. 420-NFPA 72-2019 [New Section after A.3.3.70.8]

A 3.3.70.11 Line-Type Detector.

Typical examples are rate-of-rise pneumatic tubing detectors, projected beam smoke detectors, and heat-sensitive cable.

Statement of Problem and Substantiation for Public Input

Examples removed from the body of the code to the Annex to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 419-NFPA 72-2019 [Section No. 3.3.70.11]	Annex Material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 08:11:17 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5251-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 442-NFPA 72-2019 [New Section after A.3.3.70.18]

A 3.3.70.17 Raidiant Energy-Sensing Fire Detector.

Radiant energy that can be detected are light waves such as ultraviolet, visible, or infrared.

Statement of Problem and Substantiation for Public Input

Examples removed from the body of the code added as Annex material to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 441-NFPA 72-2019 [Section No. 3.3.70.17]	Annex material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 12:56:27 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The language proposed for the annex remains under the definition.

Public Input No. 444-NFPA 72-2019 [New Section after A.3.3.70.19]

A 3.3.70.21 Spark/Ember Detector.

These devices are normally intended to operate in dark environments and in the infrared part of the spectrum.

Statement of Problem and Substantiation for Public Input

Explanatory materiel removed from body of the code added as Annex material to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 443-NFPA 72-2019 [Section No. 3.3.70.21]	Annex material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 13:12:34 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5264-NFPA 72-2019

Statement: The Technical Committee modifies the sentence structure to remove examples to comply with the Manual of Style.

Text removed from the body of the Code by the Technical Committee is added as annex material to comply with the Manual of Style. Additional edits are made to broaden the product definition

Public Input No. 446-NFPA 72-2019 [New Section after A.3.3.70.19]

A 3.3.70.22 Spot-Type Detector.

Typical examples are bimetallic detectors, fusible alloy detectors, certain pneumatic rate-of-rise detectors, certain smoke detectors, and thermoelectric detectors.

Statement of Problem and Substantiation for Public Input

Example material removed from the body of the code added as new to the Annex to conform to the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 445-NFPA 72-2019 [Section No. 3.3.70.22]	Annex Material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 13:22:39 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5265-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 568-NFPA 72-2019 [Section No. A.3.3.70.19]

A.3.3.70.19 Rate-of-Rise Detector.

Typical examples of rate-of-rise detectors are as follows:

(1) *Pneumatic Rate-of-Rise Tubing.* A line-type detector comprising small-diameter tubing, usually copper, that is installed on the ceiling or high on the walls throughout the protected area. The tubing is terminated in a detector unit that contains diaphragms and associated contacts set to actuate at a predetermined pressure. The system is sealed except for calibrated vents that compensate for normal changes in temperature.

(2) *Spot-Type Pneumatic Rate-of-Rise Detector.* A device consisting of an air chamber, a diaphragm, contacts, and a compensating vent in a single enclosure. The principle of operation is the same as that described for pneumatic rate-of-rise tubing.

(3) *Electrical Conductivity–Type Rate-of-Rise Detector.* A line-type or spot-type sensing element in which resistance changes due to a change in temperature. The rate of change of resistance is monitored by associated control ~~equipment~~ units , and an alarm is initiated when the rate of temperature increase exceeds a preset value.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:39:15 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5274-NFPA 72-2019
Statement: The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Public Input No. 42-NFPA 72-2019 [New Section after A.3.3.87]

A.3.3.90 An Emergency Communications System is normally a dedicated and limited application system. The definition is not intended to include the Emergency Services Communication Systems as addressed in NFPA 1221, nor to address the Public Switched Telecommunications Network which includes landline, cellular, cable and IP based communication systems as addressed in NFPA 72.

Statement of Problem and Substantiation for Public Input

It is important that we be clear when defining such terms as "Emergency Communications Systems." The term "communications" has very broad meaning and is used in many NFPA documents, including NFPA 110, 101, 72 and 1221 in several differing contexts. For example, "communications" in differing documents might reference any of the following:

Emergency communication system – Like an in-building fire phone system
Occupant notification – like fire alarm or voice notification system which advises to evacuate or take cover
Public safety communication system – Like 911
Fire fighter radio communication system
Communications between alarm devices or between alarms and fire panels and monitoring stations
Communications between the protected premise and monitoring stations
Communications between monitoring stations and emergency facilities

This causes some confusion, specifically when AHJs attempt to determine how requirements might be applied to telecommunications as a whole.

While NFPA 72 is one of the best documents with respect to how it clearly references Emergency Communications Systems, there is still room for improvement with the general definition. To make information clear and consistently applied, it would best to add specificity wherever the term "communication" is used.

Submitter Information Verification

Submitter Full Name: Richard Kluge
Organization: Ericsson
Affiliation: Alliance for Telecommunications Industry Solutions (ATIS)
Street Address:
City:
State:
Zip:
Submittal Date: Fri Feb 22 14:00:38 EST 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5299-NFPA 72-2019

Statement: It is important when defining such terms as "Emergency Communications Systems." The term "communications" has very broad meaning and is used in many NFPA documents, including NFPA 110, 101, 72 and 1221 in several differing contexts. For example, "communications" in differing documents might reference any of the following:

Emergency communications system – Like an in-building fire phone system

Occupant notification – like fire alarm or voice notification system which advises to evacuate or take cover

Public safety communications system – Like 911

Fire fighter radio communications system

Communications between alarm devices or between alarms and fire panels and monitoring stations

Communications between the protected premise and monitoring stations

Communications between monitoring stations and emergency facilities

This causes some confusion, specifically when AHJs attempt to determine how requirements might be applied to telecommunications as a whole.

While NFPA 72 is one of the best documents with respect to how it clearly references Emergency Communications Systems, there is still room for improvement with the general definition. To make information clear and consistently applied, it would best to add specificity wherever the term "communications" is used.

Public Input No. 387-NFPA 72-2019 [New Section after A.3.3.99]

A.3.3.99.2.1 UPS is also defined as Uninterruptable Power Systems By Underwriters Laboratory in UL 1779, Standard for Safety, Uninterruptable Power Systems as "Combination of converters, switches, and energy storage devices (such as batteries), constituting a power system for maintaining continuity of power to load in case of input power failure. Many commercial UPS are listed to UL 1778.

Statement of Problem and Substantiation for Public Input

Create a relationship between Commerical UPS and ANSI/UL 1778. Also, normalize the difference between UL's UPS langage as a Uninterruptable Power Systems, as opposed to what UPS is commonly understood to be: Uninterruptable Power Supply.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 383-NFPA 72-2019 [New Section after 10.6.8.4]	Supports the different language that UPS is defined under with respect to UL 1778.

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 19:21:26 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The proposed language is not necessary, and is redundant to the text of A.3.3.99.

Public Input No. 458-NFPA 72-2019 [New Section after A.3.3.139]

A 3.3.141.2 Automatic Extinguishing System Supervisory Device.

Abnormal conditions include, but not limited to, control valves, pressure levels, liquid agent levels and temperatures, pump power and running, engine temperature and overspeed, and room temperature.

Statement of Problem and Substantiation for Public Input

Examples removed from the body of the code are added to create a new Annex reference to comply with the Manual of Style.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 457-NFPA 72-2019 [Section No. 3.3.141.2]	Annex Material

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 15:40:44 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5269-NFPA 72-2019
Statement: Examples removed from the body of the Code by the Technical Committee are added as annex material to comply with the Manual of Style.

Public Input No. 102-NFPA 72-2019 [New Section after A.3.3.165]

A.3.3.168 Minimum Hearing Distance

In most cases, the minimum hearing distance is at a location where an occupant stands directly under or next to an audible appliance. What height should be used for the "ear"? For normal occupancy and use that distance may be easy to define. The average human height is about 68 inches with the ear being about 62 – 63 in. high. The designer might use 66 in. (5.5 ft) as a reasonable selection. However, designers need to consider how the space will be used and whether the use and occupancy of the space might affect the minimum hearing distance. Consider an exercise facility where the notification appliances are installed on the perimeter walls at a height of 90 inches. An exercise machine, such as a stair climber, could elevate a person so that their ear is very close to the appliance.

Regardless of the designer's selection of a minimum hearing distance, it is possible, though not always "normal", for a person to get closer and to experience damaging sound levels. For example, someone on a ladder changing a light bulb or accessing high shelves could be significantly closer to an audible appliance than other users of the space. Should that possibility be considered when determining the minimum hearing distance? Other mitigation, such as training and personal protective equipment (PPE, hearing protection) might be used to protect people in those instances.

The maximum allowable sound pressure level (110 dBA) is based on possible damage to human ears. Systems that expose other animals or life that might be damaged by sound pressure waves, might require additional consideration of loudness, frequency content and sound patterns.

Statement of Problem and Substantiation for Public Input

See related PI for new definition.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 101-NFPA 72-2019 [New Section after 3.3.167]	Parent definition.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 08 10:55:09 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5001-NFPA 72-2019
Statement: Minimum hearing distance is not defined. This has been a topic of discussion and something that NFPA Staff is questioned about. The 2019 handbook added text discussing this concept.

Public Input No. 439-NFPA 72-2019 [New Section after A.3.3.188]

A3.3.194 Out of Service

It is not the intent of the Code to require notification of the authority having jurisdiction, or evacuation of the portion of the building affected, for a single nonoperating device or appliance.

Statement of Problem and Substantiation for Public Input

Annex to provide additional guidance on the new definition

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 438-NFPA 72-2019 [New Section after 3.3.194]	

Submitter Information Verification

Submitter Full Name: Joshua Brackett
Organization: Baptist Health
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 12:19:03 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The body of this document contains requirements regarding equipment that is out of service, and it would be inappropriate to contradict those requirements in the annex material.

Public Input No. 484-NFPA 72-2019 [Section No. A.3.3.276.5]

A.3.3.276.5 Video Image Smoke Detection (VISD).

Video image smoke detection (VISD) is a software-based method of smoke detection that ~~has become practical with the advent of digital video systems. Listing agencies have begun testing VISD components for several manufacturers. VISD systems~~ can analyze images for changes in features such as brightness, contrast, edge content, loss of detail, and motion. The detection equipment can consist of cameras producing digital or analog (converted to digital) video signals and processing unit(s) that maintain the software and interfaces to the fire alarm control unit.

Statement of Problem and Substantiation for Public Input

Material was removed to simply the definition because VISD is a listed technology and not experimental as the removed wording would suggest.

Submitter Information Verification

Submitter Full Name: Larry Mann
Organization: Central Station, Inc.
Affiliation: Electronic Security Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:31:21 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5282-NFPA 72-2019
Statement: Material was removed to simplify the definition because VISD is a listed technology and not experimental as the removed wording would suggest.

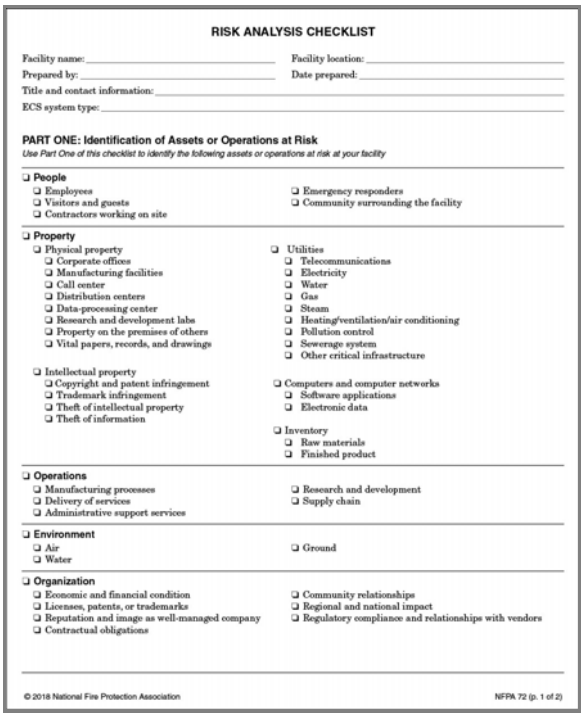
Public Input No. 362-NFPA 72-2019 [Section No. A.7.3.6]

A.7.3.6

The Risk Analysis Checklist in Figure A.7.3.6 is not mandatory, but it can be used to initiate the thought process for identifying hazards in a facility.

In sentence below PART TWO, remove the word "may".

Figure A.7.3.6 Risk Analysis Checklist.



RISK ANALYSIS CHECKLIST

Facility name: _____ Facility location: _____

Prepared by: _____ Date prepared: _____

Title and contact information: _____

ECS system type: _____

PART ONE: Identification of Assets or Operations at Risk

Use Part One of this checklist to identify the following assets or operations at risk at your facility

❑ **People**
- ❑ Employees
- ❑ Visitors and guests
- ❑ Contractors working on site
- ❑ Emergency responders
- ❑ Community surrounding the facility

❑ **Property**
- ❑ Physical property
  - ❑ Corporate offices
  - ❑ Manufacturing facilities
  - ❑ Call center
  - ❑ Distribution centers
  - ❑ Data-processing center
  - ❑ Research and development labs
  - ❑ Property on the premises of others
  - ❑ Vital papers, records, and drawings
- ❑ Intellectual property
  - ❑ Copyright and patent infringement
  - ❑ Trademark infringement
  - ❑ Theft of intellectual property
  - ❑ Theft of information
- ❑ Utilities
  - ❑ Telecommunications
  - ❑ Electricity
  - ❑ Water
  - ❑ Gas
  - ❑ Steam
  - ❑ Heating/ventilation/air conditioning
  - ❑ Pollution control
  - ❑ Sewerage system
  - ❑ Other critical infrastructure
- ❑ Computers and computer networks
  - ❑ Software applications
  - ❑ Electronic data
- ❑ Inventory
  - ❑ Raw materials
  - ❑ Finished product

❑ **Operations**
- ❑ Manufacturing processes
- ❑ Delivery of services
- ❑ Administrative support services
- ❑ Research and development
- ❑ Supply chain

❑ **Environment**
- ❑ Air
- ❑ Water
- ❑ Ground

❑ **Organization**
- ❑ Economic and financial condition
- ❑ Licenses, patents, or trademarks
- ❑ Reputation and image as well-managed company
- ❑ Contractual obligations
- ❑ Community relationships
- ❑ Regional and national impact
- ❑ Regulatory compliance and relationships with vendors

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 2)

RISK ANALYSIS CHECKLIST ***(continued)***

PART TWO: Determination of Facility Hazards

Use Part Two of this checklist to determine the potential hazards that may impact your facility.

❑ **Natural Hazards—Geological**
- ❑ Earthquake
- ❑ Tsunami
- ❑ Volcano
- ❑ Landslide, mudslide, subsidence
- ❑ Glacier, iceberg

❑ **Natural Hazards—Meteorological**
- ❑ Flood, flash flood, tidal surge
- ❑ Drought
- ❑ Windstorm, tropical cyclone, hurricane, tornado, water spout, dust/sand storm
- ❑ Extreme temperatures (heat, cold)
- ❑ Lightning strikes
- ❑ Famine
- ❑ Geomagnetic storm
- ❑ Snow, ice, hail, sleet, avalanche

❑ **Natural Hazards—Biological**
- ❑ Diseases (pandemic)
- ❑ Animal or insect infestation or damage

❑ **Human-Caused Accidental Events**
- ❑ Hazardous material (explosive, flammable liquid, flammable gas, flammable solid, oxidizer, poison, radiological, corrosive) spill or release
- ❑ Natural gas leak
- ❑ Nuclear power plant incident
- ❑ Hazmat incident off site
- ❑ Explosion/fire
- ❑ Wildfire (forest, range, urban, wildland, urban interface)
- ❑ Transportation accident (motor vehicle, railroad, watercraft, aircraft pipeline)
- ❑ Building/structure failure or collapse
- ❑ Entrapment
- ❑ Mechanical breakdown
- ❑ Energy/power/utility failure
- ❑ Fuel/resource shortage
- ❑ Air/water pollution, contamination
- ❑ Water control structure/dam/levee failure
- ❑ Communications systems interruptions
- ❑ Financial issues, economic depression, inflation, financial system collapse
- ❑ Misinformation

❑ **Human-Caused Intentional Events**
- ❑ Terrorism (explosive, chemical, biological, radiological, nuclear, cyber)
- ❑ Sabotage or vandalism
- ❑ Civil disturbance, public unrest, mass hysteria, riot
- ❑ Enemy attack, war
- ❑ Insurrection
- ❑ Strike or labor dispute
- ❑ Demonstration
- ❑ Disinformation
- ❑ Criminal activity (vandalism, arson, theft, fraud, embezzlement, data theft)
- ❑ Electromagnetic pulse
- ❑ Physical or information security breach
- ❑ Sniper incident
- ❑ Crime, theft, or robbery
- ❑ Product defect or contamination
- ❑ Harassment
- ❑ Arson
- ❑ Bomb threat
- ❑ Lost person
- ❑ Child abduction
- ❑ Kidnap
- ❑ Extortion
- ❑ Hostage incident
- ❑ Workplace violence

❑ **Technological-Caused Events**
- ❑ Telecommunications
- ❑ Central computer, mainframe, software, or application (internal/external)
- ❑ Energy/power/utility
- ❑ Ancillary support equipment

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 2)

Statement of Problem and Substantiation for Public Input

Th e uses of "may" does not comply with the MOS.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 11:09:40 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5300-NFPA 72-2019
Statement: The use of "may" does not comply with the MOS.

Public Input No. 55-NFPA 72-2019 [New Section after A.7.4.2]

A.7.4.6(7)_
A.7.4.6(7) This includes indication of where pathway survivability is being provided.

Statement of Problem and Substantiation for Public Input

The riser diagram should identify where pathway survivability is to be provided as well as the Level.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 54-NFPA 72-2019 [Section No. 7.4.6]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 28 12:03:48 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5080-NFPA 72-2019
Statement: This revision clarifies that pathway class designations and survivability levels are to be included on riser diagrams.

Additionally, the text clarifies that the riser diagram should show the location of required pathway survivability.

Public Input No. 92-NFPA 72-2019 [New Section after A.7.7.1.2]

A.7.6.6

Figure 7.6.6 (a) through Figure 7.6.6 (f) are sample forms intended to reflect the general information that could be provided as part of a system inspection and test report, but they are not intended to mandate a specific format for the report. A report format customized to the specific system configuration, devices, appliances, and system functions being tested meets the intent of the Code's requirements for inspection and testing documentation.

{Insert Inspection and Testing forms here}

Statement of Problem and Substantiation for Public Input

See substantiation in PI 81.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]	
Public Input No. 91-NFPA 72-2019 [Section No. A.7.8.2(2)]	
Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]	
Public Input No. 90-NFPA 72-2019 [Section No. 7.8.2]	
Public Input No. 91-NFPA 72-2019 [Section No. A.7.8.2(2)]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 02 09:49:59 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The referenced forms contain a statement that permits the forms to be modified as needed.

Public Input No. 602-NFPA 72-2019 [New Section after A.7.8.2(1)]

A7.8.1.2(k) 2.1

An example of a single voice channel fire alarm system is a voice evauation system that provides a single evacuation signal throughout a building or selected floor.

Statement of Problem and Substantiation for Public Input

An example is need for a single voice channel fire alarm system to provide clarity.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:22:04 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5106-NFPA 72-2019
Statement: Examples are added to provide clarity.

Public Input No. 608-NFPA 72-2019 [New Section after A.7.8.2(1)]

A7.8.1.2(k) 2.1

An example of a multiple voice channel fire alarm system is a system that can provide mutiple messages or evacuation signals to mutiple floors or areas at the same time.

Statement of Problem and Substantiation for Public Input

An example of a multiple channel system is needed to provide clarity.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:36:41 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5106-NFPA 72-2019
Statement: Examples are added to provide clarity.

Public Input No. 199-NFPA 72-2019 [Section No. A.7.8.2(1)]

A.7.8.2(1)

Examples of completed record of completion forms are shown in Figure A.7.8.2(1)(a) through Figure A.7.8.2(1)(f).

Figure A.7.8.2(1)(a) Example of Completed System Record of Completion.



SYSTEM RECORD OF COMPLETION

This form is to be completed by the system installation contractor at the time of system acceptance and approval. It shall be permitted to modify this form as needed to provide a more complete and/or clear record. Insert N/A in all unused lines. Attach additional sheets, data, or calculations as necessary to provide a complete record.

Form Completion Date: 2 November 2019 Supplemental Pages Attached: 0

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters
Address: 27132 Santa Anita Boulevard, Hilo, HI
Description of property: Business and Office Building
Name of property representative: Joe Bago Donito
Address: As above
Phone: (743) 225-9768 Fax: (743) 225-9768 E-mail: jbago@WLST.net

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

Installation contractor: Sparkee's Electric
Address: 1954 Nimitz Highway, Honolulu, HI 76542
Phone: (978) 456-9876 Fax: (978) 456-9876 E-mail: shortcircuitguy@sparkee.net
Service organization: None
Address:
Phone: Fax: E-mail:
Testing organization: Jim's Protection, Inc.
Address: 2300 Daly Boulevard, Austin, TX
Phone: (407) 738-4587 Fax: (407) 738-4588 E-mail: testerjim@JPI.com
Effective date for test and inspection contract: 25 January 2011
Monitoring organization: Look the Other Way, Inc.
Address: 995 Highway 35W, Minneapolis, MN
Phone: (412) 456-9078 Fax: (412) 456-7272 E-mail: Look@otherway.com
Account number: 56734588 Phone line 1: (212) 978-6576 Phone line 2: (212) 978-9978
Means of transmission: IP
Entity to which alarms are retransmitted: Honolulu FD Phone: (808) 455-5555

3. DOCUMENTATION

On-site location of the required record documents and site-specific software: Building Mgrs. Office Room 203

4. DESCRIPTION OF SYSTEM OR SERVICE

This is a: ☑ New system ❑ Modification to existing system Permit number: 11-907645
NFPA 72 edition: 2019

4.1 Control Unit

Manufacturer: Halter Cabinet Model number: 1019-7647

4.2 Software and Firmware

Firmware revision number: 7.0 B Executive Rev 9.11

4.3 Alarm Verification

Number of devices subject to alarm verification: _____ ☑ This system does not incorporate alarm verification. Alarm verification set for _____ seconds

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

Input voltage of control panel: 120 VAC Control panel amps: 7.3 Amps
Overcurrent protection: Type: Breaker Amps: 20 Amps
Branch circuit disconnecting means location: Breaker Panel — Room B-23 Number: 23

5.1.2 Secondary Power

Type of secondary power: Battery
Location, if remote from the plant: Rear Yard
Calculated capacity of secondary power to drive the system:
In standby mode (hours): 24 In alarm mode (minutes): 15

5.2 Control Unit

❑ This system does not have power extender panels
❑ Power extender panels are listed on supplementary sheet A

6. CIRCUITS AND PATHWAYS

Pathway Type	Dual Media Pathway	Separate Pathway	Class	Survivability Level
Signaling Line		X	A	1
Device Power				
Initiating Device		X	B	1
Notification Appliance		X	B	1
Other (specify):				

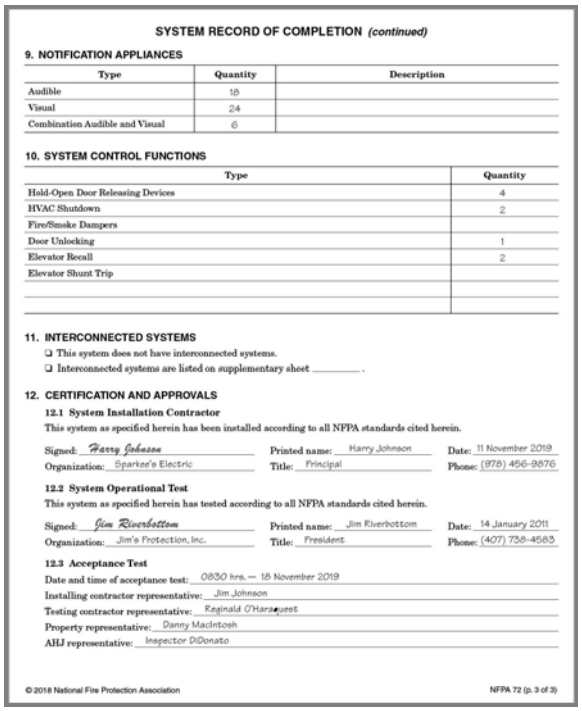
7. REMOTE ANNUNCIATORS

Type	Location
Tabular	Front Lobby

8. INITIATING DEVICES

Type	Quantity	Addressable or Conventional	Alarm or Supervisory	Sensing Technology
Manual Pull Stations	12	Addressable	Alarm	
Smoke Detectors	8	Addressable	Alarm	Photoelectric
Duct Smoke Detectors				
Heat Detectors				
Gas Detectors	1	Conventional	Supervisory	
Carbon Monoxide Detectors				
Waterflow Switches	2	Conventional	Alarm	
Tamper Switches	4	Conventional	Supervisory	

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)



SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description
Audible	18	
Visual	24	
Combination Audible and Visual	6	

10. SYSTEM CONTROL FUNCTIONS

Type	Quantity
Hold-Open Door Releasing Devices	4
HVAC Shutdown	2
Fire/Smoke Dampers	
Door Unlocking	1
Elevator Recall	2
Elevator Shunt Trip	

11. INTERCONNECTED SYSTEMS

❑ This system does not have interconnected systems.
❑ Interconnected systems are listed on supplementary sheet _____ .

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

This system as specified herein has been installed according to all NFPA standards cited herein.

Signed: Harry Johnson Printed name: Harry Johnson Date: 11 November 2019
Organization: Sparkee's Electric Title: Principal Phone: (978) 456-9876

12.2 System Operational Test

This system as specified herein has tested according to all NFPA standards cited herein.

Signed: Jim Riverbottom Printed name: Jim Riverbottom Date: 14 January 2011
Organization: Jim's Protection, Inc. Title: President Phone: (407) 738-4583

12.3 Acceptance Test

Date and time of acceptance test: 0830 hrs. — 18 November 2019
Installing contractor representative: Jim Johnson
Testing contractor representative: Reginald O'Harsequest
Property representative: Danny MacIntosh
AHJ representative: Inspector DiDonato

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

Figure A.7.8.2(1)(b) Example of Completed Emergency Communications System Supplementary Record of Completion.



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes systems and components specific to emergency communications systems.
This form is to be completed by the system installation contractor at the time of system acceptance and approval. It shall be permitted to modify this form as needed to provide a more complete and/or clear record. Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters
Address: 27132 Santa Anita Boulevard, Hilo, HI

2. DESCRIPTION OF SYSTEM OR SERVICE

❑ Fire alarm with in-building fire emergency voice alarm communication system (EVAC)
❑ Mass notification system
☑ Combination system, with the following components:
❑ Fire alarm ❑ EVACS ☒ MNS ❑ Two-way, in-building, emergency communications system
❑ Other (specify): _____
NFPA 72 edition: 2019 Additional description of system(s): _____

2.1 In-Building Fire Emergency Voice Alarm Communications System

Manufacturer: Halter Cabinet Model number: 1018-7648
Number of single voice alarm channels: 2 Number of multiple voice alarm channels: 0
Number of loudspeakers: 99 Number of loudspeaker circuits: 12
Location of amplification and sound processing equipment: Fire Control Room

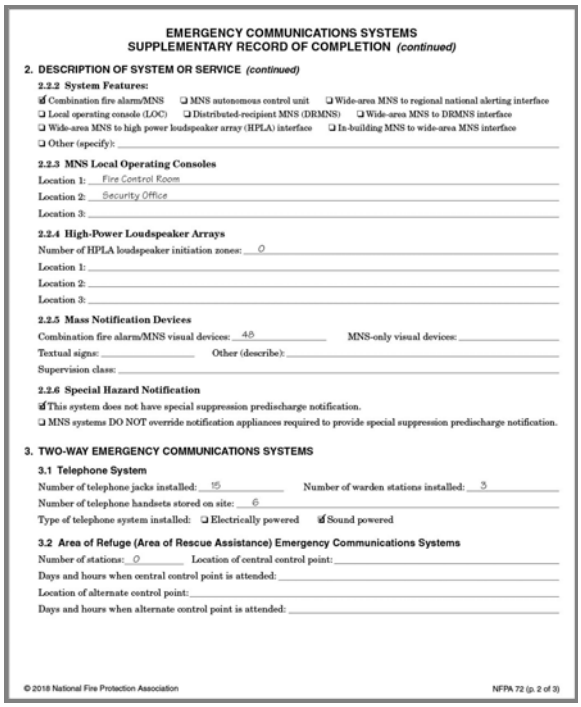
Location of paging microphone stations:
Location 1: Fire Control Room
Location 2: Security Office
Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

☑ In-building MNS–combination
❑ In-building MNS ❑ Wide-area MNS ❑ Distributed recipient MNS
❑ Other (specify): _____

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. DESCRIPTION OF SYSTEM OR SERVICE *(continued)*

2.2.2 System Features:

☑ Combination fire alarm/MNS ☐ MNS autonomous control unit ☐ Wide-area MNS to regional national alerting interface
☐ Local operating console (LOC) ☐ Distributed-recipient MNS (DRMNS) ☐ Wide-area MNS to DRMNS interface
☐ Wide-area MNS to high power loudspeaker array (HPLA) interface ☐ In-building MNS to wide-area MNS interface
☐ Other (specify):

2.2.3 MNS Local Operating Consoles

Location 1: Fire Control Room
Location 2: Security Office
Location 3:

2.2.4 High-Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones: 0
Location 1:
Location 2:
Location 3:

2.2.5 Mass Notification Devices

Combination fire alarm/MNS visual devices: 48 MNS-only visual devices:
Textual signs: Other (describe):
Supervision class:

2.2.6 Special Hazard Notification

☑ This system does not have special suppression predischarge notification.
☐ MNS systems DO NOT override notification appliances required to provide special suppression predischarge notification.

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

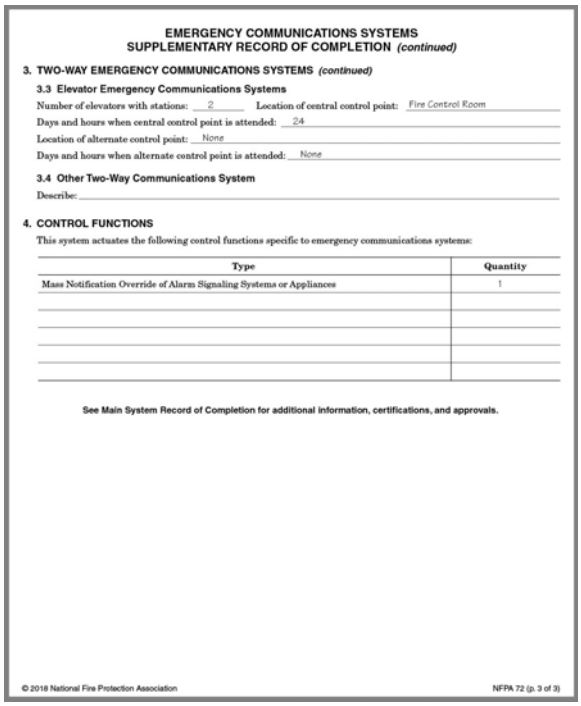
3.1 Telephone System

Number of telephone jacks installed: 15 Number of warden stations installed: 3
Number of telephone handsets stored on site: 6
Type of telephone system installed: ☐ Electrically powered ☑ Sound powered

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

Number of stations: 0 Location of central control point:
Days and hours when central control point is attended:
Location of alternate control point:
Days and hours when alternate control point is attended:

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS *(continued)*

3.3 Elevator Emergency Communications Systems

Number of elevators with stations: 2 Location of central control point: Fire Control Room
Days and hours when central control point is attended: 24
Location of alternate control point: None
Days and hours when alternate control point is attended: None

3.4 Other Two-Way Communications System

Describe:

4. CONTROL FUNCTIONS

This system actuates the following control functions specific to emergency communications systems:

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	1

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

Figure A.7.8.2(1)(c) Example of Completed Power Systems Supplementary Record of Completion.

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes systems and components specific to power systems that incorporate generators, ESS systems, remote battery systems, or other complex power systems. This form is to be completed by the system installation contractor at the time of system acceptance and approval. It shall be permitted to modify this form as needed to provide a more complete and/or clear record. Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: 0

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters
Address: 27132 Santa Anita Boulevard, Hilo, HI

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

Input voltage of control panel: 120 volt Control panel amps: 7.3
Overcurrent protection: Type: Circuit Breaker Amps: 20
Location (of primary supply panelboard): Main Electrical Room in Basement
Disconnecting means location: Panel E2 — Electric Room

2.1.2 Engine-Driven Generator

Location of generator:
Location of fuel storage: Type of fuel: Diesel

2.1.3 Energy Storage Systems

Equipment powered by ESS system: None
Location of ESS system:
Calculated capacity of ESS batteries to drive the system components connected to it:
In standby mode (hours): In alarm mode (minutes):

2.1.4 Batteries

Location: FACU Type: Gel Cell Nominal voltage: 24 Amp/hour rating: 16
Calculated capacity of batteries to drive the system:
In standby mode (hours): 24 In alarm mode (minutes): 15

2.2 In-Building Fire Emergency Voice Alarm Communications System or Mass Notification System

2.2.1 Primary Power

Input voltage of EVACS or MNS panel: 120 volt EVACS or MNS panel amps: 8.8
Overcurrent protection: Type: Circuit Breaker Amps: 20
Location (of primary supply panelboard): Main Electrical Room in Basement
Disconnecting means location: Panel E2 — Electric Room

© 2018 National Fire Protection Association

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.2.2 Engine-Driven Generator

Location of generator:
Location of fuel storage: Type of fuel: Diesel

2.2.3 Energy Storage Systems

Equipment powered by ESS system: None
Location of ESS system: N/A
Calculated capacity of ESS batteries to drive the system components connected to it:
In standby mode (hours): N/A In alarm mode (minutes): N/A

2.2.4 Batteries

Location: ECS Panel Type: Gel Cell Nominal voltage: 24 Amp/hour rating: 20
Calculated capacity of batteries to drive the system:
In standby mode (hours): 24 In alarm mode (minutes): 15

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

Input voltage of power extender panel(s): 120 volt Power extender panel amps: 8
Overcurrent protection: Type: Circuit Breaker Amps: 20
Location (of primary supply panelboard): See Table
Disconnecting means location:

2.3.2 Engine-Driven Generator

Location of generator:
Location of fuel storage: Type of fuel: Diesel

2.3.3 Energy Storage Systems

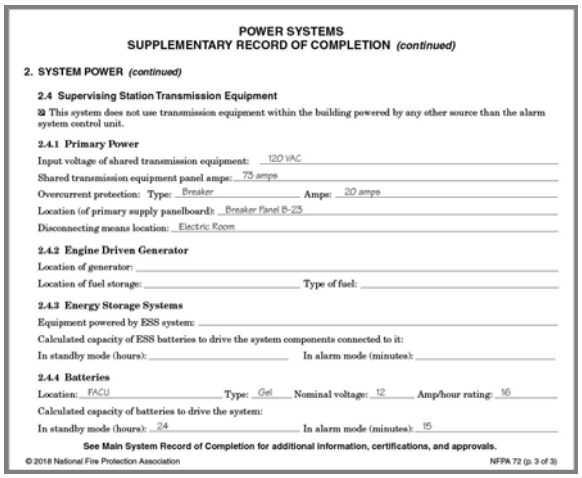
Equipment powered by ESS system: None
Location of ESS system:
Calculated capacity of ESS batteries to drive the system components connected to it:
In standby mode (hours): In alarm mode (minutes):

2.3.4 Batteries

Location: Power Panel Type: Gel Cell Nominal voltage: 24 Amp/hour rating: 12
Calculated capacity of batteries to drive the system:
In standby mode (hours): 24 In alarm mode (minutes): 15

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

☒ This system does not use transmission equipment within the building powered by any other source than the alarm system control unit.

2.4.1 Primary Power

Input voltage of shared transmission equipment: 120 VAC

Shared transmission equipment panel amps: 75 amps

Overcurrent protection: Type: Breaker Amps: 20 amps

Location (of primary supply panelboard): Breaker Panel B-25

Disconnecting means location: Electric Room

2.4.2 Engine Driven Generator

Location of generator: _____

Location of fuel storage: _____ Type of fuel: _____

2.4.3 Energy Storage Systems

Equipment powered by ESS system: _____

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): _____ In alarm mode (minutes): _____

2.4.4 Batteries

Location: FACU Type: Gel Nominal voltage: 12 Amp/hour rating: 16

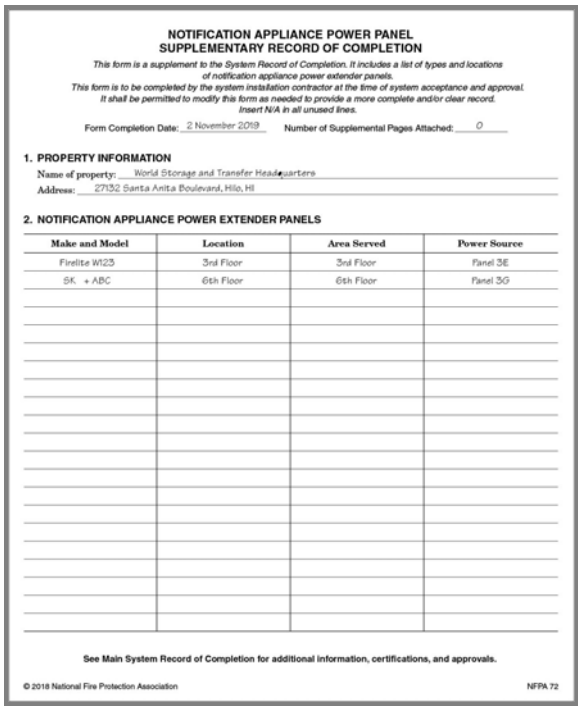
Calculated capacity of batteries to drive the system:

In standby mode (hours): 24 In alarm mode (minutes): 15

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

Figure A.7.8.2(1)(d) Example of Completed Notification Appliance Power Panel Supplementary Record of Completion.



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes a list of types and locations of notification appliance power extender panels.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: 0

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters

Address: 27132 Santa Anita Boulevard, Hilo, HI

2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source
Firelite W123	3rd Floor	3rd Floor	Panel 3E
SK + ABC	6th Floor	6th Floor	Panel 3G

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Figure A.7.8.2(1)(e) Example of Completed Interconnected Systems Supplementary Record of Completion.



INTERCONNECTED SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes a list of types and locations of systems that are interconnected to the main system.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters
Address: 27132 Santa Anita Boulevard, Hilo, HI

2. INTERCONNECTED SYSTEMS

Description	Location	Purpose
Fan Shutdown	Roof	Shut down fans on fire alarm activation
Elevator Recall	Elevator Room	Recall elevators in case of alarm on lobby smoke detectors

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Figure A.7.8.2(1)(f) Example of Completed Deviations from Adopted Codes and Standards Supplementary Record of Completion.



DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It enables the designer and/or installer to document and justify deviations from accepted codes or standards.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters
Address: 27132 Santa Anita Boulevard, Hilo, HI

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose
Waterflow switch set to a 120-second trip	Issue has been identified that there are water surges during evening hours

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Statement of Problem and Substantiation for Public Input

This PI proposes to relocate these forms to the same section of Annex A as they appeared in the 2016 edition. In that edition, these forms appear correctly at the conclusion of the Annex notes for Chapter 7. However, in the 2019 edition, these forms appear in the middle of the notes section for Chapter 10, with the result that the forms are separated from their respective annex note A.7.8.2(1) and also the notes for Chapter 10 are broken up in such a way that Section A.10.5.3.1 gets split up, with the latter portion of that note being orphaned on page 72-210, along with Sections A.10.5.3.2 through A.10.5.3.5. This has made it more difficult, not easier, for the user of the Code to navigate and locate these important notes.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 29 12:29:29 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: Paging of the printed edition is not within the control of the Technical Committee.

Public Input No. 363-NFPA 72-2019 [Section No. A.7.8.2(1)]

A.7.8.2(1)

Examples of completed record of completion forms are shown in Figure A.7.8.2(1)(a) through Figure A.7.8.2(1)(f).

Figure A.7.8.2(a) Section 6 Dual Media Pathway. An example of a Dual Media Pathway is circuit that is continous circuit connected to a FACU at two terminial locations.

Figure A.7.8.2(a) Section 6 Separate Pathway. An example of a Separate Pathway is a circuit that is only connected to the FACP at one terminal loccation.

Figure A.7.8.2(1)(a) Example of Completed System Record of Completion.



SYSTEM RECORD OF COMPLETION

This form is to be completed by the system installation contractor at the time of system acceptance and approval. It shall be permitted to modify this form as needed to provide a more complete and/or clear record. Insert N/A in all unused lines. Attach additional sheets, data, or calculations as necessary to provide a complete record.

Form Completion Date: 2 November 2019 Supplemental Pages Attached: 0

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquartere
Address: 27132 Santa Anita Boulevard, Hilo, HI
Description of property: Businees and Office Building
Name of property representative: Joe Bago Donite
Address: As above
Phone: (743) 225-9768 Fax: (743) 225-9768 E-mail: jbago@WLST.net

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

Installation contractor: Sparkee's Electric
Address: 1954 Nimitz Highway, Honolulu, HI 76542
Phone: (978) 456-9876 Fax: (978) 456-9876 E-mail: shortcircuitguy@sparkee.net
Service organization: None
Address:
Phone: Fax: E-mail:
Testing organization: Jim's Protection, Inc.
Address: 2300 Daly Boulevard, Austin, TX
Phone: (407) 758-4587 Fax: (407) 758-4598 E-mail: testerjim@JPI.com
Effective date for test and inspection contract: 25 January 2011
Monitoring organization: Look the Other Way, Inc.
Address: 995 Highway 35W, Minneapolis, MN
Phone: (412) 456-9078 Fax: (412) 456-7272 E-mail: Look@otherway.com
Account number: 56734598 Phone line 1: (212) 978-6576 Phone line 2: (212) 978-9978
Means of transmission: IP
Entity to which alarms are retransmitted: Honolulu FD Phone: (808) 456-5555

3. DOCUMENTATION

On-site location of the required record documents and site-specific software: Building Mgrs. Office Room 203

4. DESCRIPTION OF SYSTEM OR SERVICE

This is a: ☑ New system ❑ Modification to existing system Permit number: 11-907645
NFPA 72 edition: 2019

4.1 Control Unit

Manufacturer: Halter Cabinet Model number: 1019-7647

4.2 Software and Firmware

Firmware revision number: 7.0 B Executive Rev 9.11

4.3 Alarm Verification

☑ This system does not incorporate alarm verification.
Number of devices subject to alarm verification: _____ Alarm verification set for _____ seconds

© 2018 National Fire Protection Association

SYSTEM RECORD OF COMPLETION *(continued)*

5. SYSTEM POWER

5.1 Control Unit

5.1.1 Primary Power

Input voltage of control panel: 120 VAC Control panel amps: 7.3 Amps
Overcurrent protection: Type: Breaker Amps: 20 Amps
Branch circuit disconnecting means location: Breaker Panel — Room B-23 Number: 23

5.1.2 Secondary Power

Type of secondary power: Battery
Location, if remote from the plant: Rear Yard
Calculated capacity of secondary power to drive the system:
In standby mode (hours): 24 In alarm mode (minutes): 15

5.2 Control Unit

❑ This system does not have power extender panels
❑ Power extender panels are listed on supplementary sheet A

6. CIRCUITS AND PATHWAYS

Pathway Type	Dual Media Pathway	Separate Pathway	Class	Survivability Level
Signaling Line		X	A	1
Device Power				
Initiating Device		X	B	1
Notification Appliance		X	B	1
Other (specify):				

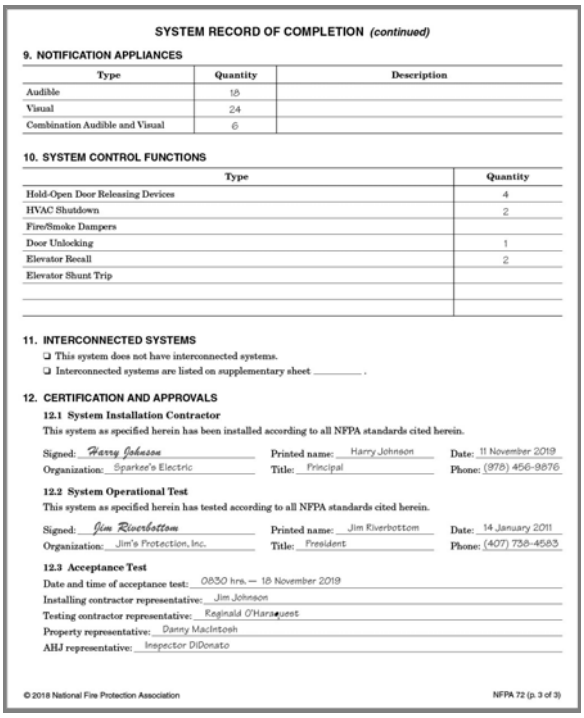
7. REMOTE ANNUNCIATORS

Type	Location
Tabular	Front Lobby

8. INITIATING DEVICES

Type	Quantity	Addressable or Conventional	Alarm or Supervisory	Sensing Technology
Manual Pull Stations	12	Addressable	Alarm	
Smoke Detectors	8	Addressable	Alarm	Photoelectric
Duct Smoke Detectors				
Heat Detectors				
Gas Detectors	1	Conventional	Supervisory	
Carbon Monoxide Detectors				
Waterflow Switches	2	Conventional	Alarm	
Tamper Switches	4	Conventional	Supervisory	

© 2018 National Fire Protection Association



SYSTEM RECORD OF COMPLETION *(continued)*

9. NOTIFICATION APPLIANCES

Type	Quantity	Description
Audible	18	
Visual	24	
Combination Audible and Visual	6	

10. SYSTEM CONTROL FUNCTIONS

Type	Quantity
Hold-Open Door Releasing Devices	4
HVAC Shutdown	2
Fire/Smoke Dampers	
Door Unlocking	1
Elevator Recall	2
Elevator Shunt Trip	

11. INTERCONNECTED SYSTEMS

❑ This system does not have interconnected systems.
❑ Interconnected systems are listed on supplementary sheet _____ .

12. CERTIFICATION AND APPROVALS

12.1 System Installation Contractor

This system as specified herein has been installed according to all NFPA standards cited herein.

Signed: Harry Johnson Printed name: Harry Johnson Date: 11 November 2019
Organization: Sparkee's Electric Title: Principal Phone: (978) 456-9876

12.2 System Operational Test

This system as specified herein has tested according to all NFPA standards cited herein.

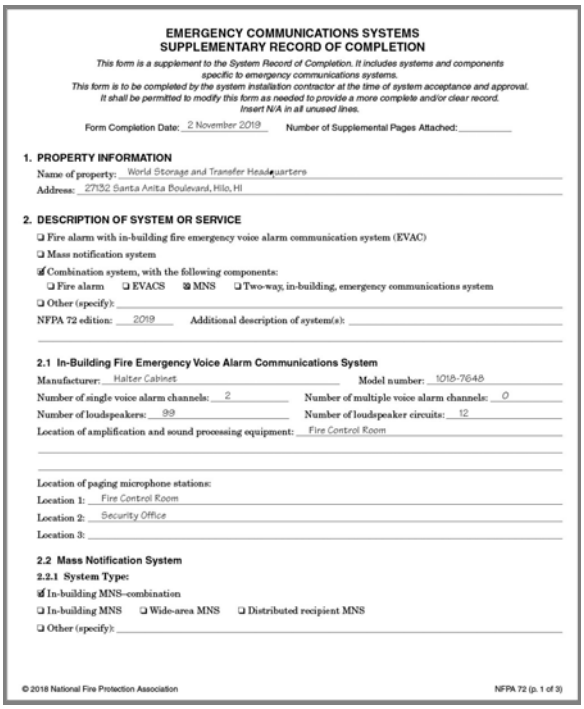
Signed: Jim Riverbottom Printed name: Jim Riverbottom Date: 14 January 2011
Organization: Jim's Protection, Inc. Title: President Phone: (407) 738-4583

12.3 Acceptance Test

Date and time of acceptance test: 0830 hrs. — 18 November 2019
Installing contractor representative: Jim Johnson
Testing contractor representative: Reginald O'Harasquest
Property representative: Danny MacIntosh
AHJ representative: Inspector DiDonato

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

Figure A.7.8.2(1)(b) Example of Completed Emergency Communications System Supplementary Record of Completion.



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes systems and components specific to emergency communications systems.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters
Address: 27132 Santa Anita Boulevard, Hilo, HI

2. DESCRIPTION OF SYSTEM OR SERVICE

❑ Fire alarm with in-building fire emergency voice alarm communication system (EVAC)
❑ Mass notification system
☑ Combination system, with the following components:
❑ Fire alarm ❑ EVACS ☒ MNS ❑ Two-way, in-building, emergency communications system
❑ Other (specify): _____
NFPA 72 edition: 2019 Additional description of system(s): _____

2.1 In-Building Fire Emergency Voice Alarm Communications System

Manufacturer: Halter Cabinet Model number: 1018-7648
Number of single voice alarm channels: 2 Number of multiple voice alarm channels: 0
Number of loudspeakers: 99 Number of loudspeaker circuits: 12
Location of amplification and sound processing equipment: Fire Control Room

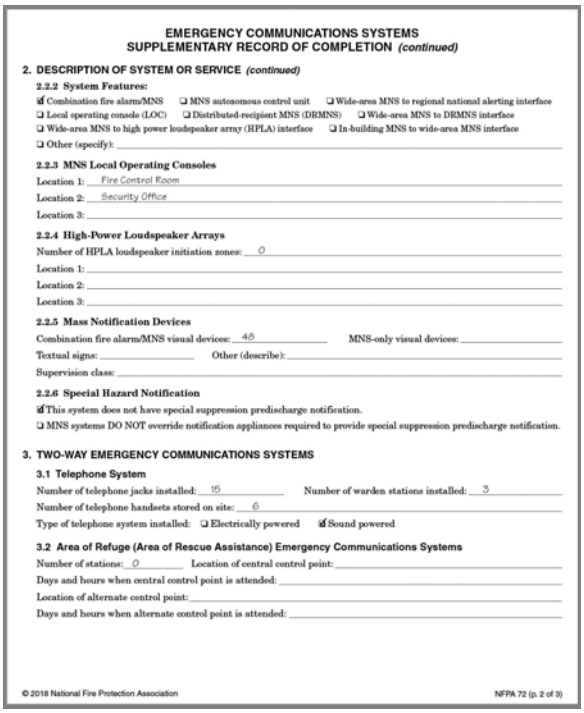
Location of paging microphone stations:
Location 1: Fire Control Room
Location 2: Security Office
Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

☑ In-building MNS–combination
❑ In-building MNS ❑ Wide-area MNS ❑ Distributed recipient MNS
❑ Other (specify): _____

© 2018 National Fire Protection Association NFPA 72 (p. 1 of 3)



EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. DESCRIPTION OF SYSTEM OR SERVICE *(continued)*

2.2.2 System Features:

☑ Combination fire alarm/MNS ☐ MNS autonomous control unit ☐ Wide-area MNS to regional national alerting interface
☐ Local operating console (LOC) ☐ Distributed-recipient MNS (DRMNS) ☐ Wide-area MNS to DRMNS interface
☐ Wide-area MNS to high power loudspeaker array (HPLA) interface ☐ In-building MNS to wide-area MNS interface
☐ Other (specify): _____

2.2.3 MNS Local Operating Consoles

Location 1: Fire Control Room
Location 2: Security Office
Location 3: _____

2.2.4 High-Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones: 0
Location 1: _____
Location 2: _____
Location 3: _____

2.2.5 Mass Notification Devices

Combination fire alarm/MNS visual devices: 48 MNS-only visual devices: _____
Textual signs: _____ Other (describe): _____
Supervision class: _____

2.2.6 Special Hazard Notification

☑ This system does not have special suppression predischarge notification.
☐ MNS systems DO NOT override notification appliances required to provide special suppression predischarge notification.

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

3.1 Telephone System

Number of telephone jacks installed: 15 Number of warden stations installed: 3
Number of telephone handsets stored on site: 6
Type of telephone system installed: ☐ Electrically powered ☑ Sound powered

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

Number of stations: 0 Location of central control point: _____
Days and hours when central control point is attended: _____
Location of alternate control point: _____
Days and hours when alternate control point is attended: _____

© 2018 National Fire Protection Association NFPA 72 (p. 2 of 3)

EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS *(continued)*

3.3 Elevator Emergency Communications Systems

Number of elevators with stations: 2 Location of central control point: Fire Control Room
Days and hours when central control point is attended: 24
Location of alternate control point: None
Days and hours when alternate control point is attended: None

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

This system actuates the following control functions specific to emergency communications systems:

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	1

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

Figure A.7.8.2(1)(c) Example of Completed Power Systems Supplementary Record of Completion.

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes systems and components specific to power systems that incorporate generators, ESS systems, remote battery systems, or other complex power systems. This form is to be completed by the system installation contractor at the time of system acceptance and approval. It shall be permitted to modify this form as needed to provide a more complete and/or clear record. Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: 0

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquartere

Address: 27132 Santa Anita Boulevard, Hilo, HI

2. SYSTEM POWER

2.1 Control Unit

2.1.1 Primary Power

Input voltage of control panel: 120 volt Control panel amps: 7.3

Overcurrent protection: Type: Circuit Breaker Amps: 20

Location (of primary supply panelboard): Main Electrical Room in Basement

Disconnecting means location: Panel E2 — Electric Room

2.1.2 Engine-Driven Generator

Location of generator:

Location of fuel storage: Type of fuel: Diesel

2.1.3 Energy Storage Systems

Equipment powered by ESS system: None

Location of ESS system:

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): In alarm mode (minutes):

2.1.4 Batteries

Location: FACU Type: Gel Cell Nominal voltage: 24 Amp/hour rating: 16

Calculated capacity of batteries to drive the system:

In standby mode (hours): 24 In alarm mode (minutes): 15

2.2 In-Building Fire Emergency Voice Alarm Communications System or Mass Notification System

2.2.1 Primary Power

Input voltage of EVACS or MNS panel: 120 volt EVACS or MNS panel amps: 8.8

Overcurrent protection: Type: Circuit Breaker Amps: 20

Location (of primary supply panelboard): Main Electrical Room in Basement

Disconnecting means location: Panel E2 — Electric Room

© 2018 National Fire Protection Association

POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.2.2 Engine-Driven Generator

Location of generator:

Location of fuel storage: Type of fuel: Diesel

2.2.3 Energy Storage Systems

Equipment powered by ESS system: None

Location of ESS system: N/A

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): N/A In alarm mode (minutes): N/A

2.2.4 Batteries

Location: ECS Panel Type: Gel Cell Nominal voltage: 24 Amp/hour rating: 20

Calculated capacity of batteries to drive the system:

In standby mode (hours): 24 In alarm mode (minutes): 15

2.3 Notification Appliance Power Extender Panels

❑ This system does not have power extender panels.

2.3.1 Primary Power

Input voltage of power extender panel(s): 120 volt Power extender panel amps: 8

Overcurrent protection: Type: Circuit Breaker Amps: 20

Location (of primary supply panelboard): See Table

Disconnecting means location:

2.3.2 Engine-Driven Generator

Location of generator:

Location of fuel storage: Type of fuel: Diesel

2.3.3 Energy Storage Systems

Equipment powered by ESS system: None

Location of ESS system:

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): In alarm mode (minutes):

2.3.4 Batteries

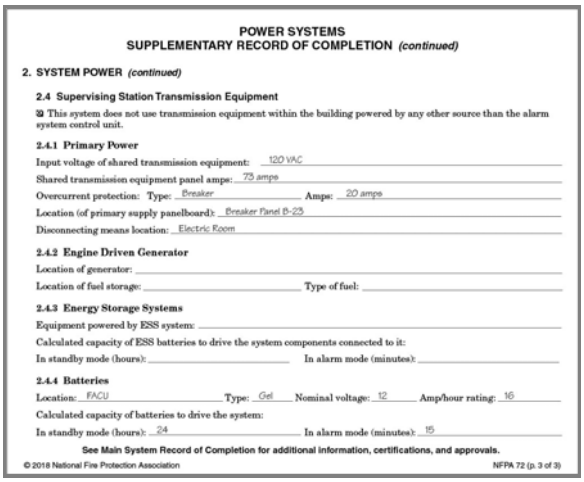
Location: Power Panel Type: Gel Cell Nominal voltage: 24 Amp/hour rating: 12

Calculated capacity of batteries to drive the system:

In standby mode (hours): 24 In alarm mode (minutes): 15

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association



POWER SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. SYSTEM POWER *(continued)*

2.4 Supervising Station Transmission Equipment

☒ This system does not use transmission equipment within the building powered by any other source than the alarm system control unit.

2.4.1 Primary Power

Input voltage of shared transmission equipment: 120 VAC

Shared transmission equipment panel amps: 75 amps

Overcurrent protection: Type: Breaker Amps: 20 amps

Location (of primary supply panelboard): Breaker Panel B-25

Disconnecting means location: Electric Room

2.4.2 Engine Driven Generator

Location of generator:

Location of fuel storage: Type of fuel:

2.4.3 Energy Storage Systems

Equipment powered by ESS system:

Calculated capacity of ESS batteries to drive the system components connected to it:

In standby mode (hours): In alarm mode (minutes):

2.4.4 Batteries

Location: FACU Type: Gel Nominal voltage: 12 Amp/hour rating: 16

Calculated capacity of batteries to drive the system:

In standby mode (hours): 24 In alarm mode (minutes): 15

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72 (p. 3 of 3)

Figure A.7.8.2(1)(d) Example of Completed Notification Appliance Power Panel Supplementary Record of Completion.



NOTIFICATION APPLIANCE POWER PANEL
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes a list of types and locations of notification appliance power extender panels.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: 0

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters

Address: 27132 Santa Anita Boulevard, Hilo, HI

2. NOTIFICATION APPLIANCE POWER EXTENDER PANELS

Make and Model	Location	Area Served	Power Source
Firelite W123	3rd Floor	3rd Floor	Panel 3E
SK + ABC	6th Floor	6th Floor	Panel 3G

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Figure A.7.8.2(1)(e) Example of Completed Interconnected Systems Supplementary Record of Completion.



INTERCONNECTED SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes a list of types and locations of systems that are interconnected to the main system.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters
Address: 27132 Santa Anita Boulevard, Hilo, HI

2. INTERCONNECTED SYSTEMS

Description	Location	Purpose
Fan Shutdown	Roof	Shut down fans on fire alarm activation
Elevator Recall	Elevator Room	Recall elevators in case of alarm on lobby smoke detectors

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Figure A.7.8.2(1)(f) Example of Completed Deviations from Adopted Codes and Standards Supplementary Record of Completion.



DEVIATIONS FROM ADOPTED CODES AND STANDARDS
SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It enables the designer and/or installer to document and justify deviations from accepted codes or standards.
This form is to be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.
Insert N/A in all unused lines.

Form Completion Date: 2 November 2019 Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: World Storage and Transfer Headquarters
Address: 27132 Santa Anita Boulevard, Hilo, HI

2. DEVIATIONS FROM ADOPTED CODES OR STANDARDS

Description	Purpose
Waterflow switch set to a 120-second trip	Issue has been identified that there are water surges during evening hours

See Main System Record of Completion for additional information, certifications, and approvals.

© 2018 National Fire Protection Association NFPA 72

Statement of Problem and Substantiation for Public Input

Examples are needed for Dual Media Pathway and Separate Pathway to provide clarity.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group

Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 11:18:48 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5107-NFPA 72-2019
Statement: The Technical Committee edits the text for clarity.

Public Input No. 91-NFPA 72-2019 [Section No. A.7.8.2(2)]

~~A.7.8.2(2)~~ —

~~Figure 7.8.2(g) through Figure 7.8.2(l) are sample forms intended to reflect the general information that should be provided as part of a system inspection and test report, but they are not intended to mandate a specific format for the report. A report format customized to the specific system configuration, devices, appliances, and system functions being tested meets the intent of the requirement.~~

Statement of Problem and Substantiation for Public Input

See substantiation in PI 81

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 92-NFPA 72-2019 [New Section after A.7.7.1.2]	
Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]	
Public Input No. 81-NFPA 72-2019 [Section No. 7.6.6]	
Public Input No. 90-NFPA 72-2019 [Section No. 7.8.2]	
Public Input No. 92-NFPA 72-2019 [New Section after A.7.7.1.2]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 02 09:48:05 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: The referenced forms contain a statement that permits the forms to be modified as needed.

Public Input No. 104-NFPA 72-2019 [Section No. A.10.3.3]

A.10.3.3

This requirement does not apply to conventional notification appliance circuits (NACs). Conventional NACs are simple circuits that deliver power to connected appliances. Hybrid addressable NACs deliver power and also serve as a digital signaling pathway (SLC). For that reason, addressible notification appliances must be listed to work with the specific control unit and the control unit's hybrid SLC/NAC.

Statement of Problem and Substantiation for Public Input

Expands discussion to addressable notification appliances.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 103-NFPA 72-2019 [Section No. 10.3.3]	Parent.
Public Input No. 103-NFPA 72-2019 [Section No. 10.3.3]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 08 11:54:04 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The Technical Committee clarifies the text of 10.3.3; see action on PI 103.

Public Input No. 214-NFPA 72-2019 [New Section after A.10.4.5]

TITLE OF NEW CONTENT

A.10.4.5.1 10.4.5 permits the use of a heat detector if ambient conditions are not suitable for smoke detection. It is important to also evaluate whether the area is suitable for the control unit.

Statement of Problem and Substantiation for Public Input

This change is required due to the format changes made to follow the Manual of Style. The text remains the same as currently found under the Exception.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 210-NFPA 72-2019 [Section No. 10.4.5]	
Public Input No. 211-NFPA 72-2019 [Section No. 10.4.6]	
Public Input No. 213-NFPA 72-2019 [Section No. A.10.4.5]	
Public Input No. 211-NFPA 72-2019 [Section No. 10.4.6]	

Submitter Information Verification

Submitter Full Name: Todd Warner
Organization: Brooks Equipment Company, Inc.
Affiliation: Fire Equipment Manufacturers Association (FEMA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 13:10:52 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5341-NFPA 72-2019

Statement: A risk analysis needs to be performed to determine if early warning fire detection is necessary to provide protection for the control unit(s), notification appliance circuit power extender(s) and supervising station transmitting equipment AND if the risk analysis shows smoke or heat detectors are not necessary, the omission must be approved by the AHJ.

Public Input No. 621-NFPA 72-2019 [New Section after A.10.4.5]

A.10.4.8.2 Cybersecurity classification designations should be referenced in the risk analysis for a mass notification system, or any emergency communication system or fire alarm system design that conducts a risk analysis. For systems that are designated as not certified, an explanation should be provided; such as the system is air gapped. An "air gapped" computer or network or system is one that has no network interfaces, either wired or wireless, connected to outside networks. Systems that have remote monitoring, or remote maintenance functionality are not normally considered air gapped. Systems may be initially installed as air gapped, but subsequently have remote capabilities added or enabled, so inspection is required to ensure certification requirements have not changed. For systems designated as not applicable, an explanation should be provided; such as no digital communication capability with outside networks physically exists.

Statement of Problem and Substantiation for Public Input

Please see PI: 599. These PIs are part of a whole, spread across chapters 2, 3, 7, 14, 10, 21, 23, 24, 26, & 27 and are meant to work together.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 599-NFPA 72-2019 [New Section after 10.4.7.3]	Part of a broader public input intended to work together

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 16:13:10 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The Technical Committee has proposed a first revision which addresses the cyber security concerns.

Public Input No. 213-NFPA 72-2019 [Section No. A.10.4.5]

A.10.4.5

The control units that are to be protected are those that provide notification of a fire to the occupants and responders. The term *control unit* does not include equipment such as annunciators and addressable devices. Requiring smoke detection at the transmitting equipment is intended to increase the probability that an alarm signal will be transmitted to a supervising station prior to that transmitting equipment being disabled due to the fire condition.

~~CAUTION: Exception No. 1 to 10.4.5 permits the use of a heat detector if ambient conditions are not suitable for smoke detection. It is important to also evaluate whether the area is suitable for the control unit.~~

Where the area or room containing the control unit is provided with total smoke detection coverage, additional smoke detection is not required to protect the control unit. Where total smoke detection coverage is not provided, the Code intends that only one smoke detector is required at the control unit even when the area of the room would require more than one detector if installed according to the spacing rules in Chapter 17. The intent of selective coverage is to address the specific location of the equipment.

The location of the required detection should be in accordance with 17.7.3.2.1.

Statement of Problem and Substantiation for Public Input

The CC has directed the TC to review A.10.4.4 for references that no longer exist.

The reference to the exception is removed. The information will be moved to a new A.10.4.5.1

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 210-NFPA 72-2019 [Section No. 10.4.5]	
Public Input No. 211-NFPA 72-2019 [Section No. 10.4.6]	
Public Input No. 211-NFPA 72-2019 [Section No. 10.4.6]	
Public Input No. 214-NFPA 72-2019 [New Section after A.10.4.5]	

Submitter Information Verification

Submitter Full Name: Todd Warner
Organization: Brooks Equipment Company, Inc.
Affiliation: Fire Equipment Manufacturers Association (FEMA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 13:07:27 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5341-NFPA 72-2019
Statement: A risk analysis needs to be performed to determine if early warning fire detection is necessary to provide protection for the control unit(s), notification appliance circuit power extender(s) and supervising station transmitting equipment AND if the risk analysis shows smoke or heat detectors are not necessary, the omission must be approved by the AHJ.

Public Input No. 465-NFPA 72-2019 [New Section after A.10.5.3]

TITLE OF NEW CONTENT

A.10.5.1.2 National Council of Examiners for Engineering and Surveying (NCEES), and most states classifiy the design of fire alarm and detection systems as the "practice of engineering"; therefore, the fire alarm and detection design should be performed by, or overseen by a licensed professional engineer. Consult the Board of Technical Professions or licensing board for which the project is located to determine if the design of the fire alarm and detection system is classified as the "practice of engineering" and if the design documents need to be sealed by a licensed professional engineer. See the NCEES Position Statement #22 on page 36 of the attached 2018 NCEES Policy Manual. Also see the NSPE Position Statement No. 08-1749 - SFPE/NSPE/NICET Joint Position on the Engineer and the Engineering Technician Designing Fire Protection Systems.

Additional Proposed Changes

File Name	Description	Approved
NCEES_Policy_Manual-August-2018.pdf		
SFPE_NSPE_NICET_Joint_Position.pdf		

Statement of Problem and Substantiation for Public Input

NCEES and most, if not all states classify the design of fire alarm and detection systems, including the development of the layout drawings as the "practice of engineering", which will require a licensed professional engineer to develop or be in responsible charge for the system design. This only adds Annex material to provide further guidance for the designers qualifications.

Submitter Information Verification

Submitter Full Name: Jack Poole
Organization: Poole Fire Protection, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 16:27:36 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: The requirement for State or local licensure is already clearly stated in the Code. “State or local licensure regulations shall be followed to determine qualified personnel.” (NFPA 72, 2019 10.5.1.2) Many states have an exception for contractors to submit plans for their projects without a PE stamp.

Public Input No. 365-NFPA 72-2019 [Section No. A.10.5.5.1(2)]

A.10.5.5.1(2)

An example of an organization providing alarm monitoring operator training is the ~~Central Station Alarm~~ The Monitoring Association (~~CSAA~~ TMA). Note that this reference is for information purposes only, information concerning the product or service has been provided by the manufacturer or other outside sources, and the information concerning the product or service has not been independently verified nor has the product or service been endorsed or certified by the NFPA or any of its technical committees.

Statement of Problem and Substantiation for Public Input

CSAA stands for the Central Station Alarm Association and it has been around since 1950 but has recently changed to TMA which stands for The Monitoring Association. It's an organization that works with UL-Listed and FM Approved central monitoring facilities.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 11:39:57 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5130-NFPA 72-2019
Statement: The Technical Committee updates the reference.

Public Input No. 385-NFPA 72-2019 [Section No. A.10.6.4]

A.10.6.4

ESS classifications are found in NFPA 111. ~~Previous editions of *NFPA 72* referenced uninterruptible~~ Uninterruptible power supplies (UPS) systems, ~~which is~~ are one type of an ESS. Commercial UPS devices are also a type of ESS; they are usually integral devices co-located with the specific equipment they service. Commercial UPS tend to be listed to ANSI/UL 1778, rather then referenced to NFPA 111. Neither NFPA 111 or ANSI/UL 1778 reference each other.

Statement of Problem and Substantiation for Public Input

Related PIs in this series are attempting to re-introduce the notion of a stand-alone commerical UPS device in contrast to a broader ESS. This PI maintains consistency with other proposed language and clarifies the relationship between ESS and UPS by pointing out the isolation between NFPA 111 and UL 1778.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 383-NFPA 72-2019 [New Section after 10.6.8.4]	Related to the reasons behind PI 383 and its substantiation .

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 19:02:47 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5157-NFPA 72-2019

Statement: The text correlates with NFPA 111 Standard on Stored Electrical Energy Emergency and Standby Power Systems. The Technical Committee revises the text by deleting the Class 24 capacity designation and adds text to require EPSS/SEPSS capacity in accordance with this Code. The reference to 10.6.7.3.1(2) in PI 636 was not included since this is addressed by the 10.6.4.2 Class 4 requirement and there is no standby vs. alarm load differentiated in 10.6.7.3.1(2).

Public Input No. 638-NFPA 72-2019 [Section No. A.10.6.4]

A.10.6.4

ESS classifications are found in NFPA 111. Previous editions of *NFPA 72* referenced uninterruptible power supplies (UPS) systems, which is one type of an ESS.

Note that 10.6.3.1 permits the use of an ESS as the sole power source for a system. Using the ESS option means that there is no primary and secondary supply. The ESS serves both purposes, but from one supply point. Because of this, the risk of common mode failures should be considered since certain faults in the ESS will leave the signaling system without any power.

Statement of Problem and Substantiation for Public Input

Added new text to existing Annex to caution designers. Most people do not realize that they have no secondary power source when using the ESS option. The ESS option results in single point of potential failure.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 17:01:23 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5159-NFPA 72-2019
Statement: The text provides correlation with NFPA 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems and provides a reference to historical terminology. Additionally, a note to indicate that EPSS/SEPSS systems are UL 1778 listed (or equivalent) and a note to indicate EPSS/SEPSS equipment serves systems from a single connection point.

Public Input No. 389-NFPA 72-2019 [Section No. A.10.6.6]

A.10.6.6

Where a computer system of any ~~kind is~~ kind that is supported by emergency standby power provided by an energy storage system (ESS), is used to receive and process alarm or supervisory signals, an ESS with sufficient capacity to operate the system until the secondary supply is capable of operating the fire alarm system might be required in order to prevent signal loss or a greater than 10-second signal delay.

ESS equipment often contains an internal bypass arrangement to supply the load directly from the line. These internal bypass arrangements are a potential source of failure. ESS equipment also requires periodic maintenance. It is, therefore, necessary to provide a means of promptly and safely bypassing and isolating the ESS equipment from all power sources while maintaining continuity of power supply to the equipment normally supplied by the ESS.

Statement of Problem and Substantiation for Public Input

Want to differentiate the circumstances to make it clearer that this applies to NFPA 111 type of emergency power system rather then a commercial UPS. An ESS has it's own switching gear that may require service. At that time, if there was not a way of isolating the switching gear from load, all the equipment connected to the entire facilities emergency power system would be shut off. Compared to a computer being supported by a commercial UPS, the computer would typically be powered down while a UPS was serviced for a short interval, or the UPS would be replaced and the UPS needing service removed if a longer interval was required.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 383-NFPA 72-2019 [New Section after 10.6.8.4]	related to teh distinction between a ESS and a commerical UPS in PI 383

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 19:39:23 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5176-NFPA 72-2019
Statement: The Technical Committee edits the text to correlate with the current NFPA 111 terminology and clarifies that an UL 864 UPS is suitable for the purpose.

Public Input No. 580-NFPA 72-2019 [New Section after A.10.6.7.2.1.1]

A.10.6.7.2.1.2

Batteries are sized with a 1.25 correction factor for normal aging. However, in temperatures less than 77F, the battery will not be able to provide full rated amperes. IEEE-485 provides guidelines for additional correction factors based on minimum anticipated design temperatures.

Statement of Problem and Substantiation for Public Input

Additional clarification of PI 564 to fire alarm system designers.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 560-NFPA 72-2019 [Section No. 10.6.7.2.1.1]	
Public Input No. 564-NFPA 72-2019 [New Section after 10.6.7.2.1.2]	
Public Input No. 576-NFPA 72-2019 [Section No. A.10.6.7.2.1.1]	
Public Input No. 564-NFPA 72-2019 [New Section after 10.6.7.2.1.2]	

Submitter Information Verification

Submitter Full Name: Herbert Hurst
Organization: Savannah River Nuclear Solutio
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:43:37 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5186-NFPA 72-2019

Statement: The text has been reorganized for readability. Thus, carbon monoxide detection remains a separate section.

The Technical Committee revises the text for derating batteries (10.6.7.2.3) to apply a minimum 1.25 correction factor and adds further guidance to the annex for other battery technologies and temperature compensation.

The Technical Committee adds the section numbered 10.6.7.2.1.7 to clarify that communications equipment at the protected premises that is used to transmit signals to a supervising station must have primary and secondary power sources.

The Technical Committee does not accept a mandated minimum with respect to the number of addressable devices that should be supported during an alarm condition. This parameter should be specified by the manufacturer in accordance with the product listing.

Public Input No. 576-NFPA 72-2019 [Section No. A.10.6.7.2.1.1]

A.10.6.7.2.1.1

The ~~20-percent safety margin~~ correction factor is intended to address normal aging effects on battery capacity. As a battery ages, rated capacity will decrease to 80 percent, which is considered the end of service life. As a minimum, a ~~20-percent~~ correction factor of 1.25 should be applied ~~for aging to~~ to offset the 20 percent loss in capacity due to aging and ensure the battery can meet its current demand at the end of service life. At initial installation, battery capacity can be as low as 90 percent and should gradually increase when it is subjected to several deep discharge/charging cycles or when it remains on float-charge for several weeks. For additional information on battery sizing considerations refer to IEEE 485, *Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications.*

Statement of Problem and Substantiation for Public Input

Alignment of PI 576 with PI 564.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 560-NFPA 72-2019 [Section No. 10.6.7.2.1.1]	
Public Input No. 564-NFPA 72-2019 [New Section after 10.6.7.2.1.2]	
Public Input No. 564-NFPA 72-2019 [New Section after 10.6.7.2.1.2]	
Public Input No. 580-NFPA 72-2019 [New Section after A.10.6.7.2.1.1]	

Submitter Information Verification

Submitter Full Name: Herbert Hurst
Organization: Savannah River Nuclear Solutio
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 13:18:03 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5186-NFPA 72-2019

Statement: The text has been reorganized for readability. Thus, carbon monoxide detection remains a separate section.

The Technical Committee revises the text for derating batteries (10.6.7.2.3) to apply a minimum 1.25 correction factor and adds further guidance to the annex for other battery technologies and temperature compensation.

The Technical Committee adds the section numbered 10.6.7.2.1.7 to clarify that communications equipment at the protected premises that is used to transmit signals to a supervising station must have primary and secondary power sources.

The Technical Committee does not accept a mandated minimum with respect to the number of addressable devices that should be supported during an alarm condition. This parameter should be specified by the manufacturer in accordance with the product listing.

Public Input No. 145-NFPA 72-2019 [Section No. A.10.6.10.3.4]

A.10.6.10.3.4

The circuitry and methods for charging batteries of various types are to be evaluated by a nationally recognized testing laboratory to ensure they are appropriate for the purpose. During primary power use, batteries are trickle-charged if they are off-line and waiting to be put under load in the event of a loss of power.

Float-charged batteries are fully charged and connected across the output of the rectifiers to smooth the output and to serve as a standby source of power in the event of a loss of line power. Other charging methods are used to restore capacity to a battery after it has been utilized during a loss of primary power.

A.10.6.10.6

Manufacturers of fire alarm and emergency communication systems provide a means for supervising the battery chargers capability to properly charge the battery(ies). There typically is no means to test the battery charger for this trouble condition in the field.

Statement of Problem and Substantiation for Public Input

There are installations that are being challenged to have the installer verify that the charger circuits are functioning properly and verify that components on the charges are tested beyond that required by 72. This section is being proposed in the annex to help with the intent that the internal testing and monitoring that is verified by the NRTL is sufficient and further component testing of the charger is not necessary and in many cases not able to be performed.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 07 10:48:06 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5179-NFPA 72-2019
Statement: The Technical Committee adds annex material to indicate that it may not be possible to test the battery charger monitoring means in the field.

Public Input No. 132-NFPA 72-2019 [New Section after A.10.17.2]

TITLE OF NEW CONTENT

A.10.18.1.1.2 The visible annunciation required by this section must remain "on" even if other appliances are silenced, shut off or disabled. Most often, a control unit will sound an audible signal and display a visual alert on an incoming signal. The audible signal is permitted to be deactivated, but the visual signal must remain active. Or, a system in a high noise area might use high power visual appliances for occupant alerting. Dectivating those signals, without resetting the system, is not permitted to decativate the visual means required by this section.

Statement of Problem and Substantiation for Public Input

Adds annex text explaining the importance and the operation of the visual alert.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 131-NFPA 72-2019 [Section No. 10.18.1.1.2]	
Public Input No. 131-NFPA 72-2019 [Section No. 10.18.1.1.2]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 23 16:10:38 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5171-NFPA 72-2019

Statement: The Technical Committee reorganizes the sections to address style and editorial issues. The Technical Committee views the visible annunciation as generally provided by an annunciator (defined in 3.3.21) and not a notification appliance (defined in 3.3.182). Thus the “other” as suggested in PI 131 and PI 133 was not included. Attempts to rewrite the section to use the term annunciator was defeated by the allowance of a printout, which is neither an annunciator or a notification appliance.

Public Input No. 144-NFPA 72-2019 [Section No. A.10.19.1]

A.10.19.1

Amplifiers generally require significant power regardless of load. To reduce the secondary power demand, there is no requirement to monitor the integrity of amplifiers during non-alarm operation on secondary power. This allows the amplifiers to be shut down while the system is operating on secondary power until an alarm occurs. When an alarm occurs, monitoring of integrity must resume so that an operator is aware of current conditions and so that any backup amplifiers can be engaged.

Backup amplifying and evacuation signal–generating equipment is recommended with automatic transfer upon primary equipment failure to ensure prompt restoration of service in the event of equipment failure.

A.10.19.1.3

Manufacturers of fire alarm and emergency communication systems provide a means for supervising the tone generating equipment capability to properly generate tones. There typically is no means to test the tone generator failure for this trouble condition in the field.

Statement of Problem and Substantiation for Public Input

There are installations that are being challenged to have the installer verify that the tone generator is functioning properly and verify that components on the tone generator is tested beyond that required by 72. This section is being proposed in the annex to help with the intent that the internal testing and monitoring that is verified by the NRTL is sufficient and further component testing of the tone generator is not necessary and in many cases not able to be performed.

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 07 10:43:49 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5170-NFPA 72-2019
Statement: The Technical Committee adds annex text to indicate that testing of the tone generator supervision may not be possible in the field.

Public Input No. 477-NFPA 72-2019 [Section No. A.12.3.6(1)]

A.12.3.6(1)

The Class N pathway designation is added to specifically address the use of modern network infrastructure when used in fire alarm and emergency communication systems.

Class N networks can be specified for ancillary functions but are not required for supplemental reporting described in 23.12.4. *[See Figure A.23.12.4.]*

Ethernet network devices are addressable but with an important distinction from device addresses on a traditional SLC multi-drop loop. A device with an Ethernet address is, in most cases, a physical endpoint connected to a dedicated cable. Traditional SLC devices are all wired on the same communication line (in parallel), similar to an old party-line telephone system. By comparison, Ethernet's network switches direct each data packet to its intended recipient device like our modern phone systems.

Class N uses redundant paths as a means to compensate for Ethernet wiring that does not report a single connection to ground, a basic requirement of Class B. Thus, the physical separation of Class A and Class X, and equipment redundancy described in 12.3.7, is not inherently required of Class N. In other words, failure of a single switch is permitted take down a class N segment and is only required to report the loss of communication. Where redundant path segments are intended to have survivability similar to Class A or Class X, the physical separation requirements and overall equipment redundancy must be specified in addition to the Class N designation.

As a visual model, Class N could be likened to a redundant pathway backbone, allowed to have Class C branch paths to single endpoint devices. Therefore, every effort is made in this section to clearly distinguish the single endpoint device from the transport equipment required to have redundant paths.

Class N requires redundant, monitored pathway segments to and from control equipment (fire alarm control units, ACUs, or ECCUs) where any interruption in communications could potentially affect multiple endpoint devices. Typically, interconnected communications equipment such as Ethernet switches, wireless repeaters, or media converters are used in combination to create pathways. Chapter 12 describes the required behavior of Class N pathways. All equipment must meet the requirements of other chapters in *NFPA 72* (such as, but not limited to, requirements pertaining to secondary power supplies, equipment listings, and environment conditions).

Redundant pathways, isolated from ground, are actually common practice in robust Ethernet designs. Managed network switches commonly have specific uplink ports that are intended for load sharing and allow two parallel connections. For compliance with Class N, a trouble must be reported if either of these connections fails. *[See Figure A.12.3.6(1)(a) and Figure A.12.3.6(1)(b).]*

Class N pathways can use metallic conductor communications cable, such as a 100 ohm balanced twisted pair (e.g., Category 5E), including single-pair or multi-pair cable, or other communications media, such as ~~optical~~ fiber-optic cable or wireless transmission, or a combination of two or more such transport mediums.

Where a conductor-based media is used for Class N, the intention is not to monitor faults on individual conductors but rather to monitor the operational capability and performance of the pathway as a whole. Similar to Class C, end-to-end verification is used in Class N.

Primary and required redundant pathways are independently and continuously verified for their ability to support end-to-end communications to and from each endpoint device and its associated control equipment. Pathway segments that service more than one device must have at least one verified redundant pathway segment. Should any primary pathway segment fail, communication is supported by the redundant pathway segment(s.) Failure of either a primary or redundant pathway will indicate a trouble.

Redundant pathway segments are generally independent and do not normally share media with the primary pathways. However, there are exceptions, such as different frequencies for wireless components, or ring topologies. *[See Figure A.12.3.6(5).]*

A Class N network can be made more reliable with physically distinct pathway segments (i.e., an alternate conduit, or cable tray route, or wireless transmission frequency range, or a combination of distinct media). In addition to the required primary segments and redundant segments, a Class N pathway is permitted to have nonrequired segments. *[See Figure A.12.3.6(1)(c).]* Additional nonrequired pathway segments are allowed to be connected and not independently monitored for integrity as long as two paths are monitored to meet the redundancy requirement of Class N.

Figure A.12.3.6(1)(a) Class N Pathway Block Diagram – Example 1.

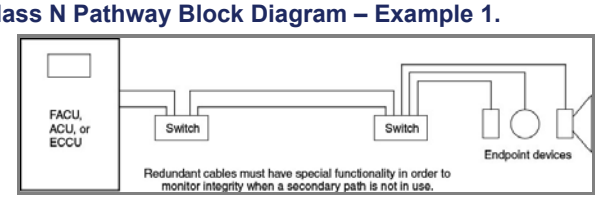
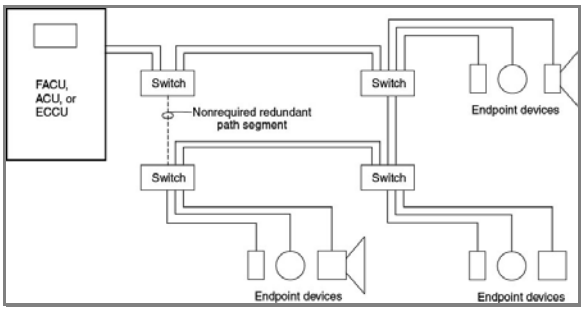


Figure A.12.3.6(1)(b) Class N Pathway Block Diagram – Example 2.



Traditionally, NFPA has used the word *device* for input components and the term *appliance* for components used in notification. With respect to Class N, the term *device* includes appliances and other intelligent, addressable components that perform a programmable input or output function. Examples of Class N devices include the following:

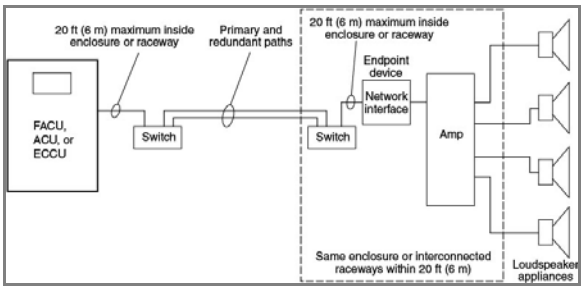
(1) Input components such as alarm initiating modules switches and sensors

(2) Output components such as output modules, Ethernet loudspeakers (i.e., IEEE 802.3af PoE loudspeakers), intelligent visual notification appliances (strobes), textual signage, and intelligent audio amplifiers

Transmission equipment components (e.g., media converters, Ethernet switches, patch panels, cross-connects) are connected to the Class N pathway merely to transport instructions between other equipment. As such, they are not considered devices with respect to Class N pathways.

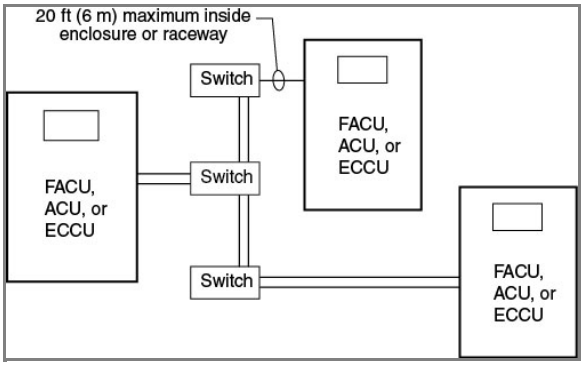
The audio amplifier listed above is an example of an addressable device that can receive a digital audio input from the Class N pathway and then provide a notification appliance circuit (NAC) output with Class A, B, or X pathways. Other endpoint devices can similarly provide alternate class pathways for visual notification appliances (strobes) (NACs) or initiating devices (IDCs). From the perspective of the Class N pathway, communications terminate at this endpoint device. However, since these types of endpoints can support multiple notification appliance devices or initiating devices, path segments are subject to the redundant pathway requirement unless protected in an enclosure or raceway less than 20 ft (6 m) in length. *(See 12.6.9.)[See Figure A.12.3.6(1)(c).]*

Figure A.12.3.6(1)(c) Class N Pathway to Endpoint with Multiple Devices.



Class N connections between control equipment are required to have redundant monitored pathway segments if a failure of a primary pathway segment in between control equipment could impair the operation of the control equipment. *[See Figure A.12.3.6(1)(d).]*

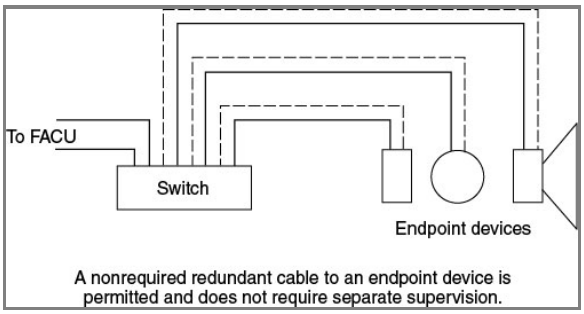
Figure A.12.3.6(1)(d) Class N Pathway Block Diagram with Multiple Control Units.



Class N is also permitted to include dual port devices that provide both transmission and input/output functions. Endpoint devices can have multiple connection ports and support dual pathway segment connections; thus the term *endpoint device* is not intended to prohibit more than one connection to a

device. Even with dual connections, where other devices depend on the path, primary and redundant paths are required. But, where an endpoint device has two connection ports, and when a secondary nonrequired connection is added, there is no requirement to separately supervise the nonrequired redundant pathway segment. *[See Figure A.12.3.6(1)(e).]*

Figure A.12.3.6(1)(e) Class N Pathway Block Diagram with Device with Dual Pathway Connection.



Statement of Problem and Substantiation for Public Input

Standardizes the use of "fiber-optic" as an adjective.

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:03:35 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5010-NFPA 72-2019
Statement: The phrase "control equipment (fire alarm control units, ACUs, or ECCUs)" is replaced with "a control unit(s)" because the identified examples are all defined as control units in 3.3.63.

The Technical Committee revises the text to change the word “optical” to “optic-” for correct use of grammar.

Public Input No. 569-NFPA 72-2019 [Section No. A.12.3.6(1)]

A.12.3.6(1)

The Class N pathway designation is added to specifically address the use of modern network infrastructure when used in fire alarm and emergency communication systems.

Class N networks can be specified for ancillary functions but are not required for supplemental reporting described in 23.12.4. *[See Figure A.23.12.4.]*

Ethernet network devices are addressable but with an important distinction from device addresses on a traditional SLC multi-drop loop. A device with an Ethernet address is, in most cases, a physical endpoint connected to a dedicated cable. Traditional SLC devices are all wired on the same communication line (in parallel), similar to an old party-line telephone system. By comparison, Ethernet's network switches direct each data packet to its intended recipient device like our modern phone systems.

Class N uses redundant paths as a means to compensate for Ethernet wiring that does not report a single connection to ground, a basic requirement of Class B. Thus, the physical separation of Class A and Class X, and equipment redundancy described in 12.3.7, is not inherently required of Class N. In other words, failure of a single switch is permitted take down a class N segment and is only required to report the loss of communication. Where redundant path segments are intended to have survivability similar to Class A or Class X, the physical separation requirements and overall equipment redundancy must be specified in addition to the Class N designation.

As a visual model, Class N could be likened to a redundant pathway backbone, allowed to have Class C branch paths to single endpoint devices. Therefore, every effort is made in this section to clearly distinguish the single endpoint device from the transport equipment required to have redundant paths.

Class N requires redundant, monitored pathway segments to and from control equipment (fire alarm control units, ACUs, or ECCUs) where any interruption in communications could potentially affect multiple endpoint devices. Typically, interconnected communications equipment such as Ethernet switches, wireless repeaters, or media converters are used in combination to create pathways. Chapter 12 describes the required behavior of Class N pathways. All equipment must meet the requirements of other chapters in *NFPA 72* (such as, but not limited to, requirements pertaining to secondary power supplies, equipment listings, and environment conditions).

Redundant pathways, isolated from ground, are actually common practice in robust Ethernet designs. Managed network switches commonly have specific uplink ports that are intended for load sharing and allow two parallel connections. For compliance with Class N, a trouble must be reported if either of these connections fails. *[See Figure A.12.3.6(1)(a) and Figure A.12.3.6(1)(b).]*

Class N pathways can use metallic conductor communications cable, such as a 100 ohm balanced twisted pair (e.g., Category 5E), including single-pair or multi-pair cable, or other communications media, such as optical fiber cable or wireless transmission, or a combination of two or more such transport mediums.

Where a conductor-based media is used for Class N, the intention is not to monitor faults on individual conductors but rather to monitor the operational capability and performance of the pathway as a whole. Similar to Class C, end-to-end verification is used in Class N.

Primary and required redundant pathways are independently and continuously verified for their ability to support end-to-end communications to and from each endpoint device and its associated control ~~equipment~~ units . Pathway segments that service more than one device must have at least one verified redundant pathway segment. Should any primary pathway segment fail, communication is supported by the redundant pathway segment(s.) Failure of either a primary or redundant pathway will indicate a trouble.

Redundant pathway segments are generally independent and do not normally share media with the primary pathways. However, there are exceptions, such as different frequencies for wireless components, or ring topologies. *[See Figure A.12.3.6(5).]*

A Class N network can be made more reliable with physically distinct pathway segments (i.e., an alternate conduit, or cable tray route, or wireless transmission frequency range, or a combination of distinct media). In addition to the required primary segments and redundant segments, a Class N pathway is permitted to have nonrequired segments. *[See Figure A.12.3.6(1)(c).]* Additional nonrequired pathway segments are allowed to be connected and not independently monitored for integrity as long as two paths are monitored to meet the redundancy requirement of Class N.

Figure A.12.3.6(1)(a) Class N Pathway Block Diagram – Example 1.

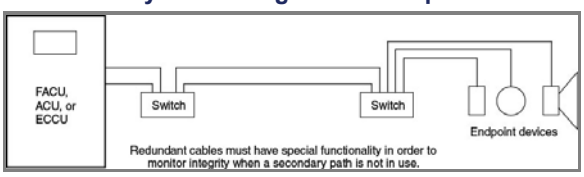
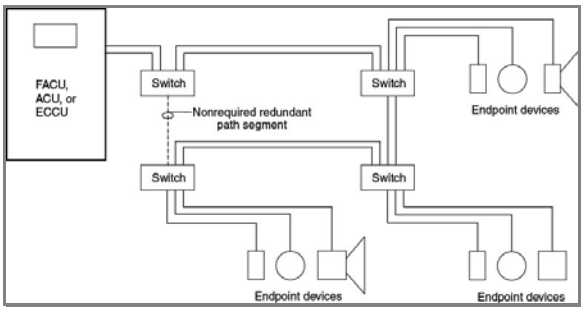


Figure A.12.3.6(1)(b) Class N Pathway Block Diagram – Example 2.



Traditionally, NFPA has used the word *device* for input components and the term *appliance* for components used in notification. With respect to Class N, the term *device* includes appliances and other intelligent, addressable components that perform a programmable input or output function. Examples of Class N devices include the following:

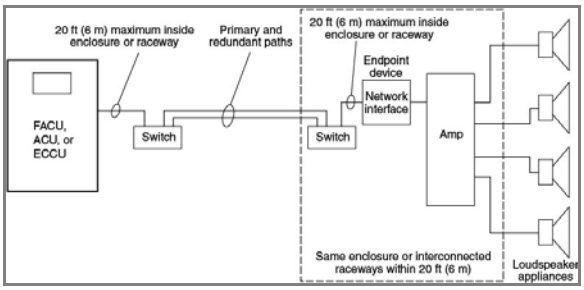
(1) Input components such as alarm initiating modules switches and sensors

(2) Output components such as output modules, Ethernet loudspeakers (i.e., IEEE 802.3af PoE loudspeakers), intelligent visual notification appliances (strobes), textual signage, and intelligent audio amplifiers

Transmission equipment components (e.g., media converters, Ethernet switches, patch panels, cross-connects) are connected to the Class N pathway merely to transport instructions between other equipment. As such, they are not considered devices with respect to Class N pathways.

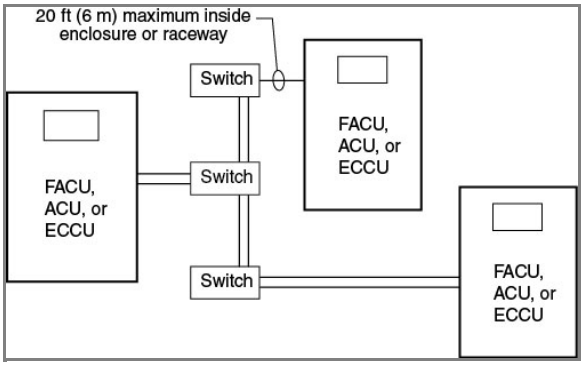
The audio amplifier listed above is an example of an addressable device that can receive a digital audio input from the Class N pathway and then provide a notification appliance circuit (NAC) output with Class A, B, or X pathways. Other endpoint devices can similarly provide alternate class pathways for visual notification appliances (strobes) (NACs) or initiating devices (IDCs). From the perspective of the Class N pathway, communications terminate at this endpoint device. However, since these types of endpoints can support multiple notification appliance devices or initiating devices, path segments are subject to the redundant pathway requirement unless protected in an enclosure or raceway less than 20 ft (6 m) in length. *(See 12.6.9.)[See Figure A.12.3.6(1)(c).]*

Figure A.12.3.6(1)(c) Class N Pathway to Endpoint with Multiple Devices.



Class N connections between control equipment are required to have redundant monitored pathway segments if a failure of a primary pathway segment in between control equipment could impair the operation of the control equipment. *[See Figure A.12.3.6(1)(d).]*

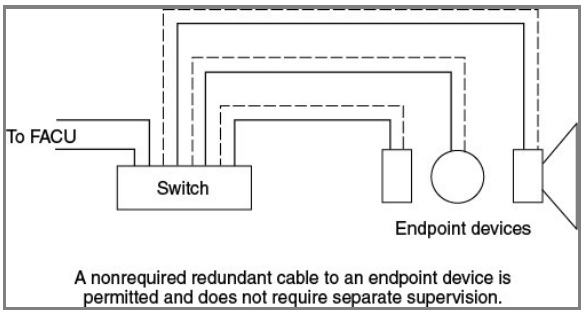
Figure A.12.3.6(1)(d) Class N Pathway Block Diagram with Multiple Control Units.



Class N is also permitted to include dual port devices that provide both transmission and input/output functions. Endpoint devices can have multiple connection ports and support dual pathway segment connections; thus the term *endpoint device* is not intended to prohibit more than one connection to a

device. Even with dual connections, where other devices depend on the path, primary and redundant paths are required. But, where an endpoint device has two connection ports, and when a secondary nonrequired connection is added, there is no requirement to separately supervise the nonrequired redundant pathway segment. *[See Figure A.12.3.6(1)(e).]*

Figure A.12.3.6(1)(e) Class N Pathway Block Diagram with Device with Dual Pathway Connection.



Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:41:28 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee does not agree that the term “control unit” is the proper term. Paragraph 3.3.63 defines a control unit as a system component that monitors inputs and controls outputs through various types of circuits. This section is only discussing the communication pathways which are typically a subsystem of a control unit.

Public Input No. 159-NFPA 72-2019 [Section No. A.12.3.8]

A.12.3.8

~~A goal of~~ ~~12.3.8~~ - This requirement is to provide ~~adequate separation between the~~ the physical or mechanical separation of outgoing and return cables~~. This separation is required to help ensure protection of the cables from physical damage. The recommended minimum separation to prevent physical damage is 12 in. (300 mm) where the cable is installed vertically and 48 in. (1.22 m) where the cable is installed horizontally.~~ , whether Class A, N, or X designation, so as to provide or meet the requirements of Chapter 12. This requirement will add to the integrity of each circuit.

Statement of Problem and Substantiation for Public Input

The proposed revision to the current Annex note is related to the Public Input to place the dimensional provisions of the current Annex note into the body of the Standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 158-NFPA 72-2019 [New Section after 12.3.8]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 13:42:46 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The Technical Committee rejects the proposed change because moving the material to the body of the Code requires technical justification. The 1-foot and 4-foot spacing are simple guidance and has allowed a starting point for evaluating the wiring protection. Additionally, these proposed requirements do not allow for other means of protection that have been accepted as standard engineering practice.

Public Input No. 2-NFPA 72-2018 [Section No. A.12.4.3]

A.12.4.3

Methods of survivability protection might alternate within a protected ~~premise~~ premises . For example, 2-hour fire-resistive cable might extend from a 2-hour fire-resistance-rated enclosure.

Fire alarm system notification appliances, control modules, jacks, and initiating devices are not capable of resisting attack by fire. Connecting these devices to circuits that require survivability and span multiple zones or floors, will result in a circuit that is no longer survivable. For example, two-way, in-building communications system (fire fighter's telephone) jacks that are connected to a circuit serving multiple floors could be shorted by the fire. It is recommended that a Level 2 or Level 3 survivable circuit serving multiple zones or floors be installed as Class X or Class N or those circuits be designed to serve a single fire zone.

Statement of Problem and Substantiation for Public Input

The word "Premise" is a thought. Premises is a property or area including a structure on a property.
Though plural for the word "Premise" (thought) is "Premises" (thoughts) is spelled the same as "Premises" (property) it is not the same.
The singular for "Premises" is still "Premises".

Premise never means property.

Submitter Information Verification

Submitter Full Name: Ronald Smith
Organization: TEAMWired
Street Address:
City:
State:
Zip:
Submittal Date: Thu Oct 11 12:04:37 EDT 2018
Committee: SIG-PRO

Committee Statement

Resolution: FR-5011-NFPA 72-2019
Statement: The Technical Committee revises the text to change the word "premise" to "premises" for correct use of grammar.

Public Input No. 478-NFPA 72-2019 [Section No. A.14.2.1.2]

A.14.2.1.2

If a system is designed to meet a specific mission or set of goals, then operational testing will assure that the system has mission reliability. For example, during acceptance testing, the design ambient noise level might not be present. Authorities having jurisdiction and technicians should not be trying to achieve the +5/15 dB or +5/10 dB requirements at acceptance, as they might not know what the maximum average or peak noise levels are. They need only measure the system and determine if it meets the required design level. Therefore, the design level needs to be documented and communicated to them.

Acceptance and re-acceptance testing includes proper operation, and non-operation, of the fire alarm or signaling system's ability to properly interface to other systems. The best way to ensure a proper interface operation is to observe the actual operation of the interfaced system. However, exercising an emergency control function every time a related initiating device is actuated might not be desirable or practical, or in some cases ~~may not even be~~ is not be permitted. *NFPA 72* permits testing of the fire alarm or signaling system up to the end point connection to the interfaced system or emergency control function. Refer to A.14.4.3.2 Table 14.4.3.2 Item 24.

Statement of Problem and Substantiation for Public Input

1. For consideration as directed by the TCC
2. Eliminate usage of "may" throughout the Code. (MOS - July 2004, 2.2.1.1)

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:04:52 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5258-NFPA 72-2019
Statement: This revision eliminates usage of "may" per the MOS.

Public Input No. 591-NFPA 72-2019 [New Section after A.14.2.2.1.2]

A.14.2.2.2.1

The act of testing a system does not in itself necessarily constitute an impairement.However, testing may warrant both planned an unplanned impairments for takiing portions of a system out of service for extended periods of time and discovery of critical system deficiencies.

Statement of Problem and Substantiation for Public Input

Further clarification of new text added by PI 585 clarifying when normal periodic testing warrants impairment.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 585-NFPA 72-2019 [Section No. 14.2.2.2.1]	

Submitter Information Verification

Submitter Full Name: Herbert Hurst
Organization: Savannah River Nuclear Solutio
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:31:10 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5278-NFPA 72-2019

Statement: Impairments and deficiencies are defined separately in Chapter 3, and impairments are addressed separately in Chapter 10. Therefore, they should be treated separately in Chapter 14 and not categorized together in one section.

The revision clarifies when periodic testing is considered to cause an impairment and eliminates needless impairments for minor out-of-service events.

Public Input No. 570-NFPA 72-2019 [Section No. A.14.4.2]

A.14.4.2

Reacceptance testing is performed to verify the proper operation of added or replaced devices, appliances, emergency control function devices, control ~~equipment~~ units , and so forth. It is not the intent of the committee to unduly burden the system owner with increased costs for repeated testing of devices not directly affected by the replacement of devices with like devices.

For example, if a 2 amp fuse is replaced with another 2 amp fuse in the fire alarm control unit, verification of the circuit(s) served by the fused supply is required, but it would not be necessary to test 10 percent of initiating devices not directly affected by replacing the fuse. Likewise, it is not necessary to test all these initiating devices whenever a smoke detector is replaced with a like smoke detector.

When wiring changes are made to correct improperly supervised circuits, a test of the affected device or appliance is required, but not a test of 10 percent of initiating devices not directly affected.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:43:45 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5285-NFPA 72-2019
Statement: The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Public Input No. 272-NFPA 72-2019 [Section No. A.14.4.3.2]

A.14.4.3.2

Table 14.4.3.2 Item 9(4). Ohmic testing is a means to determine the state of health of a VRLA battery's cells by measuring some form of a cell's internal resistance. Typically ohmic testing equipment uses one of three techniques — conductance, impedance, or resistance — to make these measurements.

In simplest technical terms, ohmic technology is based on Ohm's Law, which expresses the relationship between volts, amperes, and ohms in an electrical circuit. Ohmic testing attempts to use voltage and current to determine the resistive characteristic of a battery's cells. As the cells in a battery age and start to lose capacity, the internal components of the battery are undergoing a degradation process. The degradation of these components (plates, grids, internal connection straps) within the battery's cells causes an increased resistance in the conduction paths of the cell, which in turn causes a change in the internal ohmic values. A measured increase in impedance or resistance, or a decrease in conductance, indicates the battery is losing its ability to produce the energy it was designed to deliver when called upon to support the connected loads.

The key to effective application of ohmic testing is the appropriate trending of test results over time compared to a baseline or reference value. Studies have demonstrated that an individual battery produces a unique ohmic "signature" and the use of ohmic testing equipment to trend changes in this signature from installation through the life of the battery is the most effective use of the technology. A program that involves ohmic testing on a regular interval to note changes in the battery is a good maintenance practice.

An ohmic baseline reference value is a benchmark value based on data collected from known good batteries. Reference values can be determined from site-specific measurement, or from testing a sample of new healthy batteries, or by using a generic baseline value to get started.

(1) The best baseline is one established on the installed battery within three to six months after installation and trend accordingly using good record keeping. Ideally the individual ohmic value should be measured at installation and again after the battery has been on float charge for at least 72 hours in order for it to reach a high state of stabilization. These initial "site-specific" values should be recorded and permanently affixed to the battery as a baseline for subsequent tests over the life of the battery. The ohmic value will typically increase for conductance and decrease for resistance and impedance between the initial installation and after being on float-charge for 90 to 180 days (10 percent to 15 percent depending on battery type and size). Six months after installation measure and compare the ohmic readings to the readings taken at installation. Use whichever value is greater for conductance or lower for resistance and impedance as the baseline for that particular battery at that site going forward.

(2) A sample of new healthy batteries in a fully charged state can be tested to obtain a baseline value representative of a new battery. A sample size of at least 30 batteries from one manufacturer with the same make, model, amp-hour rating, age (within 6 months), and manufacturing lot is recommended. Record the following information for the batteries:

  (a) Battery manufacturer

  (b) Model number

  (c) Date of manufacture

  (d) Manufacturing lot number (if available)

  (e) Battery temperature

  (f) Whether or not the battery has had a freshening charge

  (g) Battery voltage

  (h) Ohmic test value

  Calculate the average ohmic value of the batteries. Do not include batteries that deviate more than 30 percent from the average because they could be outside of an acceptable range. Use the average value as a baseline starting point for this model battery.

(3) A generic baseline value for a specific battery model can often be found by contacting the ohmic test equipment manufacturer or from the battery manufacturer. While it is important to note that the use of generic reference values might not be as accurate, it is still possible to identify grossly failed batteries and significant changes in battery condition by applying this method. Generic baseline values are typical averages to be used as general guidelines and should only be used when no other data is available. When testing older batteries for which no initial site-specific ohmic value is available, reference values can be obtained in the following ways:

  (a) Contact the equipment or battery manufacturer for assistance.

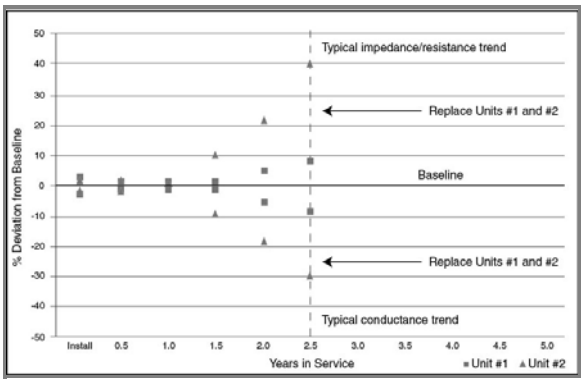
  (b) Consult your company documentation to see if reference values were created for the battery you are testing.

  (c) Using ohmic readings of recently installed batteries of the same manufacturer and model of the

battery, manufacturer and model of the alarm panel/system, charging circuit, and temperature at time of measurements, calculate the average ohmic value of the best 8 to 10 batteries and use this value as a baseline reference.

As a battery ages and loses capacity, the internal ohmic values change. Although the change might not be perfectly consistent over all battery models and sizes, experience and extensive test data shows that a deviation of ohmic values from the established baseline by 30 percent or more for conductance and 40 percent or more for resistance or impedance indicates that the actual battery capacity has dropped to 80 percent or lower. (For lead-acid batteries, capacity drops off rapidly once the 80 percent capacity point is reached in the lifetime curve, so this is known as the “knee” of the capacity vs. lifetime curve). This 80 percent capacity is the level at which battery manufacturers recommend battery replacement. Figure A.14.4.3.2 illustrates an ohmic trend of a 5-year design life battery with an actual expected service life of 3 years. Note that while battery Unit #1 still has good ohmic readings, semiannual measurements show Unit #2 failing prematurely. For this case, it is desirable to replace both units at the same time. If one unit fails at 2½ years, it is likely the second unit will fail in one of the next semiannual tests. Full replacement ensures that all units will “float” together. One exception might be when a unit fails in the first year.

Figure A.14.4.3.2 Example Ohmic Trend Analysis for a 24-Volt Battery Made Up of Two 12-Volt Units.



Ohmic testing can be a safe, simple, accurate, and reliable means of determining the state of health of VRLA batteries. It is important however to understand the following basic guidelines in order to maximize the benefits and avoid possible misleading test results:

(1) Follow safety regulations: wear eye protection and remove metal jewelry, and so forth prior to working with batteries.

(2) Conduct a visual inspection prior to testing. A cracked case, leaking terminal or post, or bulging battery should be replaced, not tested.

(3) Temperature changes affect measured ohmic values and battery capacity. Ohmic measurements should be taken at 77°F (25°C) ±13°F (7°C).

(4) For maximum accuracy and consistency, batteries should be tested when in a fully charged state.

(5) Check the battery charging current prior to test. The charging current should be stable and be within the normal float current recommendations of the battery manufacturer for the battery model. If it is not, it is likely that the batteries have recently been discharged and a test is not appropriate until this float current stabilizes.

(6) Whenever possible, ohmic readings should be taken each time with the same instrument, but as a minimum with the same model. Changing models will skew the data and require re-establishing the baseline.

(7) When test equipment is provided with an alert, set the ohmic baseline and/or thresholds prior to beginning the test to provide an indication of any deviations from baseline.

(8) It is essential to take ohmic measurements at the battery terminal or post. For consistency and accuracy, subsequent tests should always have probes or clamps placed at the same point while avoiding battery hardware such as bolt heads or washers. Connecting on the hardware will influence the readings and could cause replacement of a healthy battery.

(9) Maintain good contact at the test point for the duration of the test. If the probe or clamp slips off during the test, an incorrect reading will result.

(10) For batteries with fully insulated quick disconnect connectors, the battery should be taken offline by removing the quick disconnects from the battery terminals and then measuring and recording the internal ohmic value of the battery.

(11) Do not condemn a battery based upon results of a single test without any trending data or an established baseline for that specific battery.

(12) When one or more units in a battery falls outside the acceptable range from baseline, replace the entire string.

(13) While testing online is the preferred method, it should be noted that the capability of ohmic meters varies. As such, the manufacturer may provide instructions to disconnect the battery and test offline. A battery tested online can display a different value than when tested offline due to the charger circuit and load being across the battery. Always test the same way, either online or offline, to have consistent and meaningful results. When ohmic testing is performed online, a change in current occurs due to the ohmic test set signal that could impact battery voltage readings. Because battery float voltage is directly tied to float current, the sum of the voltages of each battery cell/unit have to equal the charger float voltage of the battery string. If a load is applied from the ohmic test set that depresses one cell/unit, then the others have to rise somewhat to offset it. As ohmic testing progresses through the battery string, each cell/unit gets pulled down by the ohmic test set somewhat, and the charger must boost the string current to maintain the voltage, raising the voltage of the cells/units that have not yet been tested. For this reason, voltage readings should be taken with a voltmeter prior to performing ohmic testing online.

Table 14.4.3.2 Item 9(5). Battery capacity is determined by the mass of active material contained in the battery and is a measure of the battery's stored energy. The rated capacity of small VRLA batteries used in fire alarm and signaling system applications is typically measured in ampere-hours (Ah) where the ampere-hour rating is based on the battery's capability to provide a constant current at the nominal battery voltage for 20 hours. The rated capacity might vary from manufacturer to manufacturer.

The *actual* battery capacity during service life, often referred to as the state of charge (SOC), can vary significantly from *rated* capacity due to aging, charge and discharge cycles, temperature, and other factors. The unique failure modes of VRLA batteries due to aging and internal degradation are attributed for a high failure rate where the *actual* battery capacity has degraded to 80 percent of the manufacturer's *rated* capacity. As a result, battery manufacturers often recommend replacement much sooner than the rated design life for critical systems.

A test of battery capacity is designed to determine if the battery is capable of continuing to deliver the voltage level specified by the manufacturer. The results of a capacity test can also be used to estimate where the battery is in its service life. A test of capacity is performed by applying a constant current load to the battery based on the manufacturer's published discharge rates until voltage falls to specified levels. Although discharging the battery for capacity testing concerns some, VRLA batteries are designed to handle numerous discharges within the limits established by the battery manufacturer.

The discharge rate selected for testing should be representative of the battery duty cycle. At shorter test times, the test duration has a greater effect on the capacity calculation. For example, a 1-minute difference in actual test time for a 5-minute discharge rate compared to a 3-hour discharge rate will result in a greater deviation of the calculated capacity. The battery is also operating less efficiently at shorter discharge rates and the effects of aging and degradation might not be as prevalent during shorter discharges.

Fire alarm and signaling system loading is typically insufficient for the practical application of a battery load test because the system load cannot be varied to maintain a constant current equal to the battery manufacturer's published discharge rates. The fixed load applied by the system will result in final voltage levels that are deceptively high. Battery sizing is also a factor. The calculated system loads for the battery duty cycle (e.g., 24 hours standby followed by 5 minutes in an alarm) will rarely align with published discharge rates necessary for load testing. In many applications where the battery size is large in comparison to the required system current, the system loading could be too small to accurately determine battery capacity. In these cases, a battery near failure could conceivably satisfy the low discharge rate applied by the fire alarm or signaling system.

In order to satisfy the load test requirements of Table 14.4.3.2, battery capacity testing can be performed in the following manner or in accordance with other methods such as those identified in IEEE Std TM 1188, *Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications*:

(1) Referring to the battery manufacturer's specifications, determine the load current for the 3-hour battery rating to the selected end voltage, typically 1.67 volts per cell (10.2 volts for a 12-volt system or 20.4 volts for a 24-volt system).

(2) Record the battery temperature at the negative terminal.

(3) Disconnect the charger and connect a load bank to the battery terminals.

(4) Apply the constant current specified for the 3-hour rate to the battery. Once the constant current is applied, continue the test until the battery terminal voltage decreases to the specified end voltage.

(5) Stop the test when the selected end voltage is reached.

(6) Record the actual test duration in minutes.

(7) Disconnect the load bank and reconnect the charger.

(8) Calculate percent battery capacity as follows:

$$\% \text{ Capacity} = [T_{actual}/(180 \times K_T)] \times 100$$

where:

T_{actual} = the test duration in minutes

K_T = the temperature correction factor for the actual battery temperature at the start of the test from Table 14.4.3.2. Additional temperature correction factors can be obtained from IEEE 1188.

(9) Replace the battery if the battery capacity is less than or equal to 80 percent. Replace the battery at the next scheduled test interval if the battery capacity is less than 85 percent.

Table A.14.4.3.2 Temperature Correction Factors

Temperature		-
°F	(°C)	K_T
65	18.3	0.92
66	18.9	0.927
67	19.4	0.935
68	20	0.942
69	20.6	0.948
70	21.1	0.955
71	21.7	0.96
72	22.2	0.97
73	22.8	0.975
74	23.4	0.98
75	23.9	0.985
76	24.5	0.99
77	25	1
78	25.6	1.002
79	26.1	1.007
80	26.7	1.011
81	27.2	1.017
82	27.8	1.023
83	28.3	1.03
84	28.9	1.035
85	29.4	1.04
86	30	1.045
87	30.6	1.05
88	31.1	1.055
89	31.6	1.06
90	32.2	1.065
95	35	1.09
100	37.8	1.112
-	-	-

As a good practice, a new battery should be fully charged and then load tested following the battery manufacturer's recommendations prior to installation. A new fully charged battery should have a capacity of at least 90 percent.

Table 14.4.3.2, Item 17. Where the manufacturer publishes limits of accuracy for the operation of an initiating device, the test method should verify actuation is within the tolerances provided.

Table 14.4.3.2 Item 22(1) and 22(2). If, during the course of the periodic test of audible appliances, it is suspected that alarm sound levels could be lower than the required minimum, the system owner or the system owner's designated representative should be notified in writing. Such notification will allow the building owner or designated building representative to determine whether sound pressure level readings should be taken for the area(s) in question.

Table 14.4.3.2, Item 24. The extent of testing of a fire alarm or signaling system, including devices that were not tested, should be documented in accordance with the test plan in 14.2.10. *NFPA 72* does not require testing of an emergency control function, such as elevator recall, but does require testing of the emergency control function interface device, such as the relay powered by the fire alarm or signaling system. Where the emergency control function is not being tested concurrent with the fire alarm or signaling system testing, measurement of the emergency control function interface device output should be verified using the proper test devices. This might require reading or observing the condition of a relay, a voltage measurement, or the use of another type of test instrument. Once testing is complete, verification that any disabled or disconnected interface devices have been restored to normal is essential, and this verification should be documented in the testing results.

Testing of the emergency control functions themselves is outside of the scope of *NFPA 72*. A complete end-to-end test that demonstrates the performance of emergency control functions actuated by the fire alarm or signaling system might be required by some other governing laws, codes, or standards, or the authority having jurisdiction. In that situation, other applicable installation standards and design documents, not *NFPA 72*, would address testing and performance of the emergency control functions. NFPA 4 provides requirements for integrated (end-to-end) system testing.

It is important to note that the appropriate NFPA standard would provide the acceptance criteria for the overall emergency control function operation requirements, including performance and test methods, while *NFPA 72* covers the required performance and testing of the emergency function interface device.

For instance, if an end-to-end test for a building with an engineered smoke control system is required by some other governing laws, codes, standards, or the authority having jurisdiction, the test protocol would have unique criteria for the smoke control system design, and a special inspector would be responsible for the overall operation and performance of the smoke control system in accordance with the appropriate standard (NFPA 92 and NFPA *101*) during the testing, including measuring pressure differentials and ensuring proper fan and damper operation. Refer to the following extract from NFPA *101* on smoke control:

9.3.2 System Design. The engineer of record shall clearly identify the intent of the system, the design method used, the appropriateness of that method used, and the required means of inspecting, testing, and maintaining the system. [***101*:** 9.3.2]

9.3.3 Acceptance Testing. Acceptance testing shall be performed by a special inspector in accordance with Section 9.13. [***101*:** 9.3.3]

Even though the fire alarm or signaling system initiating device might actuate the smoke control system, the actual testing of the dampers and fan operation would be as required by the smoke control design and not part of the fire alarm or signaling system.

Other emergency control operation requirements might be as follows: For fan shutdown and smoke damper operation, the fan and damper operations would be in accordance with NFPA 90A and NFPA 105 respectively, and those equipment operations would be verified by those responsible for HVAC systems in combination with the fire alarm system personnel. Guidance for elevator inspection and testing can be found in ASME A.17.2, *Guide for Inspection of Elevators, Escalators and Moving Walks*. For elevator systems, the recall function, elevator power shutdown, and hat illumination would be done with the elevator mechanics present during the test. This operational test is often accomplished during routine periodic fire alarm testing. For fire door holder and fire shutter release, it would be expected that the emergency control function operation of the doors/shutters would be verified in accordance with NFPA 80 and NFPA *101* during the test. In some cases, the door manufacturer representative might need to be present to reset the equipment.

Statement of Problem and Substantiation for Public Input

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material states that offline testing is also acceptable. This PI proposes to clarify that while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Related Public Inputs for This Document

Related Input	Relationship

Public Input No. 271-NFPA 72-2019 [Section No. 14.4.3.2]

Public Input No. 271-NFPA 72-2019 [Section No. 14.4.3.2]

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 10:03:02 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5328-NFPA 72-2019

Statement: In Items 2, 26(2), and 30(13), the term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

[9.]

This revision makes three changes to the battery test methods in (9).

Firstly, with the introduction of a test method for temperature testing of batteries in (9)(1), there has been confusion in the field as to where the ambient temperature should be taken. Some have concluded that the ambient temperature should be taken in the room or area where the FACU cabinet is located. However, the industry standard is for ambient temperature to be taken from inside the cabinet, which is not currently stated. This revision clarifies that language and provides clarification regarding the comparison of the battery cell/unit temperature with the ambient temperature measurement.

Secondly, with regard to the semi-annual Ohmic Test in (9)(4), the phrase "and connected to the charger" has created confusion in the field since the related annex note states that offline testing may also be acceptable. Since Chapter 14's wording appears to indicate that testing online is the only option, the reference to connection to the charger has been deleted, as that may not be the best practice recommendation depending on the manufacture of the ohmic meter being utilized.

Finally, the revision in (9)(4) addresses the Ohmic Test method for VRLA batteries, changing "and" to "or" to better indicate the intent of this test method. Either a conductance test "or" a Resistance/Impedance test is required, not both.

[14.]

Wireless communications is added to Item 14 to address new technology. (See new sections 23.16.4.8 and 23.16.4.9 on Class A and Class B radio pathways.) The Technical Committee requests that the Correlating Committee form a Task Group with members from SIG-TMS, SIG-PRO, SIG-PRS, and SIG-FUN to address the requirements for these systems.

[17.]

Items 17(4)(c) and (d) are revised to minimize confusion with regard to the test method for non-restorable, spot-type heat detectors.

In 17(9), only devices connected to protected premises systems are required to be tested annually. Household CO devices are tested per Sections 14.4.6 or 14.4.8 and are under the scope of the (SIG-HOU) Technical Committee.

Item 17(10)(b) is revised to correlate with 2019 changes made to Paragraph 17.17.2.2, particularly (C) for valves that use lower settings. Also refer to A.17.17.2.2.

The test in 17(7)(d) is revised to permit the use of a listed feature that is capable of supervising airflow to each sampling port, in lieu of a manual test.

The references to other items in the table are corrected in Item 17(7)(e).

The smoke entry test in 17(8) is for single-criteria detectors only. There is a separate entry in the table for multi-criteria detectors.

The multi-sensor/multi-criteria tests in 17(12) are rewritten for clarity.

[22.]

The direction in Chapter 14 regarding test methods for sound level testing for loudspeakers should correlate with Chapter 18, which is to use the meter on alert tone signals only. This provides good guidance for testing personnel, reminding them that audible information is not to be tested with the meter.

The revision also removes "throughout the protected area," as it is unenforceable and undefined. Language referencing the actual required performance metric has been added. Finally, "confirm" is changed to "determine," as it is more reflective of the proper test reason.

[Table note d]

The added text in Table Note d facilitates a technology-based alternative to the current VRLA battery testing procedure.

[Table note e]

Footnote "e" pertains to the charging current for Nickel-Cadmium batteries. However, this battery type was deleted from the table in the 2019 edition, and the footnote was mistakenly retained. Footnote "e " is, therefore, deleted.

[Annex]

With the introduction of new language for ohmic testing of batteries, there has been some confusion in the field as to whether to conduct this test online or offline. While the test method in Chapter 14 states that the test is to be done online (connected to the charger), the related annex material stated that offline testing is also acceptable. This revision clarifies that, while online testing is the preferred method for the Ohmic Test, offline testing may be the recommended practice on the part of certain ohmic meter manufacturers.

Public Input No. 88-NFPA 72-2019 [New Section after A.14.6.1.2]

A.14.6.1.1

One method used to define the required sequence of operations and to document the actual sequence of operations is an input/output matrix. *(see Figure A.14.6.1.1).*

FIGURE A.14.6.1.1 . Typical Input/Output Matrix.

[insert Figure from A.14.6.2.4 here]

Statement of Problem and Substantiation for Public Input

See substantiation in PI 86

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 86-NFPA 72-2019 [Section No. A.14.6.2.4]	
Public Input No. 87-NFPA 72-2019 [Section No. 14.6.1.1]	
Public Input No. 85-NFPA 72-2019 [Section No. 14.6.2.4]	
Public Input No. 86-NFPA 72-2019 [Section No. A.14.6.2.4]	
Public Input No. 87-NFPA 72-2019 [Section No. 14.6.1.1]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 01 10:59:50 EDT 2019
Committee: SIG-TMS

Committee Statement

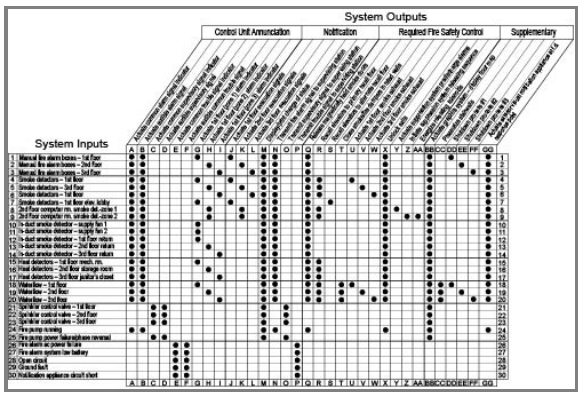
Resolution: FR-5340-NFPA 72-2019
Statement: The annex note on sequence of operation has no relevance to this particular section. It is moved to be associated with 14.6.1.1, which is a more appropriate section.

Public Input No. 502-NFPA 72-2019 [Section No. A.14.6.2.4]

A.14.6.2.4

One method used to define the required sequence of operations and to document the actual sequence of operations is an input/output matrix *(see Figure A.14.6.2.4).*

Figure A.14.6.2.4 Typical Input/Output Matrix.



Statement of Problem and Substantiation for Public Input

1. For consideration as directed by the TCC
2. This figure needs to be reviewed by the TC. The data is not completely accurate.
3. Should Standard for Safety for Remote Software Updates, UL 5500 be discussed in Chapter 14 and/or Annex A.14 and referenced in Chapter 2 and/or Annex I?

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 11:42:14 EDT 2019
Committee: SIG-TMS

Committee Statement

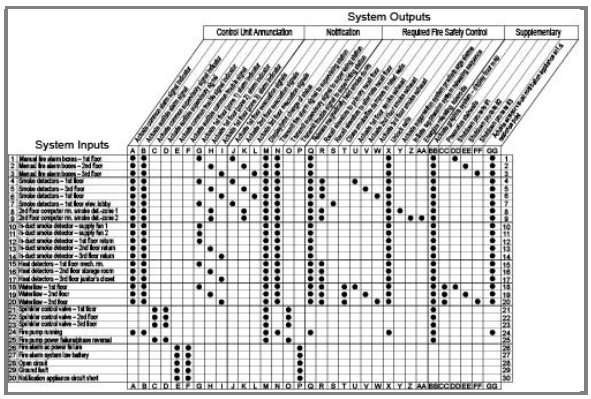
Resolution: The Technical Committee is satisfied that this figure represents a sufficient example.

Public Input No. 86-NFPA 72-2019 [Section No. A.14.6.2.4]

~~**A.14.6.2.4** —~~

~~One method used to define the required sequence of operations and to document the actual sequence of operations is an input/output matrix *(see Figure A.14.6.2.4).*~~

~~**Figure A.14.6.2.4 Typical Input/Output Matrix.**~~



Statement of Problem and Substantiation for Public Input

The current annex note and figure for 14.6.2.4 bears no relationship to the documentation reference to chapter 7 in that section, creating a disconnect as to why the sequence of operations is appended to that section. Section 14.6.1.1 is recommended for relocation of this annex note and figure as it is better connected with the content of that section and this is addressed in PI 88

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 88-NFPA 72-2019 [New Section after A.14.6.1.2]	
Public Input No. 87-NFPA 72-2019 [Section No. 14.6.1.1]	
Public Input No. 85-NFPA 72-2019 [Section No. 14.6.2.4]	
Public Input No. 87-NFPA 72-2019 [Section No. 14.6.1.1]	
Public Input No. 88-NFPA 72-2019 [New Section after A.14.6.1.2]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 01 10:54:52 EDT 2019
Committee: SIG-TMS

Committee Statement

Resolution: FR-5340-NFPA 72-2019

Statement: The annex note on sequence of operation has no relevance to this particular section. It is moved to be associated with 14.6.1.1, which is a more appropriate section.

Public Input No. 278-NFPA 72-2019 [New Section after A.17.4.5]

A.17.4.6

Detectors have built in status indicators which aid in identifying individual detectors with an active alarm or supervisory condition. These indicators should be readily visible to responding personnel unless other means are provided to aid in the purpose. Other methods can include means at the control panel to independently identify the detector's status along with the location of the detector and its purpose or it can include the addition of a remote alarm indicator. Where a detector is concealed above a removable object that can be reached by a person on the floor, it is not considered an impediment to viewing the detectors status indicator so long as the detector is oriented such that the indicator is visible to the person below once the obstruction is removed.

Statement of Problem and Substantiation for Public Input

Section 17.4.6 was edited during a past revision cycle and commas were removed. At the time neither the Report of Proposals nor the Report on Comments included committee action to delete the commas. As a result, the existing wording of Section 17.4.6 could be interpreted as two or three conditions. This ambiguity as well as some ambiguity between the intent of the section and the 2019 Handbook commentary was identified by the Correlating Committee and NFPA Staff. The proposed revisions are intended to clarify the intent of the requirement and address some potential MOS issues.

New appendix sections are proposed to clarify intent of the revised Section 17.4.6

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 274-NFPA 72-2019 [Section No. 17.4.6]	New Appendix for revised section
Public Input No. 274-NFPA 72-2019 [Section No. 17.4.6]	

Submitter Information Verification

Submitter Full Name: Samuel Miller
Organization: BP
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 12:11:00 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5222-NFPA 72-2019
Statement: Remote indication is needed for whenever the indicator is not visible. The section was reformatted for clarity. Annex material was added to clarify revised Sections 17.4.6 and 17.4.6.2.

Public Input No. 279-NFPA 72-2019 [New Section after A.17.4.6.1]

A.17.4.6.2

Remote alarm and supervisory indicators, should be located in an area where they are readily visible to responding personnel. Many times, they are located in the general vicinity of the concealed detector. Separate indicators for alarm and supervisory signals are not required so long as each condition can be independently identified.(ie. Multicolor LED, or flashing LED vs Steady LED).

Statement of Problem and Substantiation for Public Input

Section 17.4.6 was edited during a past revision cycle and commas were removed. At the time neither the Report of Proposals nor the Report on Comments included committee action to delete the commas. As a result, the existing wording of Section 17.4.6 could be interpreted as two or three conditions. This ambiguity as well as some ambiguity between the intent of the section and the 2019 Handbook commentary was identified by the Correlating Committee and NFPA Staff. The proposed revisions are intended to clarify the intent of the requirement and address some potential MOS issues.

New appendix sections are proposed to clarify intent of the revised Section 17.4.6

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 274-NFPA 72-2019 [Section No. 17.4.6]	New appendix text for revised section
Public Input No. 274-NFPA 72-2019 [Section No. 17.4.6]	

Submitter Information Verification

Submitter Full Name: Samuel Miller
Organization: BP
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 12:13:29 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5222-NFPA 72-2019
Statement: Remote indication is needed for whenever the indicator is not visible. The section was reformatted for clarity. Annex material was added to clarify revised Sections 17.4.6 and 17.4.6.2.

Public Input No. 169-NFPA 72-2019 [Section No. A.17.4.7]

A.17.4.7

~~Some applications that do not require full area protection do require detection to initiate action when specific objects or spaces are threatened by smoke or fire, such as at elevator landings that have ceilings in excess of 15 ft (4.6 m) and for protection of fire alarm control units. In high-ceiling areas, to achieve the desired initiation, such as for elevator recall and protection of fire alarm control units (FACUs), detection should be placed on the wall above and within 60 in. (1.52 m) from the top of the elevator door(s) or FACU.~~

Statement of Problem and Substantiation for Public Input

The recommendation that smoke detectors be placed 5' above elevator doors or fire alarm control units is in direct conflict with 17.7.3.2.1, which requires smoke detectors to be located at the ceiling or on the wall within 12" of the ceiling. The guidance provided in Appendix B indicates that smoke will rise in a plume until it reaches the ceiling, and then spread, which indicates why smoke detectors shall be located at the ceiling. In the case of elevators and fire alarm control units, the intent is to detect a fire in the vicinity, not a fire originating within the elevator or fire alarm control unit. Consequently, it is important the smoke detector be located where the smoke is likely to be (at the ceiling), not where it may be convenient to mount a smoke detector (5' above an elevator door or fire alarm control unit).

Eliminating the language in the annex is consistent with the Manual of Style section 1.9.2, which requires that "annexes shall not be inconsistent with the document", and in this case the annex recommendation that the smoke detector be located substantially below the ceiling is in direct conflict with the requirement in the document that wall mounted smoke detectors be mounted within 12" of the ceiling. There is no technical justification for this annex language, and nothing in the document, including Annex B, to suggest that smoke will be detected in a timely manner by mounting a detector 5' above a fire alarm control panel (mounting height of approximately 11') or 5' above an elevator door (mounting height of approximately 12'). Since this language references ceilings in excess of 15', the recommendation would be to locate smoke detectors at least 3' below the ceiling for elevator doors and at least 4' below the ceiling for fire alarm control units. The higher the ceiling is, the further the recommendation differs from the requirement in the body of the code.

Submitter Information Verification

Submitter Full Name: Daniel Decker
Organization: Safety Systems, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun May 12 17:50:52 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The annex material is necessary to explain close proximity as allowed in the Code.

Public Input No. 280-NFPA 72-2019 [Section No. A.17.6.3.1.1]

A.17.6.3.1.1

Maximum linear spacings on smooth ceilings for spot-type heat detectors are determined by full-scale fire tests. *[See Figure A.17.6.3.1.1(c).]* These tests assume that the detectors are to be installed in a pattern of one or more squares, each side of which equals the maximum spacing as determined in the test, as illustrated in Figure A.17.6.3.1.1(a). The detector to be tested is placed at a corner of the square so that it is positioned at the farthest possible distance from the fire while remaining within the square. Thus, the distance from the detector to the fire is always the test spacing multiplied by 0.7 and can be calculated as shown in Table A.17.6.3.1.1. Figure A.17.6.3.1.1(b) illustrates the smooth ceiling spacing layout for line-type heat detectors.

Table A.17.6.3.1.1 Test Spacing for Spot-Type Heat Detectors

Test Spacing					
Maximum Test Distance from Fire to Detector (0.7 *D*)					
ft			m	ft	m
50 × 50	15.2 × 15.2				
		35.0		10.7	
40 × 40	12.2 × 12.2				
		28.0		8.5	
30 × 30	9.1 × 9.1				
		21.0		6.4	
25 × 25	7.6 × 7.6				
		17.5		5.3	
20 × 20	6.1 × 6.1				
		14.0		4.3	
15 × 15	4.6 × 4.6				
10.5			3.2		

Once the correct maximum test distance has been determined, it is valid to interchange the positions of the fire and the detector. The detector is now in the middle of the square, and the listing specifies that the detector is adequate to detect a fire that occurs anywhere within that square — even out to the farthest corner.

In laying out detector installations, designers work in terms of rectangles, as building areas are generally rectangular in shape. The pattern of heat spread from a fire source, however, is not rectangular in shape. On a smooth ceiling, heat spreads out in all directions in an ever-expanding circle. Thus, the coverage of a detector is not, in fact, a square, but rather a circle whose radius is the linear spacing multiplied by 0.7.

This is graphically illustrated in Figure A.17.6.3.1.1(d). With the detector at the center, by rotating the square, an infinite number of squares can be laid out, the corners of which create the plot of a circle whose radius is 0.7 times the listed spacing. The detector will cover any of these squares and, consequently, any point within the confines of the circle.

So far this explanation has considered squares and circles. In practical applications, very few areas turn out to be exactly square, and circular areas are extremely rare. Designers deal generally with rectangles of odd dimensions and corners of rooms or areas formed by wall intercepts, where spacing to one wall is less than one-half the listed spacing. To simplify the rest of this explanation, the use of a detector with a listed spacing of 30 ft × 30 ft (9.1 m × 9.1 m) should be considered. The principles derived are equally applicable to other types.

Figure A.17.6.3.1.1(g) illustrates the derivation of this concept. In Figure A.17.6.3.1.1(g), a detector is placed in the center of a circle with a radius of 21 ft (0.7 × 30 ft) [6.4 m (0.7 × 9.1 m)]. A series of rectangles with one dimension less than the permitted maximum of 30 ft (9.1 m) is constructed within the circle. The following conclusions can be drawn:

(1) As the smaller dimension decreases, the longer dimension can be increased beyond the linear maximum spacing of the detector with no loss in detection efficiency.

(2) A single detector covers any area that fits within the circle. For a rectangle, a single, properly located ~~detector may~~ detector should be permitted, provided the diagonal of the rectangle does not exceed the diameter of the circle.

(3) Relative detector efficiency actually is increased, because the area coverage in square meters is always less than the 900 ft^2 (84 m^2) permitted if the full 30 ft × 30 ft (9.1 m × 9.1 m) square were to be utilized. The principle illustrated here allows equal linear spacing between the detector and the fire, with no recognition for the effect of reflection from walls or partitions, which in narrow rooms or corridors is of additional benefit. For detectors that are not centered, the longer dimension should always be used in laying out the radius of coverage.

Areas so large that they exceed the rectangular dimensions given in Figure A.17.6.3.1.1(g) require additional detectors. Often proper placement of detectors can be facilitated by breaking down the area into multiple rectangles of the dimensions that fit most appropriately *[see Figure A.17.6.3.1.1(e) and Figure A.17.6.3.1.1(f)]*. For example, refer to Figure A.17.6.3.1.1(h). A corridor 10 ft (3.0 m) wide and up to 82 ft (25.0 m) long can be covered with two 30 ft (9.1 m) spot-type detectors. An area 40 ft (12.2 m) wide and up to 74 ft (22.6 m) long can be covered with four spot-type detectors. Irregular areas need more careful planning to make certain that no spot on the ceiling is more than 21 ft (6.4 m) away from a detector. These points can be determined by striking arcs from the remote corner. Where any part of the area lies beyond the circle with a radius of 0.7 times the listed spacings, additional detectors are required.

Figure A.17.6.3.1.1(h) illustrates smoke or heat detector spacing layouts in irregular areas.

Figure A.17.6.3.1.1(a) Spot-Type Heat Detectors.

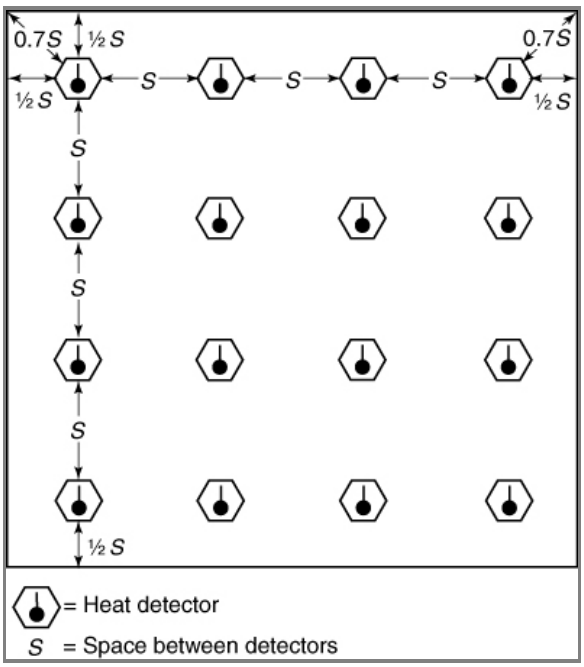


Figure A.17.6.3.1.1(b) Line-Type Detectors — Spacing Layouts, Smooth Ceiling.

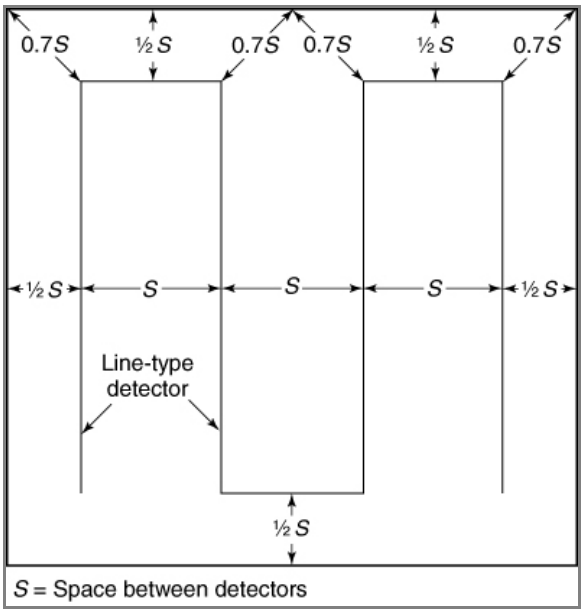


Figure A.17.6.3.1.1(c) Fire Test Layout.

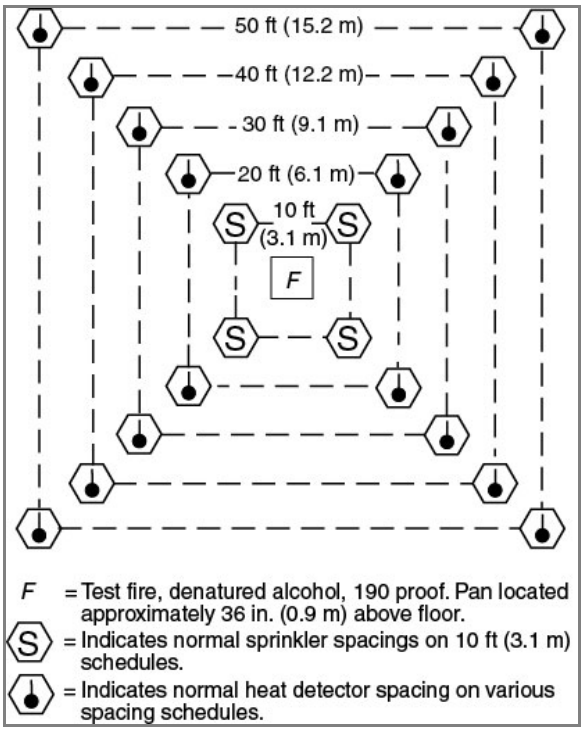


Figure A.17.6.3.1.1(d) Detector Covering any Square Laid Out in Confines of Circle in Which Radius Is 0.7 Times Listed Spacing.

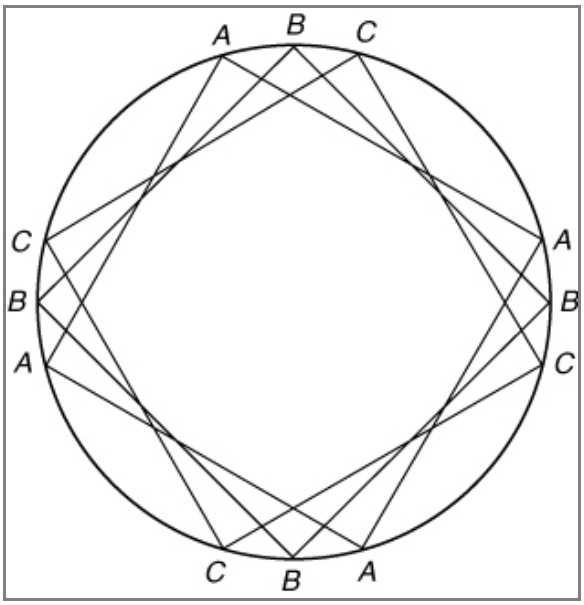


Figure A.17.6.3.1.1(e) Typical Rectangles for Detector Curves of 15 ft to 50 ft.

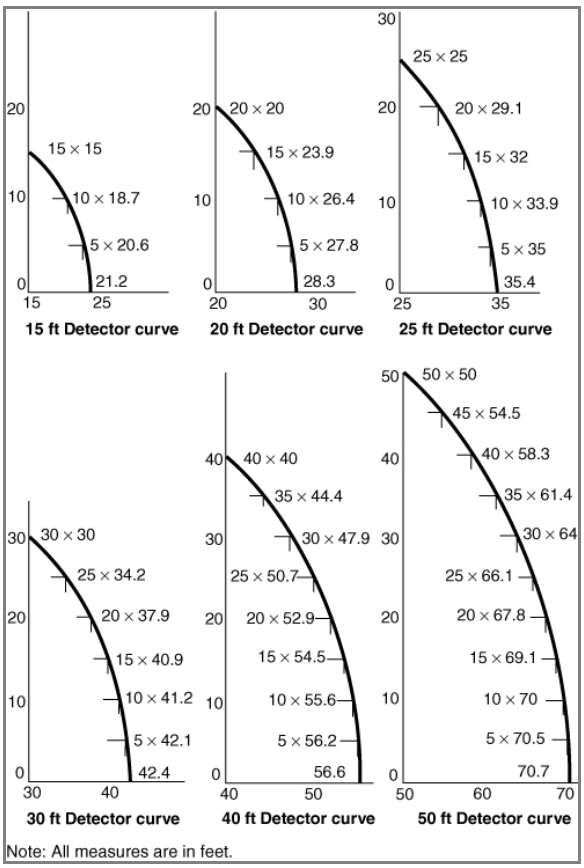


Figure A.17.6.3.1.1(f) Typical Rectangles for Detector Curves of 4.6 m to 15.2 m.

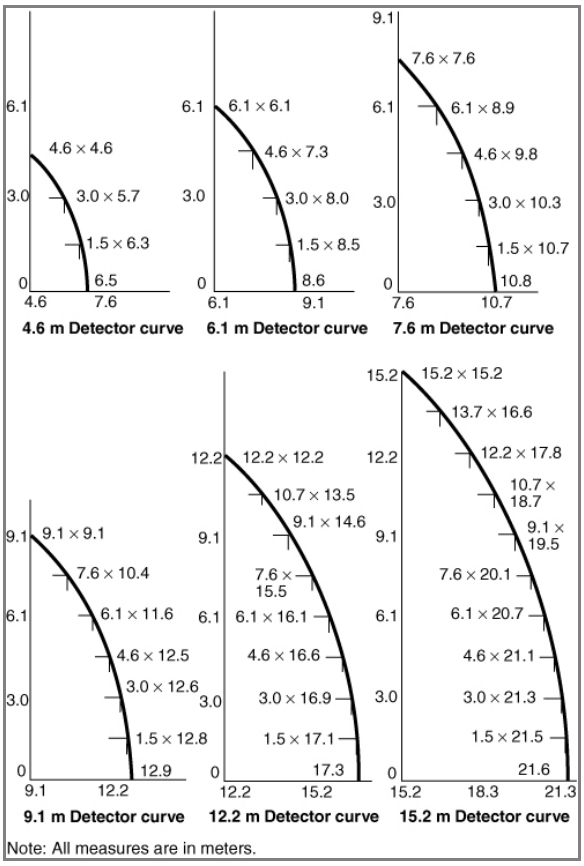


Figure A.17.6.3.1.1(g) Detector Spacing, Rectangular Areas.

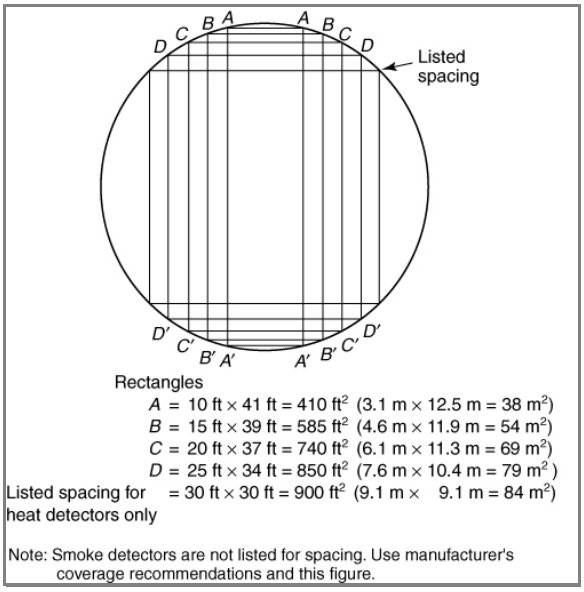
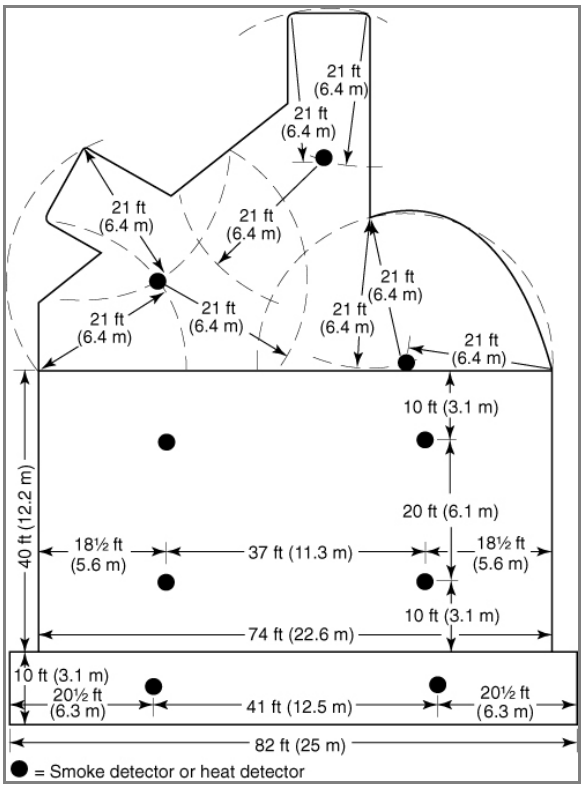


Figure A.17.6.3.1.1(h) Smoke or Heat Detector Spacing Layout in Irregular Areas.



Statement of Problem and Substantiation for Public Input

As identified by the Corelating Committee, the usage of “may” is not permitted by the MOS.

Submitter Information Verification

Submitter Full Name: Samuel Miller
Organization: BP
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 12:22:06 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5296-NFPA 72-2019
Statement: The revision is to be consistent with the Manual of Style.

Public Input No. 625-NFPA 72-2019 [Section No. A.17.6.3.1.1]

A.17.6.3.1.1

Maximum linear spacings on smooth ceilings for spot-type heat detectors are determined by full-scale fire tests. *[See Figure A.17.6.3.1.1(c).]* These tests assume that the detectors are to be installed in a pattern of one or more squares, each side of which equals the maximum spacing as determined in the test, as illustrated in Figure A.17.6.3.1.1(a). The detector to be tested is placed at a corner of the square so that it is positioned at the farthest possible distance from the fire while remaining within the square. Thus, the distance from the detector to the fire is always the test spacing multiplied by 0.7 and can be calculated as shown in Table A.17.6.3.1.1. Figure A.17.6.3.1.1(b) illustrates the smooth ceiling spacing layout for line-type heat detectors.

Table A.17.6.3.1.1 Test Spacing for Spot-Type Heat Detectors

Test Spacing		Maximum Test Distance from Fire to Detector (0.7*D*)	
ft	m	ft	m
50 × 50	15.2 × 15.2	35.0	10.7
40 × 40	12.2 × 12.2	28.0	8.5
30 × 30	9.1 × 9.1	21.0	6.4
25 × 25	7.6 × 7.6	17.5	5.3
20 × 20	6.1 × 6.1	14.0	4.3
15 × 15	4.6 × 4.6	10.5	3.2

Once the correct maximum test distance has been determined, it is valid to interchange the positions of the fire and the detector. The detector is now in the middle of the square, and the listing specifies that the detector is adequate to detect a fire that occurs anywhere within that square — even out to the farthest corner.

In laying out detector installations, designers work in terms of rectangles, as building areas are generally rectangular in shape. The pattern of heat spread from a fire source, however, is not rectangular in shape. On a smooth ceiling, heat spreads out in all directions in an ever-expanding circle. Thus, the coverage of a detector is not, in fact, a square, but rather a circle whose radius is the linear spacing multiplied by 0.7.

This is graphically illustrated in Figure A.17.6.3.1.1(d). With the detector at the center, by rotating the square, an infinite number of squares can be laid out, the corners of which create the plot of a circle whose radius is 0.7 times the listed spacing. The detector will cover any of these squares and, consequently, any point within the confines of the circle.

So far this explanation has considered squares and circles. In practical applications, very few areas turn out to be exactly square, and circular areas are extremely rare. Designers deal generally with rectangles of odd dimensions and corners of rooms or areas formed by wall intercepts, where spacing to one wall is less than one-half the listed spacing. To simplify the rest of this explanation, the use of a detector with a listed spacing of 30 ft × 30 ft (9.1 m × 9.1 m) should be considered. The principles derived are equally applicable to other types.

Figure A.17.6.3.1.1(g) illustrates the derivation of this concept. In Figure A.17.6.3.1.1(g), a detector is placed in the center of a circle with a radius of 21 ft (0.7 × 30 ft) [6.4 m (0.7 × 9.1 m)]. A series of rectangles with one dimension less than the permitted maximum of 30 ft (9.1 m) is constructed within the circle. The following conclusions can be drawn:

(1) As the smaller dimension decreases, the longer dimension can be increased beyond the linear maximum spacing of the detector with no loss in detection efficiency.

(2) A single detector covers any area that fits within the circle. For a rectangle, a single, properly located detector may be permitted, provided the diagonal of the rectangle does not exceed the diameter of the circle.

(3) Relative detector efficiency actually is increased, because the area coverage in square meters is always less than the 900 ft^2 (84 m^2) permitted if the full 30 ft × 30 ft (9.1 m × 9.1 m) square were to be utilized. The principle illustrated here allows equal linear spacing between the detector and the fire, with no recognition for the effect of reflection from walls or partitions, which in narrow rooms or corridors is of additional benefit. For detectors that are not centered, the longer dimension should always be used in laying out the radius of coverage.

Areas so large that they exceed the rectangular dimensions given in Figure A.17.6.3.1.1(g) require additional detectors. Often proper placement of detectors can be facilitated by breaking down the area into multiple rectangles of the dimensions that fit most appropriately *[see Figure A.17.6.3.1.1(e) and Figure A.17.6.3.1.1(f)]*. For example, refer to Figure A.17.6.3.1.1(h). A corridor 10 ft (3.0 m) wide and up to 82 ft (25.0 m) long can be covered with two 30 ft (9.1 m) spot-type detectors. An area 40 ft (12.2 m) wide and up to 74 ft (22.6 m) long can be covered with four spot-type detectors. Irregular areas need more careful planning to make certain that no spot on the ceiling is more than 21 ft (6.4 m) away from a detector. These

points can be determined by striking arcs from the remote corner. Where any part of the area lies beyond the circle with a radius of 0.7 times the listed spacings, additional detectors are required.

Figure A.17.6.3.1.1(h) illustrates smoke or heat detector spacing layouts in irregular areas.

Figure A.17.6.3.1.1(a) Spot-Type Heat Detectors.

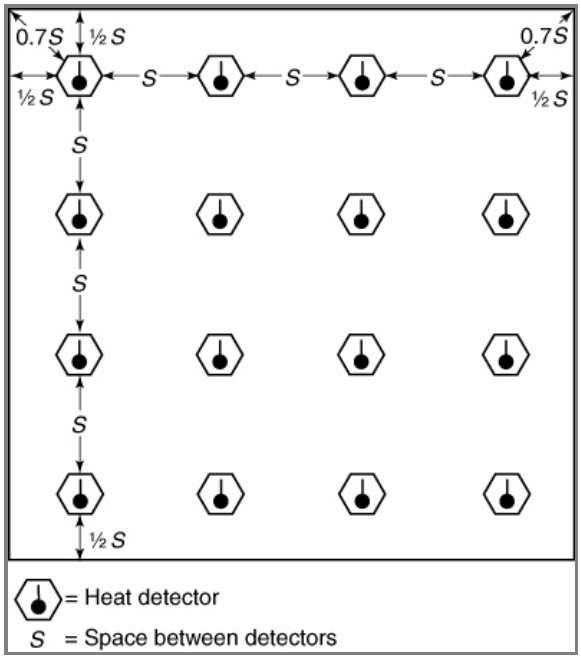


Figure A.17.6.3.1.1(b) Line-Type Detectors — Spacing Layouts, Smooth Ceiling.

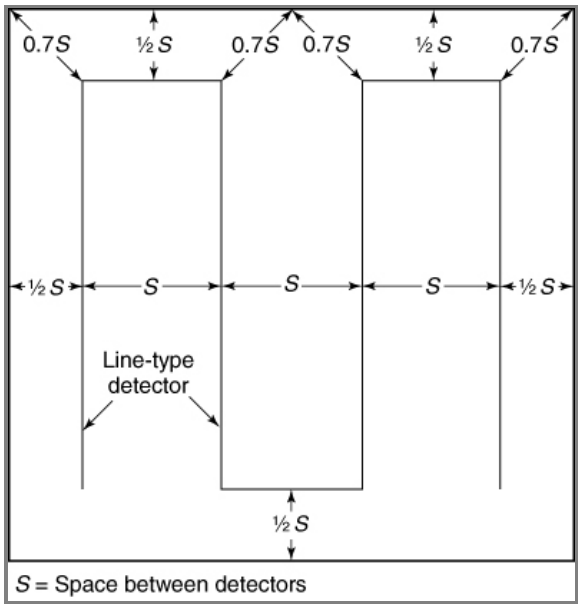


Figure A.17.6.3.1.1(c) Fire Test Layout.

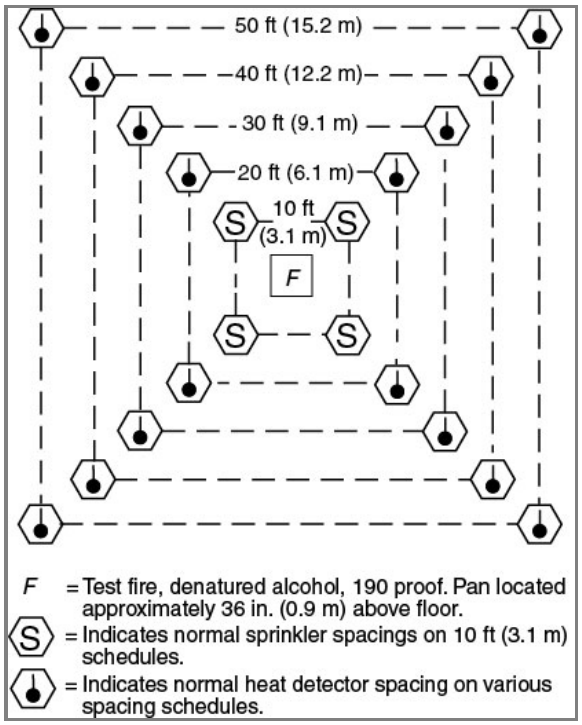


Figure A.17.6.3.1.1(d) Detector Covering any Square Laid Out in Confines of Circle in Which Radius Is 0.7 Times Listed Spacing.

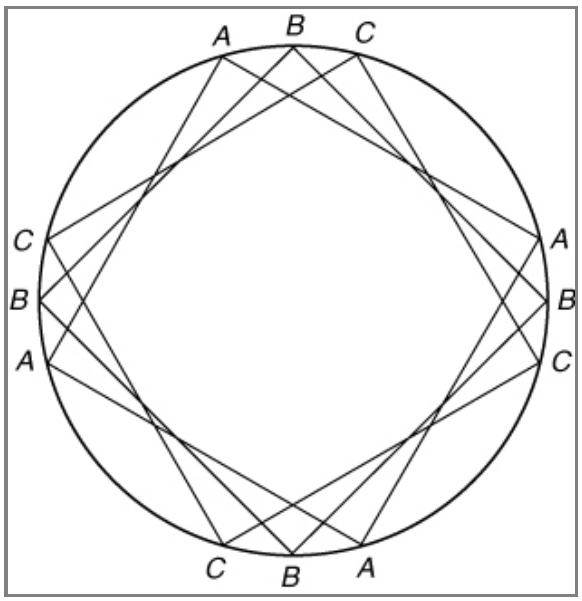


Figure A.17.6.3.1.1(e) Typical Rectangles for Detector Curves of 15 ft to 50 ft.

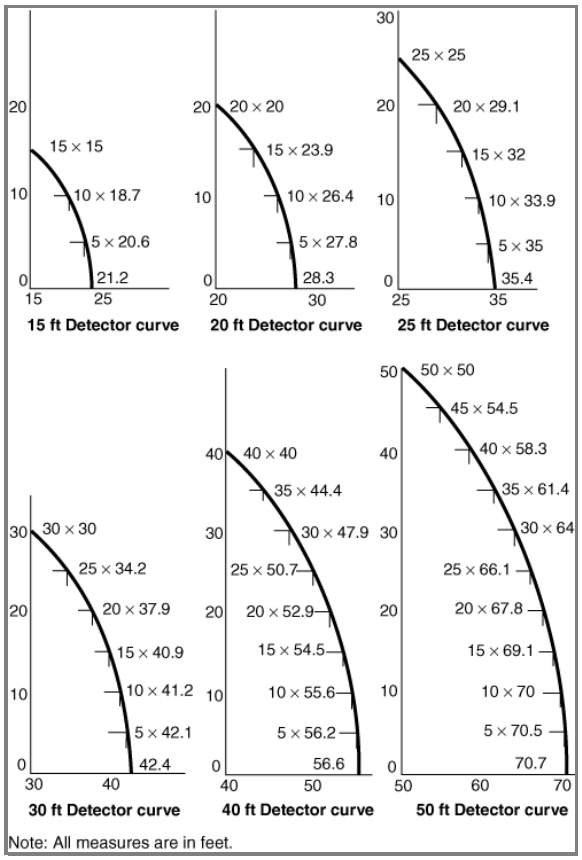


Figure A.17.6.3.1.1(f) Typical Rectangles for Detector Curves of 4.6 m to 15.2 m.

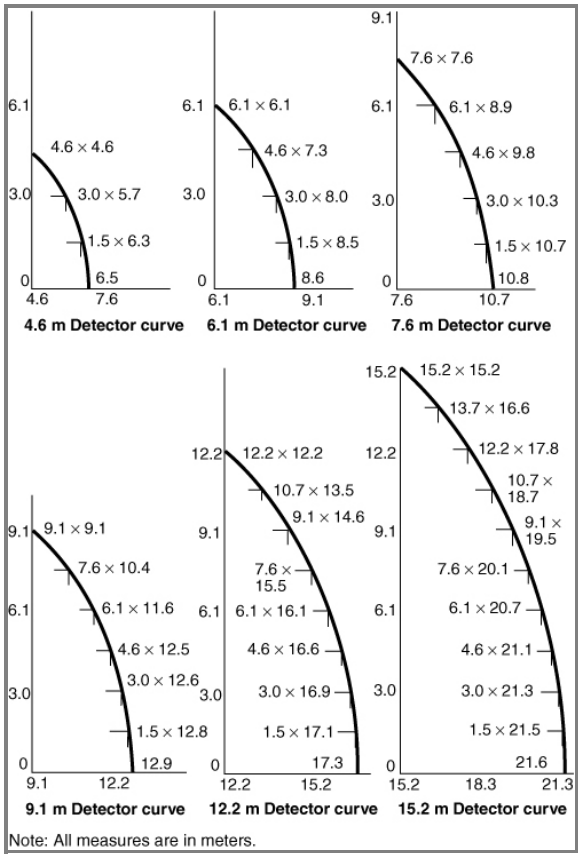


Figure A.17.6.3.1.1(g) Detector Spacing, Rectangular Areas.

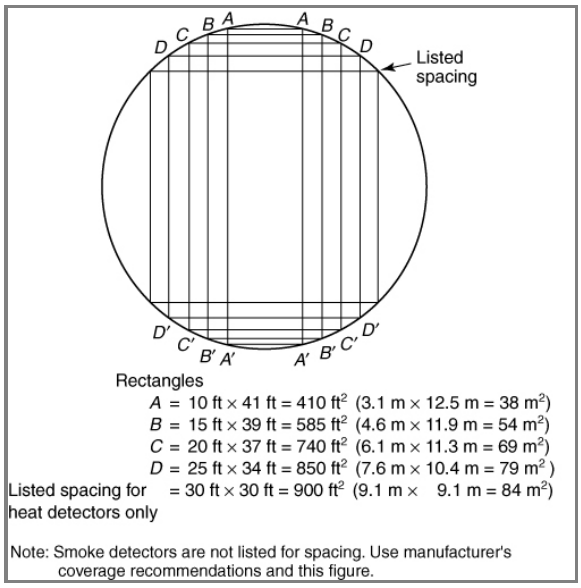
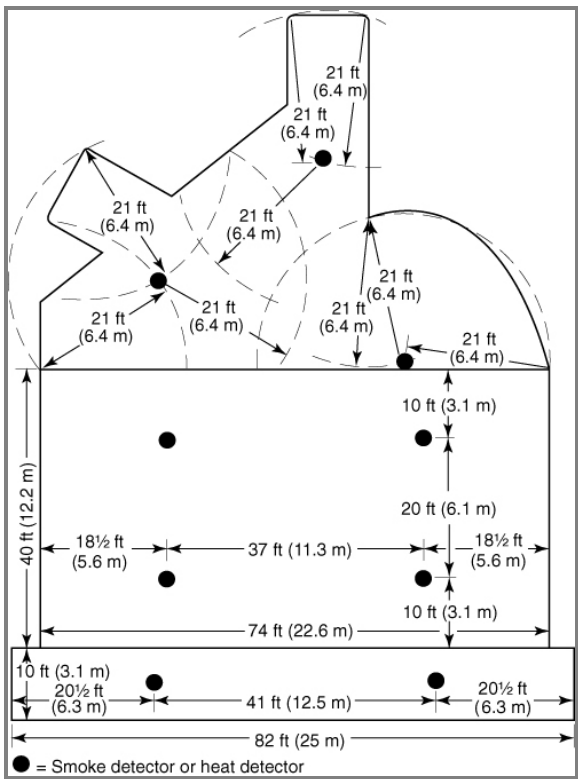


Figure A.17.6.3.1.1(h) Smoke or Heat Detector Spacing Layout in Irregular Areas.



Statement of Problem and Substantiation for Public Input

Incorrect NFPA 170 symbol used for heat detectors. NFPA 170- 2018 edition replaced the included thermometer with an emboldened capital H. This edit was missed during the 2019 cycle and should be corrected now. Drawings A17.6.3.1.1 (a) and (c) are teh drawings affected with this change.

Submitter Information Verification

Submitter Full Name: James Mundy
Organization: Asset Protection Associates, L
Street Address:
City:

State:
Zip:
Submittal Date: Wed Jun 26 16:19:28 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5298-NFPA 72-2019
Statement: Figures A17.6.3.1.1 (a) and (c) are updated to correlate with NFPA 170.

Public Input No. 632-NFPA 72-2019 [Section No. A.17.6.3.1.1]

A.17.6.3.1.1

Maximum linear spacings on smooth ceilings for spot-type heat detectors are determined by full-scale fire tests. *[See Figure A.17.6.3.1.1(c).]* These tests assume that the detectors are to be installed in a pattern of one or more squares, each side of which equals the maximum spacing as determined in the test, as illustrated in Figure A.17.6.3.1.1(a). The detector to be tested is placed at a corner of the square so that it is positioned at the farthest possible distance from the fire while remaining within the square. Thus, the distance from the detector to the fire is always the test spacing multiplied by 0.7 and can be calculated as shown in Table A.17.6.3.1.1. Figure A.17.6.3.1.1(b) illustrates the smooth ceiling spacing layout for line-type heat detectors.

Table A.17.6.3.1.1 Test Spacing for Spot-Type Heat Detectors

Test Spacing		Maximum Test Distance from Fire to Detector (0.7*D*)	
ft	m	ft	m
50 × 50	15.2 × 15.2	35.0	10.7
40 × 40	12.2 × 12.2	28.0	8.5
30 × 30	9.1 × 9.1	21.0	6.4
25 × 25	7.6 × 7.6	17.5	5.3
20 × 20	6.1 × 6.1	14.0	4.3
15 × 15	4.6 × 4.6	10.5	3.2

Once the correct maximum test distance has been determined, it is valid to interchange the positions of the fire and the detector. The detector is now in the middle of the square, and the listing specifies that the detector is adequate to detect a fire that occurs anywhere within that square — even out to the farthest corner.

In laying out detector installations, designers work in terms of rectangles, as building areas are generally rectangular in shape. The pattern of heat spread from a fire source, however, is not rectangular in shape. On a smooth ceiling, heat spreads out in all directions in an ever-expanding circle. Thus, the coverage of a detector is not, in fact, a square, but rather a circle whose radius is the linear spacing multiplied by 0.7.

This is graphically illustrated in Figure A.17.6.3.1.1(d). With the detector at the center, by rotating the square, an infinite number of squares can be laid out, the corners of which create the plot of a circle whose radius is 0.7 times the listed spacing. The detector will cover any of these squares and, consequently, any point within the confines of the circle.

So far this explanation has considered squares and circles. In practical applications, very few areas turn out to be exactly square, and circular areas are extremely rare. Designers deal generally with rectangles of odd dimensions and corners of rooms or areas formed by wall intercepts, where spacing to one wall is less than one-half the listed spacing. To simplify the rest of this explanation, the use of a detector with a listed spacing of 30 ft × 30 ft (9.1 m × 9.1 m) should be considered. The principles derived are equally applicable to other types.

Figure A.17.6.3.1.1(g) illustrates the derivation of this concept. In Figure A.17.6.3.1.1(g), a detector is placed in the center of a circle with a radius of 21 ft (0.7 × 30 ft) [6.4 m (0.7 × 9.1 m)]. A series of rectangles with one dimension less than the permitted maximum of 30 ft (9.1 m) is constructed within the circle. The following conclusions can be drawn:

(1) As the smaller dimension decreases, the longer dimension can be increased beyond the linear maximum spacing of the detector with no loss in detection efficiency.

(2) A single detector covers any area that fits within the circle. For a rectangle, a single, properly located detector may be permitted, provided the diagonal of the rectangle does not exceed the diameter of the circle.

(3) Relative detector efficiency actually is increased, because the area coverage in square meters is always less than the 900 ft^2 (84 m^2) permitted if the full 30 ft × 30 ft (9.1 m × 9.1 m) square were to be utilized. The principle illustrated here allows equal linear spacing between the detector and the fire, with no recognition for the effect of reflection from walls or partitions, which in narrow rooms or corridors is of additional benefit. For detectors that are not centered, the longer dimension should always be used in laying out the radius of coverage.

Areas so large that they exceed the rectangular dimensions given in Figure A.17.6.3.1.1(g) require additional detectors. Often proper placement of detectors can be facilitated by breaking down the area into multiple rectangles of the dimensions that fit most appropriately *[see Figure A.17.6.3.1.1(e) and Figure A.17.6.3.1.1(f)]*. For example, refer to Figure A.17.6.3.1.1(h). A corridor 10 ft (3.0 m) wide and up to 82 ft (25.0 m) long can be covered with two 30 ft (9.1 m) spot-type detectors. An area 40 ft (12.2 m) wide and up to 74 ft (22.6 m) long can be covered with four spot-type detectors. Irregular areas need more careful planning to make certain that no spot on the ceiling is more than 21 ft (6.4 m) away from a detector. These

points can be determined by striking arcs from the remote corner. Where any part of the area lies beyond the circle with a radius of 0.7 times the listed spacings, additional detectors are required.

Figure A.17.6.3.1.1(h) illustrates smoke or heat detector spacing layouts in irregular areas.

Figure A.17.6.3.1.1(a) Spot-Type Heat Detectors.

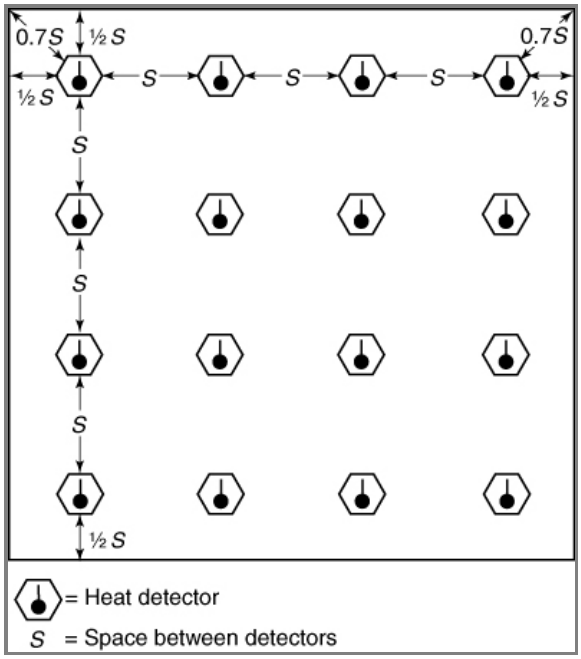


Figure A.17.6.3.1.1(b) Line-Type Detectors — Spacing Layouts, Smooth Ceiling.

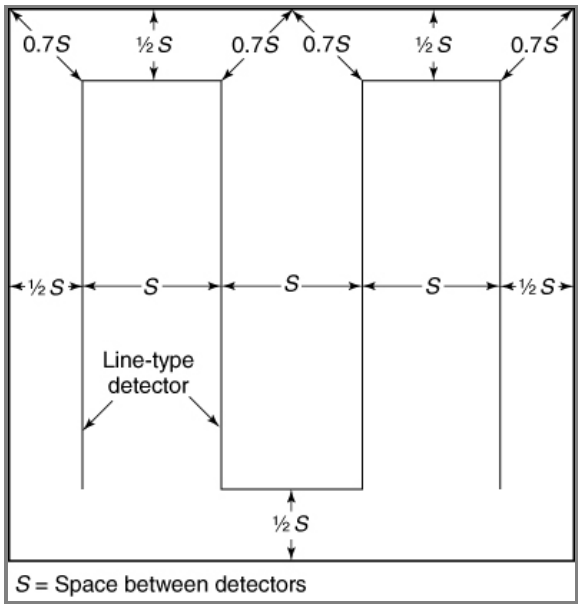


Figure A.17.6.3.1.1(c) Fire Test Layout.

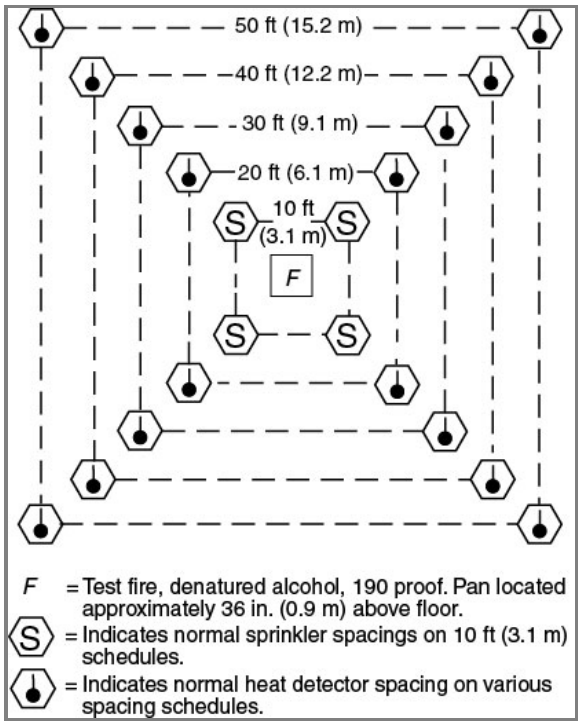


Figure A.17.6.3.1.1(d) Detector Covering any Square Laid Out in Confines of Circle in Which Radius Is 0.7 Times Listed Spacing.

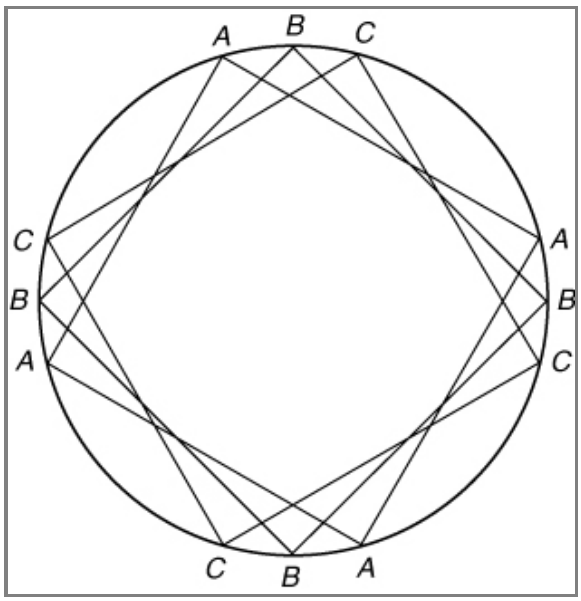


Figure A.17.6.3.1.1(e) Typical Rectangles for Detector Curves of 15 ft to 50 ft.

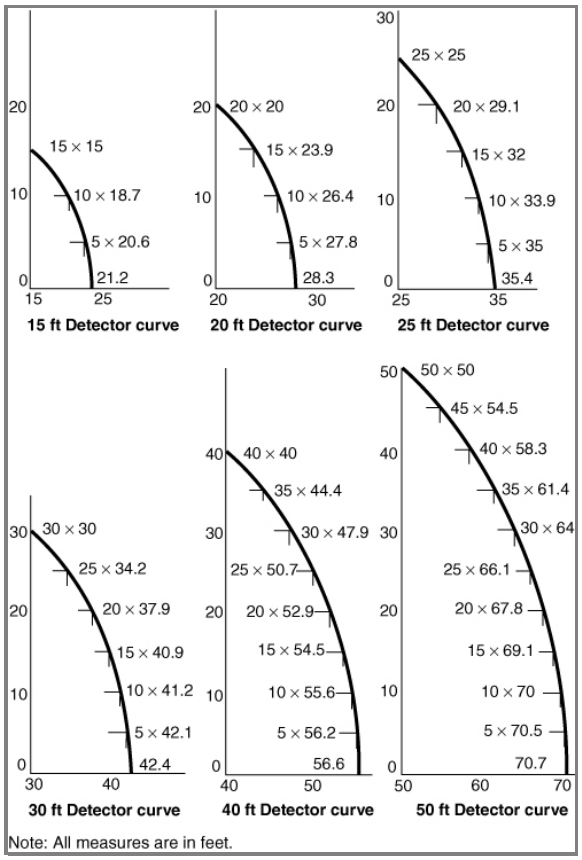


Figure A.17.6.3.1.1(f) Typical Rectangles for Detector Curves of 4.6 m to 15.2 m.

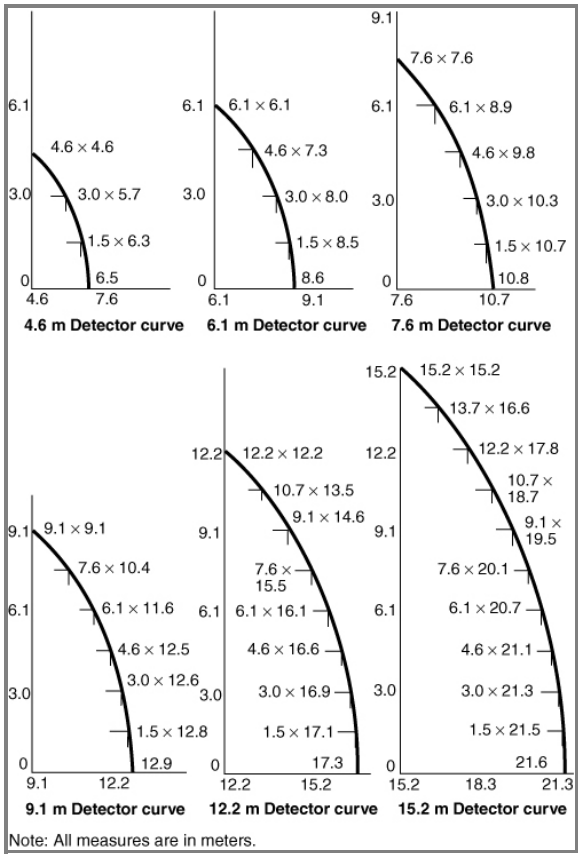


Figure A.17.6.3.1.1(g) Detector Spacing, Rectangular Areas.

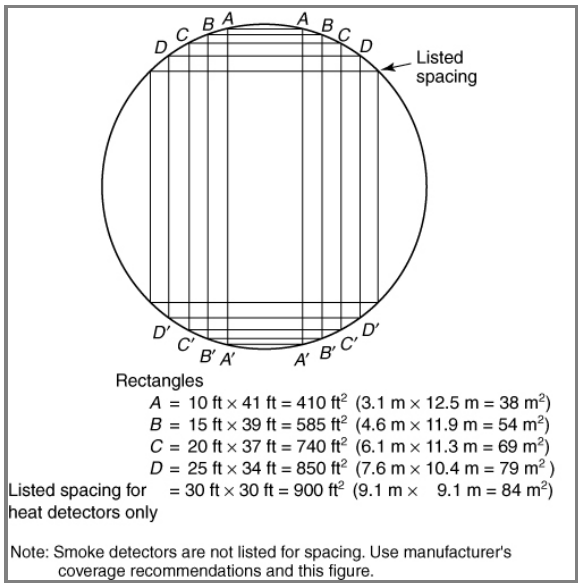
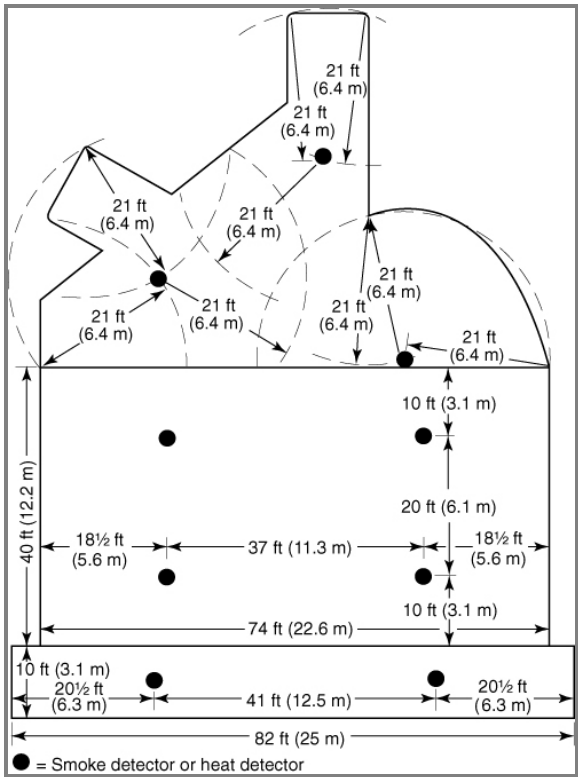


Figure A.17.6.3.1.1(h) Smoke or Heat Detector Spacing Layout in Irregular Areas.



Statement of Problem and Substantiation for Public Input

Figure A.17.6.3.1.1(g) talks only about spacing. It is used for both spot heat and smoke detectors. There needs to be a statement or change in title to indicate the effectiveness for both mechanisms. The change should be made with in the Annex and in body of the code.

Submitter Information Verification

Submitter Full Name: James Mundy
Organization: Asset Protection Associates, L
Street Address:
City:

State:
Zip:
Submittal Date: Wed Jun 26 16:33:03 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The requested change is unclear. A clear recommendation should be provided to the Technical Committee.

Public Input No. 96-NFPA 72-2019 [Section No. A.17.7.3.6.1.1]

A.17.7.3.6.1.1

For an air sampling-type smoke detector, the sensitivity at the detector is not equal to sensitivity at the sampling port. Sampling port sensitivity is dependent on two main factors:

(1) The number of sampling ports in the piping network

(2) The set alarm sensitivity of the detector

~~In the absence of performance-based criteria, the~~ The sensitivity at each sampling port of an air sampling-type smoke detector should not exceed ~~the 4 percent ft obscuration criteria of a spot-type smoke detector~~ its listed port sensitivity .

Statement of Problem and Substantiation for Public Input

Both UL 217 and UL 268 have been updated to eliminate the requirement of a minimum smoke box sensitivity of 4%/ft. The standard now merely requires that the smoke alarm/detector pass the fire tests at whatever sensitivity is it set to. This change will bring NPFA 72 into alignment with UL standards.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 05 13:47:24 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5302-NFPA 72-2019
Statement: Both UL 217 and UL 268 have been updated to eliminate the requirement of a minimum smoke box sensitivity of 4%/ft. The standards now merely require that the smoke alarm/detector pass the fire tests at whatever sensitivity is it set to. This change will correlate NFPA 72 with the UL standards.

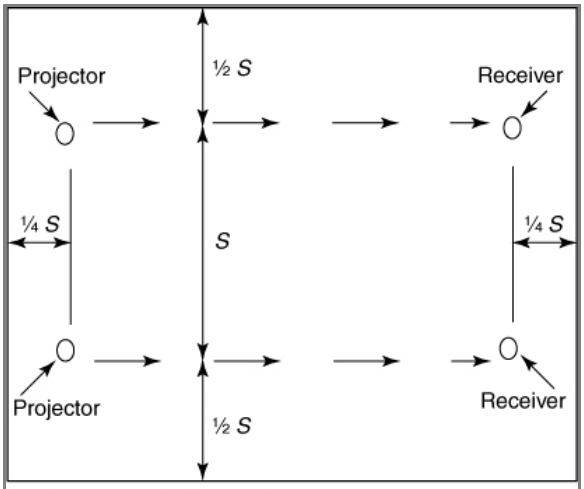
Public Input No. 108-NFPA 72-2019 [Section No. A.17.7.3.7]

A.17.7.3.7

On smooth ceilings, a spacing of not more than 60 ft (18.3 m) between projected beams and not more than one-half that spacing between a projected beam and a sidewall (wall parallel to the beam travel) should be used as a guide. Other spacing should be determined based on ceiling height, airflow characteristics, and response requirements.

In some cases, the light beam projector is mounted on one end wall, with the light beam receiver ~~mounted~~ or reflector mounted on the opposite wall. However, it is also permitted to suspend the projector and receiver/reflector from the ceiling at a distance from the end walls not exceeding one-quarter the selected spacing (*S*). *(See Figure A.17.7.3.7.)*

Figure A.17.7.3.7 Maximum Distance at Which Ceiling-Suspended Light Projector and Receiver/Reflector Can Be Positioned from End Wall Is One-Quarter Selected Spacing *(S)*.



Statement of Problem and Substantiation for Public Input

Some projected beam smoke detectors use a separate transmitter and receiver and others use a transceiver and reflector. Text and figure should be updated to reflect the state of the art.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 09 13:06:39 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5303-NFPA 72-2019
Statement: Some projected beam smoke detectors use a separate transmitter and receiver and others use a transceiver and reflector. Reference to both adds clarity.

Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]

A.17.7.5.4.2

Smoke detectors are designed to sense the presence of particles of combustion, but depending on the sensing technology and other design factors, different detectors respond to different types of particles. Detectors based on ionization detection technology are most responsive to smaller, invisible sub-micron sized particles. ~~Detectors based on photoelectric technology, by contrast, are most responsive to larger visible particles.~~

It is generally accepted that particle size distribution varies from sub-micron diameter particles predominant in the proximity of the flame of a flaming fire to particles one or more orders of magnitude larger, which are characteristic of smoke from a smoldering fire. The actual particle size distribution depends on a host of other variables including the fuel and its physical make-up, the availability of oxygen including air supply and fire–gas discharge, and other ambient conditions, especially humidity. Moreover, the particle size distribution is not constant, but as the fire gases cool, the sub-micron particles agglomerate and the very large ones precipitate. In other words, as smoke travels away from the fire source, the particle size distribution shows a relative decrease in smaller particles. Water vapor, which is abundantly present in most fires, when cooled sufficiently will condense to form fog particles — an effect frequently seen above tall chimneys. Because water condensation is basically clear in color, when it is mixed with other smoke particles, it can be expected to lighten the color of the mixture.

In almost every fire scenario in an air-handling system, the point of detection will be some distance from the fire source; therefore, the smoke will be cooler and more visible because of the growth of sub-micron particles into larger particles due to agglomeration and recombination. For these reasons, photoelectric detection technology has advantages over ionization detection technology in air duct system applications.

Statement of Problem and Substantiation for Public Input

Reason: We are proposing to delete many of the references to specific technology with the next edition of NFPA 72 to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268. End product safety standards such as UL 217 and UL 268 are technology independent. In addition, the performance requirements for detecting fire types and cooking nuisance mitigation are independent of technology. Calling out technology requirements in an installation standard does not consider innovative technology solutions that could otherwise be used to comply with these end product standards. As an example, UL cooking nuisance research demonstrated that independent of smoke detection technology, and placement, all smoke alarms produced an alarm signal during normal cooking. Placement of the alarms in reference to the broiling hamburger cooking source and by 1.5% OBS/ft, resulted in an increased or delayed response, based on location, in almost all smoke alarms with many different types of technologies being tested.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 583-NFPA 72-2019 [Section No. 29.11.3.4]	
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]	
Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]	
Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]	
Public Input No. 592-NFPA 72-2019 [Section No. A.29.11.3.4(7)]	
Public Input No. 593-NFPA 72-2019 [Section No. B.4.7.1]	
Public Input No. 594-NFPA 72-2019 [Section No. B.4.7.3]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:

City:
State:
Zip:
Submittal Date: Wed Jun 26 13:58:34 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5321-NFPA 72-2019
Statement: References to specific technology have been deleted to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268.

Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]

A.17.7.5.4.2

Smoke detectors are designed to sense the presence of particles of combustion, but depending on the sensing technology and other design factors, different detectors respond to different types of particles. Detectors based on ionization detection technology are most responsive to smaller, invisible sub-micron sized particles. Detectors based on photoelectric technology, by contrast, are most responsive to larger visible particles.

It is generally accepted that particle size distribution varies from sub-micron diameter particles predominant in the proximity of the flame of a flaming fire to particles one or more orders of magnitude larger, which are characteristic of smoke from a smoldering fire. The actual particle size distribution depends on a host of other variables including the fuel and its physical make-up, the availability of oxygen including air supply and fire–gas discharge, and other ambient conditions, especially humidity. Moreover, the particle size distribution is not constant, but as the fire gases cool, the sub-micron particles agglomerate and the very large ones precipitate. In other words, as smoke travels away from the fire source, the particle size distribution shows a relative decrease in smaller particles. Water vapor, which is abundantly present in most fires, when cooled sufficiently will condense to form fog particles — an effect frequently seen above tall chimneys. Because water condensation is basically clear in color, when it is mixed with other smoke particles, it can be expected to lighten the color of the mixture.

~~In almost every fire scenario in an air-handling system, the point of detection will be some distance from the fire source; therefore, the smoke will be cooler and more visible because of the growth of sub-micron particles into larger particles due to agglomeration and recombination. For these reasons, photoelectric detection technology has advantages over ionization detection technology in air duct system applications.~~

Statement of Problem and Substantiation for Public Input

We are proposing to delete many of the references to specific technology with the next edition of NFPA 72 to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268. End product safety standards such as UL 217 and UL 268 are technology independent. In addition, the performance requirements for detecting fire types and cooking nuisance mitigation are independent of technology. Calling out technology requirements in an installation standard does not consider innovative technology solutions that could otherwise be used to comply with these end product standards. As an example, UL cooking nuisance research demonstrated that independent of smoke detection technology, and placement, all smoke alarms produced an alarm signal during normal cooking. Placement of the alarms in reference to the broiling hamburger cooking source and by 1.5% OBS/ft, resulted in an increased or delayed response, based on location, in almost all smoke alarms with many different types of technologies being tested.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 582-NFPA 72-2019 [Section No. 24.10.1]	
Public Input No. 583-NFPA 72-2019 [Section No. 29.11.3.4]	
Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]	
Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]	
Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]	
Public Input No. 592-NFPA 72-2019 [Section No. A.29.11.3.4(7)]	
Public Input No. 593-NFPA 72-2019 [Section No. B.4.7.1]	
Public Input No. 594-NFPA 72-2019 [Section No. B.4.7.3]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC

Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:09:32 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5321-NFPA 72-2019
Statement: References to specific technology have been deleted to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268.

Public Input No. 597-NFPA 72-2019 [Section No. A.17.13.2]

A.17.13.2

The waterflow device or the combination of the waterflow devices and fire alarm system should be field configurable so that an alarm is initiated no more than 90 seconds after a sustained flow of at least 10 gpm (40 L/min).

Features that should be investigated to minimize alarm response time include the following:

(1) Elimination of trapped air in the sprinkler system piping

(2) Use of an excess pressure pump

(3) Use of pressure drop alarm-initiating devices

(4) A combination thereof

Care should be used when choosing waterflow alarm-initiating devices for hydraulically calculated looped systems and those systems using small orifice sprinklers. Such systems might incorporate a single point flow of significantly less than 10 gpm (40 L/min). In such cases, additional waterflow alarm-initiating devices or the use of pressure drop-type waterflow alarm-initiating devices might be necessary.

Care should be used when choosing waterflow alarm-initiating devices for sprinkler systems that use on–off sprinklers to ensure that an alarm is initiated in the event of a waterflow condition. On–off sprinklers open at a predetermined temperature and close when the temperature reaches a predetermined lower temperature. With certain types of fires, waterflow might occur in a series of short bursts of a duration of 10 seconds to 30 seconds each. An alarm-initiating device with retard might not detect waterflow under these conditions. An excess pressure system or a system that operates on pressure drop should be considered to facilitate waterflow detection on sprinkler systems that use on–off sprinklers.

Excess pressure systems can be used with or without alarm valves. The following is a description of one type of excess pressure system with an alarm valve.

An excess pressure system with an alarm valve consists of an excess pressure pump with pressure switches to control the operation of the pump. The inlet of the pump is connected to the supply side of the alarm valve, and the outlet is connected to the sprinkler system. The pump control pressure switch is of the differential type, maintaining the sprinkler system pressure above the main pressure by a constant amount. Another switch monitors low sprinkler system pressure to initiate a supervisory signal in the event of a failure of the pump or other malfunction. An additional pressure switch can be used to stop pump operation in the event of a deficiency in water supply. Another pressure switch is connected to the alarm outlet of the alarm valve to initiate a waterflow alarm signal when waterflow exists. This type of system also inherently prevents false alarms due to water surges. The sprinkler retard chamber should be eliminated to enhance the detection capability of the system for short duration flows.

The 90 second requirement is necessary in some cases. Where water pressure is contant many AHJ's find this to be excessive. Timing less than 90 econds are quite common. Many practitioners and AHJ's settle for delays in hte 30 to 35 second range. This clearly falls within the 90 second limitation. Local practice is often times the limiting factor.

Statement of Problem and Substantiation for Public Input

Frequently AHJ's want timing below the 90 second maximum. Although the requirement in some instances to extend to the maximum is justified, some AHJ's require something less. The added language to to privide clarity for both the testing individual and the AHJ.

Submitter Information Verification

Submitter Full Name: James Mundy
Organization: Asset Protection Associates, L
Street Address:
City:
State:

Zip:
Submittal Date: Wed Jun 26 15:04:05 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The proposed text attempts to establish a minimum required time delay to override a local AHJ requirement.

Public Input No. 586-NFPA 72-2019 [New Section after A.18.1.5]

TITLE OF NEW CONTENT

New Section A18.3.2 Nameplates.

Please note that this material is part of the information relative to the NFPA 72 Chapter 18 Task Group on Notification Appliance Circuits.

Notification Appliance Circuits (NACs) have been part of fire alarm and life safety systems almost since they were electrified. Emergency Communication, Fire Alarm and Life Safety Systems rely heavily on proper NAC operation to provide authorized information to personnel when needed. However, at times, varying and inconsistent design parameters have been used for systems. These include, but are not limited to:

- Incorrect circuit terminal starting voltages
- Incorrect end voltages
- Incorrect appliance power consumption
- Incorrect circuit parameters (length, wire, etc.)
- Failure to include riser power losses
- Failure to account for installation and operational environmental conditions

System testing has also been inconsistent. This includes, but is not limited to:

- Testing only on ac mains power
- Not testing Class A/Class X operation
- Not testing for circuit electrical characteristics
- Not testing for terminal starting voltages
- Not testing for end-of-line voltages
- Not testing circuit current draw

Characteristics

The subject of proper design, installation, testing, operation, and maintenance of NACs is one that requires knowledge of codes/regulations, physics, design parameters, installation methodologies, materials, and system operations.

This document relates to copper conductor-based architecture and technologies that are in the marketplace as of the date of this writing.

Some of the topics that must be understood are:

(1) Nationally Recognized Testing Laboratory (NRTL)-classified Regulated versus Special Application circuits. This document addresses NRTL Regulated solutions. Note that NRTL Regulated is independent of the term Regulated as it applies to power supplies and power circuits.

(2) For Special Application systems, circuits & appliances, information must be secured from the manufacturer.

(3) Electrical characteristics of Regulated Circuits (certain topics are expounded upon in next subsection):

(4) Notification Appliances

(5) Performance requirements

(6) Power consumption

(7) Conductors

(8) Conductive material

(9) Solid copper

(10) Stranded copper

(11) Operating temperature

(12) AWG temps (68 & 167 F)

(13) Insulation

(14) Temperatures

(15) Construction

(16) Twisted conductors

(17) Shielding

(18) Values

(19) Capacitance

(20) Resistance

(21) Inductance

(22) Inrush

(23) Circuit types

(24) Full-wave rectified (FWR)

(25) Filtered-regulated (F/R)

(26) DC

(27) AC

(28) Power sources

(29) Loading factors

(30) Inrush characteristics

(31) Low system voltage

(32) Start terminal voltage

(33) Design parameters

(34) End line loading

(35) Point-to-point

(36) Load centering

(37) Circuit length

(38) How to measure Class A/X

(39) Installation methods

(40) Class B

(41) Class A

(42) Class X

(43) Survivability

(44) Support

(45) Terminations

(46) Splicing

(47) System testing

(48) On AC mains power

(49) Low line voltage cutover

(50) On secondary power

(51) Circuit operation

(52) System operations

(53) Supervision

(54) Synchronization

(55) Visual

(56) Audible

(57) Activation/De-activation

(58) Control

Regulated Circuit Characteristic Information

Notification Appliances. The goal of a properly designed, installed and maintained system is to ensure that the notification appliances will operate at the required output (sound pressure level, candela output, synchronization, etc.) and durations during expected system operations.

A key component of a notification appliance is its power consumption. The designer must account for the minimum and maximum power specifications of an appliance. Regulated “24VDC” appliances must operate at a low of 16 VDC and at a maximum of 33 VDC in order to ensure its output characteristics are correct. For example too low of a voltage at the appliance may result in visual appliances losing synchronization or audible appliances having low or no output.

When designing DC NACs the appliance nameplate (Listed) voltage and current consumption values are used. This will typically be X mA @ 16 VDC.

For audio NACs, the appliance voltage and wattage settings will provide a given output. This will typically be Y dBA-fast @ 25.2 or 70.7 VAC.

Appliance inrush current may also need to be accounted for in system design. Inrush current is when some appliances are first turned on. This may be a spike in power consumption that only happens for a very short period of time, but if not accounted for, may cause the circuit and/or appliance to fail to operate.

Conductors. Copper conductors are used with systems. This copper can be solid or stranded. The resistance differences between solid and stranded can be 8%.

When designing a NAC, the designer must also look at the environment where the circuits and appliances will be installed. Wire resistance changes with temperature. For standard copper wire, the difference between the 2 most common design wire temperature of 68 F (20C) and 167 F (75C) is a significant 26%.

The following charts provide the resistance values for solid and stranded copper wire at both 68 and 167 F.

Wire resistance @ 68F (20C)		
Wire	*Pair 1K*	*Ohm/wire/1K*
10 Solid	1.9978	0.9989
10 Stranded	2.16	1.08
12 Solid	3.176	1.588
12 Stranded	3.42	1.71
14 Solid	5.05	2.525
14 Stranded	5.46	2.73
16 Solid	8.032	4.016
16 Stranded	8.7	4.35
18 Solid	12.77	6.385
18 Stranded	13.84	6.92

Wire resistance @ 167F (75C)		
Wire	*Pair 1K*	*Ohm/wire/1K*
10 Solid	2.52	1.26
10 Stranded	2.58	1.29
12 Solid	4.02	2.01
12 Stranded	4.1	2.05
14 Solid	6.38	3.19
14 Stranded	6.52	3.26
16 Solid	10.16	5.08
16 Stranded	10.58	5.29
18 Solid	16.16	8.08
18 Stranded	16.9	8.45

Conductor insulation performance can also vary with temperature. Temperature may impact the stability of the insulation, the capacitance of the circuit and more. The wire manufacture's information must be reviewed.

Conductor/cable assembly may also impact the circuit performance. For audio and many other circuits, the system manufacturer may specify that twisted cable is required. Others may specify that the circuit must be shielded.

Electrical values of capacitance, resistance and at times, inductance must be taken into account for NACs. These values may have a direct impact on if the circuit will work as designed and required.

Circuit Types. For "DC" circuits, there are typically Filtered/Regulated (F/R), also referred to as clean DC (note, the Regulated here has nothing to do with the NRTL "regulated" term), and Full-Wave Rectified (FWR). FWR, which has also been referred to as "lumpy DC," is the power output of some systems when the unit is being powered by ac mains, but will typically change to F/R when the system is on battery power.

Typical DC notification appliances have a blocking diode in them. When the NAC is in quiescent mode, the circuit polarity is in one direction, which is blocked by the diode. When the circuit is activated, the polarity is revered and now the diode allows the energy to flow into the appliance.

Audio (AC) circuits are typically rated at 25.2 (nominal 25) and 70.7 (nominal 70) in North America. These circuits typically operate in quiescent mode with DC supervision and then AC is applied to the circuit when the circuit is activated. Audio circuits/appliances are typically powered by audio amplifiers.

Typical Listed audio notification appliances have a blocking capacitor in them to block the DC supervisory power, but permit the AC audio power to reach the loudspeaker when the circuit is activated.

Power Sources. The type of power supply will impact the system design and operation. The system output, overcurrent protection methods, loading ratings/factors, inrush capabilities and voltages must be evaluated. Some power supplies may actually have their worst-case output condition at brownout, which is when the incoming AC mains are at its lowest value before the power supply transfers to battery power. The manufacturer's documentation and direction must be adhered to.

Design Parameters. This is a key design factor. In the past there have been 3 main types of circuit design methods. They are:

- **End Lump Sum** – this assumes that all the appliances are at the end of the circuit and are activated at one time. This is the most conservative method and is the recommended design method for all systems.
- **Point-To-Point** – this method requires that the designer know the exact wire distance between each and every device. If the installed values are different than the design values, the circuit may not work correctly. This method requires close coordination with the design and field work.
- **Load Centering** – this method assumes that 50% of the load is after the midpoint of the circuit and 50% is before the midpoint. This method is not recommended.

Block Diagrams & Scenarios

The following images are of control equipment for a "24 VDC" NAC, but the design parameters are similar to that of an audio (AC) circuit. For audio circuits, the calculation is provided below.

For Figure A, the notification appliances are connected on supervised NACs to a power and control unit. This may be an FACU or a remote power supply assembly.

Figure A – NAC Power & Control Unit

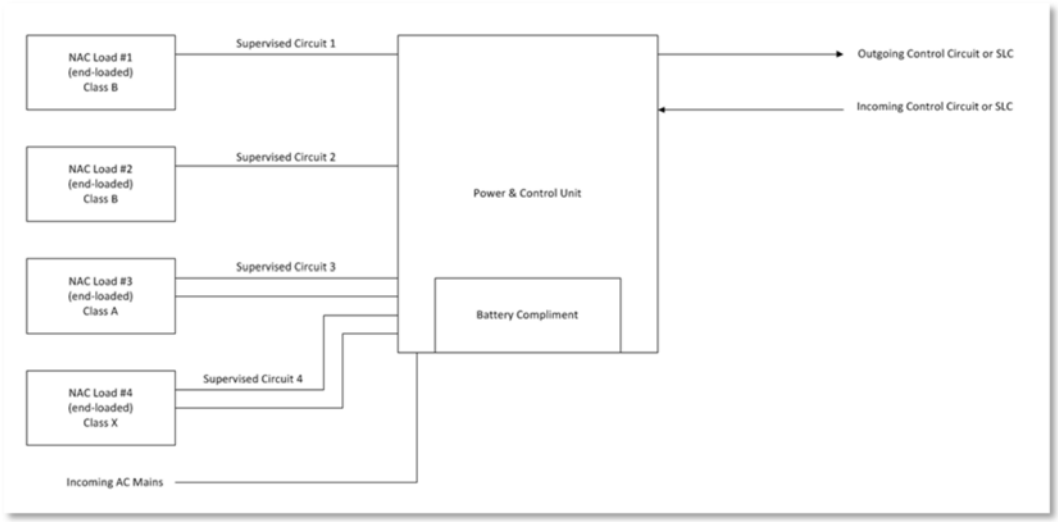
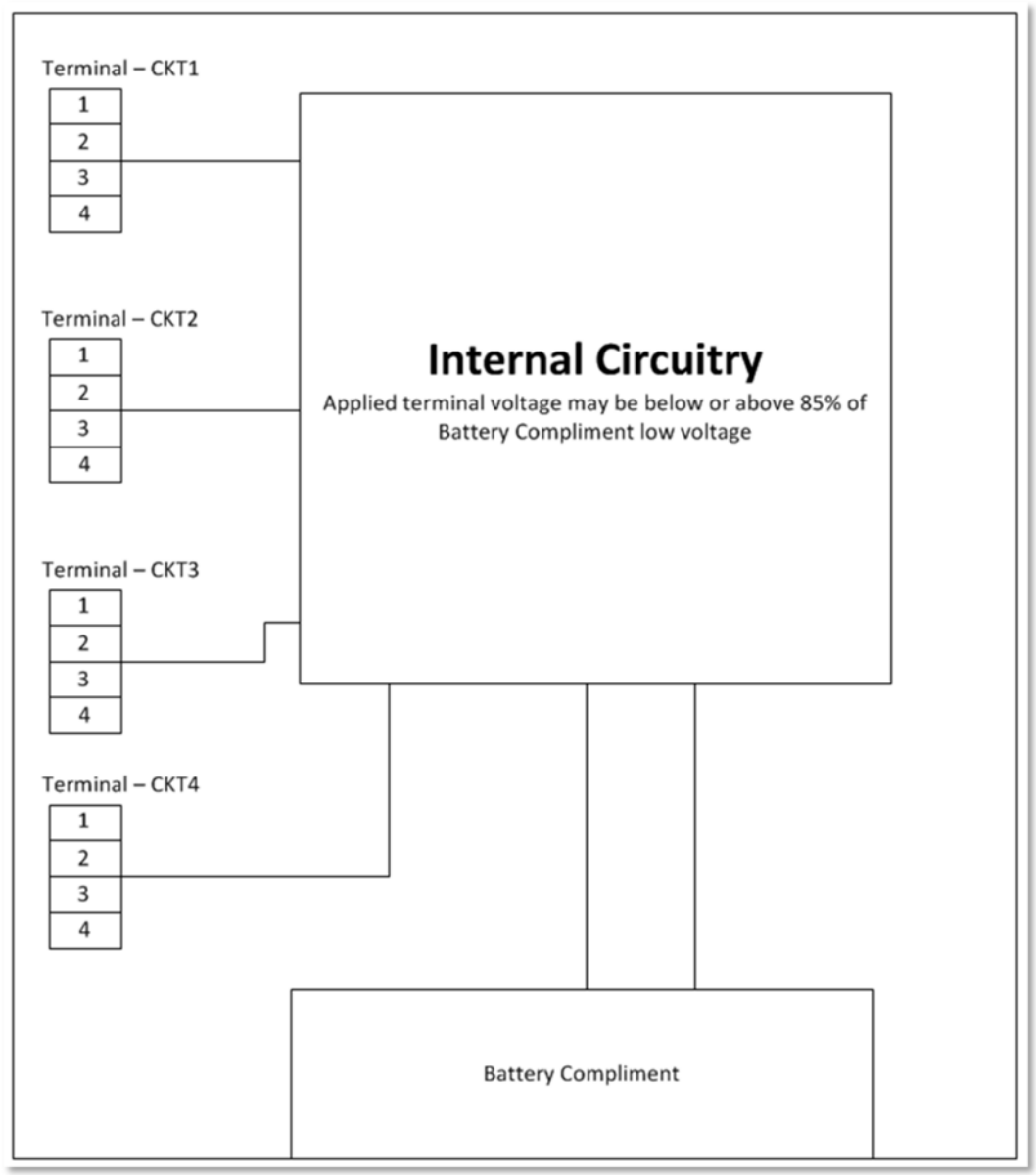


Figure B provides a block diagram of the internal sections of the power/control unit. The important thing here is the Terminals (Terminal – CK1 through Terminal – CK4). This is where the Start Terminal Voltage (STV) is derived from. The Internal Circuity will impact the STV.

As an example when the unit is on AC mains power, this voltage may be as high as 33 volts. In this case, the circuit would be able to support a voltage drop of 17 volts (33-16 = 17) – which means that most every circuit would work. Now assume that the power supply is operating on battery power, the batteries are at the end of their service life and at the end of their retention time, and then the system is activated. Now the applied voltage may be 18.5 volts, which means the circuit could only support a 2.5 volt drop (18.5-16 = 2.5). The appliances and circuits that work when the unit was on AC mains may not when the unit is

powered by batteries.

Figure B – Internal NAC Power & Control Unit



Scenario 1 – standard technology

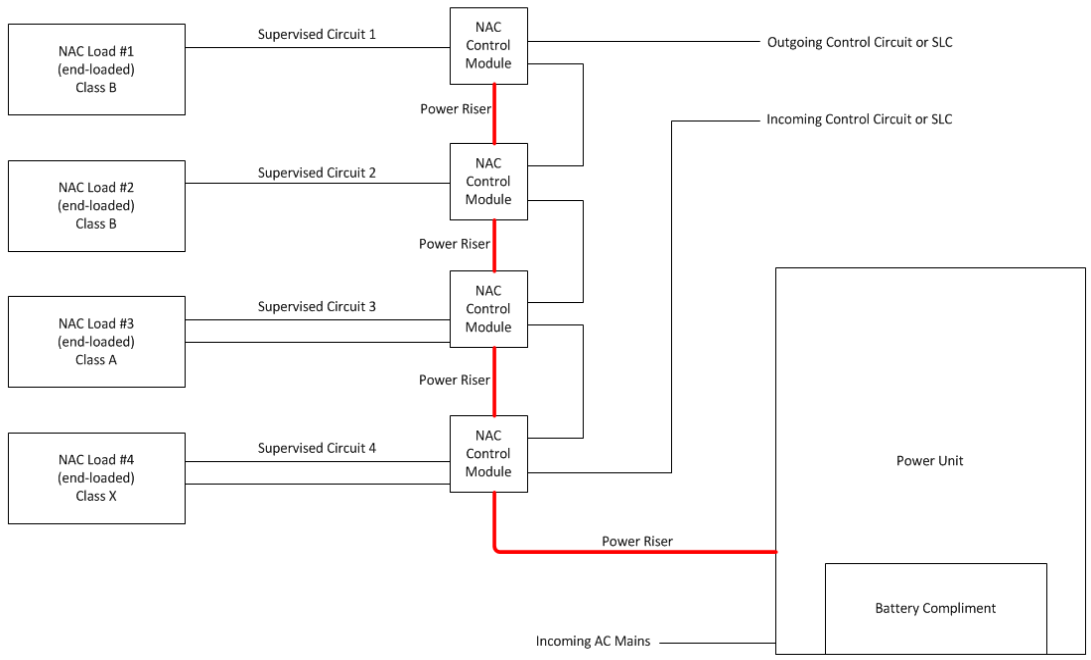
- Appliance maximum wire gauge: 12 AWG
- Nominal battery voltage: 24 VDC
- Battery terminal voltage: 20.4 (85% of 24 VDC)
- Internal voltage adjustment of control equipment: -1.3 VDC at load
- NAC Terminal voltage: 20.4-1.3 = 19.1
- Regulated appliance low voltage: 16
- Maximum voltage drop of design circuit: 19.1-16 = 3.1 VDC
- Design circuit current draw of all alliances on NAC: 2.022 A @ 16 VDC
- Project required spare capacity: 20%
- Design circuit load: 2.4264 A

- Design circuit length: 350’
- If design/application is at 68 F, maximum circuit length is 402.27 feet with 12 AWG solid wire. Circuit design is valid for 12, but will not work with 14.
- If design/application is at 167 F, maximum circuit length is 317.81 feet with 12 AWG solid wire. Circuit design is invalid and will not work. Must split circuit.

Scenario 2 – advanced technology

- Appliance maximum wire gauge: 12 AWG
- Nominal battery voltage: 24 VDC
- Battery terminal voltage: 20.4 (85% of 24 VDC)
- Internal voltage drops of control equipment: +2.1 VDC at load
- NAC Terminal voltage: 20.4 + 2.1 = 22.5 VDC
- Regulated appliance low voltage: 16
- Maximum voltage drop of design circuit: 22.5-16 = 6.5 VDC
- Design circuit current draw of all alliances on NAC: 2.022 A @ 16 VDC
- Project required spare capacity: 20%
- Design circuit load: 2.4264 A
- Design circuit length: 550’
- If design/application is at 68 F, maximum circuit length is 843.47 feet with 12 AWG solid wire. Circuit design is valid for 12, but will not work with 14.
- If design/application is at 167 F, maximum circuit length is 666.38 feet with 12 AWG solid wire. Circuit design is valid for 12, but will not work with 14.

Figure C – Field NAC Control Modules With Power Riser



Scenario 3 – Common Riser To Field Modules

This application is typical for installations where control modules are installed in the field, away from the control/power unit and are supplied notification power via a common supervised power riser. In this case, all circuits that can be activated in the worst case all enter into the equation as the loading will impact the

power riser voltage at each of the NAC Control Modules.

Audio Circuits

Audio circuits, when active are alternating current (ac). The method to calculate line loss is based on the permitted decibel loss (typically .5 or 1 dB) and can be calculated with the following equation:

$$\text{Loss dB} = 20 \log \frac{R_L}{R_L + R_W}$$

Where:

$R_L = \frac{V2}{P}$ = Load Resistance (W)

V = Amplifier output voltage (V)

P = Power in Load (W)

R_W = Wire resistance

To solve for wire resistance:

Wire resistance (RW) is converted to wire length as follows:

$$D = \frac{R_W}{R_{/1000' \text{ pair}}} \times 1000$$

Where:

D = Distance in feet.

R_W = Maximum allowable wire resistance.

R/1000' pair = wire resistance per 1000'pair.

For a 0.5 dB loss calculation, the above equations may be simplified to:

$$\text{Max length} = \frac{59.25 \times \text{Amplifier output}^2}{\text{Wire resistance} \times \text{Circuit load}}$$

where:

- Amplifier output is the signal level in VRMS supplied by the amplifier driving the circuit
- Circuit load is the total watts required by the audio circuit
- Wire resistance is the resistance rating of the wire per 1000 ft pair, see Table 63 below.

For example, the maximum allowable wire length for an audio circuit consisting of a 30 W, 25 VRMS amplifier driving thirty 1-watt speakers, using 18-guage wire would be 95 ft.

$$94.95 = \frac{59.25 \times 25^2}{13 \times 30}$$

Statement of Problem and Substantiation for Public Input

many NACs are not designed, installed, tested or maintained properly. This new section is intended to provide the designer guidance on proven and repeatable methodologies that can be applied to systems. This work is part of the NFPA 72 Task Group on Notification Appliance Circuits.

Submitter Information Verification

Submitter Full Name: Morris Stoops

Organization: UTC Fire & Security/Edwards

Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:06:06 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: CI-5036-NFPA 72-2019

Statement: Many NACs are not designed, installed, tested or maintained properly. This new section is intended to provide the designer guidance on proven and repeatable methodologies that can be applied to systems. This work is part of the NFPA 72 Task Group on Notification Appliance Circuits. The Task Group will continue to work on this material before the Second Draft Meeting. This CI incorporates PI 338 and PI 586.

Public Input No. 203-NFPA 72-2019 [New Section after A.18.4.1.5.2]

A18.4.1.5.3

See 3.3.186 for the definition of occupiable

Statement of Problem and Substantiation for Public Input

Added section that was associated with 18.4.1.5.2 when it should be associated with 18.4.1.5.3. Simply putting the section where it belongs.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 202-NFPA 72-2019 [Section No. A.18.4.1.5.2]	

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 29 19:08:37 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: Section 18.4.1.5.3 already includes a reference to the definition of occupiable area, 3.3.187.

Public Input No. 202-NFPA 72-2019 [Section No. A.18.4.1.5.2]

~~**A.18.4.1.5.2** —~~

~~See 3.3.186 for the definition of occupiable.~~

Statement of Problem and Substantiation for Public Input

This annex section belongs with 18.4.1.5.3 - PI has been submitted to add this to section A18.4.1.5.3

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 203-NFPA 72-2019 [New Section after A.18.4.1.5.2]	

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshal Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 29 19:03:09 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5042-NFPA 72-2019
Statement: This annex section was in the incorrect location. Occupiable areas are addressed in 18.4.1.5.3, which already has a reference to the definition.

Public Input No. 208-NFPA 72-2019 [Section No. A.18.4.1.6]

A.18.4.1.6

Because voice is composed of modulated tones, it is not valid to compare loudness measurements of tone signals with loudness measurements of voice signals. A voice signal that is subjectively judged to be equally as loud as a tone signal will actually produce a dB reading below that of the tone signal. The modulated tones of a voice signal can have the same or greater peak amplitude as that of a tone signal. However, ~~because they are modulated~~ because voice signals are modulated meters with fast or slow time, constants will show a lower dB or dBA reading.

A voice signal must have sufficient audibility to result in intelligible communication. Intelligibility modeling/measurements (subject based and instrument based) include audibility as well as many other factors when determining whether a voice signal is adequate or not adequate.

Statement of Problem and Substantiation for Public Input

Added the works "voice signals" for clarity.

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 12:18:17 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5043-NFPA 72-2019
Statement: The Technical Committee adds the words "voice signals" rather than "they" for clarity.

Public Input No. 531-NFPA 72-2019 [New Section after A.18.4.2.1]

TITLE OF NEW CONTENT

New A.18.4.2.2 The purpose of a minimum ring time is to assure that occupants have time to hear, understand and act. When a signal stops, occupants might assume that no threat exists. Some jurisdictions might require longer ring times. Others might require visual appliances to continue to flash when audible signals have been silenced. Different jurisdictions and different buildings/areas require different emergency plans. Thus, the code minimum ring time should be allowed to be different when approved by the AHJ. The code specifically permits manual interruption. A jurisdiction might have an ordinance that does not allow owners/occupant to interrupt the signal, but would allow first responders to use the system as needed. In other cases, an owner's approved emergency preparedness and emergency action plans might allow for manual interruption of the signal. The code also has an allowance for MNS messages to interrupt the minimum ring time.

Statement of Problem and Substantiation for Public Input

Explain the minimum ring time and how it might be used as suggested by the NITMAM/CAM that failed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 528-NFPA 72-2019 [Section No. 18.4.2]	
Public Input No. 528-NFPA 72-2019 [Section No. 18.4.2]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 08:30:38 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5013-NFPA 72-2019

Statement: These changes are intended to return the text to the version following the 2019 edition 1st draft. The final 2019 edition does not reflect the 1st draft changes. Those changes were unchanged in the 2nd draft. However, a floor CAM was passed but failed final Standards Council (SC) approval. When that occurs, the text does not stay as approved by the Technical Committee (TC). Instead, the directive is to ignore 1st and 2nd drafts and CAMs and to revert the text to the previous edition. Thus, the 2019 edition was returned to 2016 text, undoing the 1st draft changes. The ANSI standard for the signal had been updated to allow greater flexibility with T3 (and T4) and to allow T3 to be used for relocation or partial evacuation instead of only TOTAL building evacuation. To correlate with the ANSI standard and to make NFPA 72 work with MNS/EVACS the figure and reference to the figure was deleted. The text regarding single stroke bells was also deleted as not being needed in NFPA 72 body.

The first printing of 2019 NFPA 72 has 18.4.2.2.1 and 18.4.2.2.2 incorrectly under the paragraph 18.4.2.2 for single stroke bells. Those two paragraphs belong under the paragraph for minimum ring time that was inadvertently left out of the printing and that was reinstated by Errata 72-19-2.

Annex text has been added to explain the minimum ring time and how it might be used as suggested by the NITMAM/CAM that failed.

Public Input No. 514-NFPA 72-2019 [Section No. A.18.4.4]

A.18.4.4

The typical average ambient sound level for the occupancies specified in Table A.18.4.4 are intended only for design guidance purposes. The typical average ambient sound levels specified should not be used in lieu of actual sound level measurements.

Table A.18.4.4 Average Ambient Sound Level According to Location

Location	Average Ambient Sound Level (dBA)
Business occupancies	~~54~~ 50
Educational occupancies	45
Industrial occupancies	88
Institutional occupancies	50
Mercantile occupancies	40
Mechanical rooms	91
Piers and water-surrounded structures	40
Places of assembly	60
Residential occupancies	35
Storage occupancies	30
Thoroughfares, high-density urban	70
Thoroughfares, medium-density urban	55
Thoroughfares, rural and suburban	40
Tower occupancies	35
Underground structures and windowless buildings	40
Vehicles and vessels	50

Sound levels can be significantly reduced due to distance and losses through building elements. Every time the distance from the source doubles, the sound level decreases by about 6 decibels (dB). Audible notification appliances are typically rated by manufacturers' and testing agencies at 10 ft (3 m) from the appliance. Subsequently, at a distance of 20 ft (6.1 m) from an audible appliance rated at 84 dBA, the sound level might be reduced to 78 dBA. At a closed door, the loss might be about 10 dB to 24 dB or more depending on construction. If the opening around the door is sealed, this might result in a loss of 22 dB to 34 dB or more.

Statement of Problem and Substantiation for Public Input

50+15 = 65dba is great audio level for business occupancy. If you are providing more than 65dba in a business occupancy that's good but behind office doors it takes a higher level to reach the current annex recommended 70dba. How many contractor's give 70dba behind the closed door? 65dba is a great level for the lowest point. The ambient level is about 50 for an occupied period. If looking back to the 2002 when the code was for 24 hour average, the annex said 55 as well. So please check the data for 8 hour period.

Submitter Information Verification

Submitter Full Name: Brian Codzandski
Organization:
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 14:20:51 EDT 2019

Committee: SIG-NAS

Committee Statement

Resolution: The values in this table come from the CDC and 3M, so without technical justification or change to the source material, the Technical Committee is going to retain the current values.

Public Input No. 150-NFPA 72-2019 [Section No. A.18.4.4.1]

A.18.4.4.1

Audio levels are commonly measured using units of decibels, or 1/10 Bell, abbreviated dB. When measured using a sound level meter, the operator can select either an A-weighted, B-weighted, or C-weighted measurement. The C-weighted measurement is nominally flat from 70 Hz to 4000 Hz, and the B-weighted measurement is nominally flat from 300 Hz to 4000 Hz. The A-weighted measurement filters the input signal to reduce the measurement sensitivity for frequencies to which the human ear is less sensitive and is relatively flat from 600 Hz to 7000 Hz. This results in a measurement that is weighted to simulate the segment of the audio spectrum that provides the most significant intelligibility components heard by the human ear. The units used for measurement are still dB, but the shorthand for specifying use of the A-weighted filter is typically dBA. The difference between any two sound levels measured on the same scale is always expressed in units of dB, not dBA.

The constantly changing nature of pressure waves, which are detected by ear, can be measured by electronic sound meters, and the resulting electronic waveforms can be processed and presented in a number of meaningful ways. Most simple sound level meters have a fast or slow time constant (125 ms and 1000 ms, respectively) to quickly average a sound signal and present a root mean square (RMS) level to the meter movement or display. This is the type of measurement used to determine the maximum sound level having a duration of at least 60 seconds. Note that Chapter 14 requires this measurement to be made using the FAST time setting on the meter. However, this quick average of impressed sound results in fast movements of the meter's output that are best seen when talking into the microphone; the meter quickly rises and falls with speech. However, when surveying the ambient sound levels to establish the increased level at which a notification appliance will properly function, the sound source needs to be averaged over a longer period of time. See 3.3.30, Average Ambient Sound Level. Moderately priced sound level meters have such a function, usually called L_{eq} or equivalent sound level. For example, an L_{eq} of speech in a quiet room would cause the meter movement to rise gradually to a peak reading and slowly fall well after the speech is over. L_{eq} measurements are made over a specified time period and reported as $L_{eq,t}$, where t is the time period. For example, a measurement taken over 24 hours is reported as L_{eq24}.

L_{eq} readings can be misapplied in situations where the background ambient noises vary greatly during a 24-hour period. L_{eq} measurements should be taken over the period of occupancy. This is clarified by the definition of average ambient sound level *(see 3.3.30)*. Note that average in this context is the integrated average at a particular measurement location, not the average of several readings taken at different locations. For example, it would be incorrect to take a reading in a quiet bathroom and average it with a reading taken near a noisy machine to get an average to use for the alarm signal design. The alarm would probably be excessively loud in the quiet bathroom and not loud enough near the noisy machine.

In areas where the background noise is generated by machinery and is fairly constant, a frequency analysis can be warranted. It might be found that the high sound levels are predominantly in one or two frequency bandwidths — often lower frequencies. Notification appliances producing sound in one or two other frequency bandwidths can adequately penetrate the background noise and provide notification. The system would still be designed to produce or have a sound level at the particular frequency or frequency bandwidth of at least 15 dB above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater.

In very high noise areas, such as theaters, dance halls, nightclubs, and machine shops, sound levels during occupied times can be 100 dBA and higher. Peak sounds might be 110 dBA or greater. At other occupied times, the sound level might be below 50 dBA. A system designed to have a sound level of at least 15 dB above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds might result in a required sound pressure level in excess of the maximum of ~~115~~ 110 dBA. A viable option is to reduce or eliminate the background noise. Professional theaters or other entertainment venues can have road show connection control units *(see Section 520.50 of NFPA 70)* to which troupes can connect their light and sound systems. These power sources can be controlled by the system. In less formal applications, such as many nightclubs, designated power circuits could be controlled. Diligence needs to be exercised to ensure that the controlled circuits are used.

Also, in occupancies such as machine shops or other production facilities, care must be exercised in the design to ensure that the removal of power to the noise source does not create some other hazard. As with other emergency control functions, control circuits and relays would be monitored for integrity in accordance with Chapter 10, Chapter 12, and Chapter 23.

Appropriate audible signaling in high ambient noise areas is often difficult. Areas such as automotive assembly areas, machining areas, paint spray areas, and so on, where the ambient noise is caused by the manufacturing process itself, require special consideration. Adding additional audible notification appliances that merely contribute to the already noisy environment might not be appropriate. Other alerting techniques such as visual notification appliances, for example, could be more effectively used.

Other codes, standards, laws, or regulations, and the authority having jurisdiction determine where a signal must be audible. This Code section describes the performance requirement needed for a signal to be considered reliably audible.

Statement of Problem and Substantiation for Public Input

This may not be an error but even so it would be advisable if the committee responsible would take another look at this annex note and ensure that it is still accurate or consider if it could be edited for better clarity. This language goes back at least as far as the 2002 edition, when the maximum alarm level was set at 120dB, which, at that time, would make the reference to a maximum level of 115dB in this annex note acceptable (within the 120dB allowance). However, as of the 2007 edition, the maximum alarm level was reduced to 110dB, which would make the phrase "in excess of the maximum of 115dB" appear to be inaccurate. (since 115dB is outside the 110dB allowance and is not an acceptable maximum). However, this note as written appears to imply that in a high noise area, a maximum alarm level of 115dB would be acceptable. The example of a peak ambient sound level of 110dB is used in this annex note, so it is assumed that the reference to 115dB was used as an example of an alarm level measurement that reflects the option of 5dB above the maximum sound level (in this case, 110dB). If this understanding is correct, then this note likely will need editing as the reference to "the maximum of 115dB" appears to conflict with the current maximum alarm level of 110dB.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 07 11:54:58 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5044-NFPA 72-2019
Statement: The Technical Committee revises the text as the reference to "the maximum of 115 dB" conflicts with the current maximum alarm level of 110 dB.

Public Input No. 209-NFPA 72-2019 [Section No. A.18.4.8.2]

A.18.4.8.2

ITD: A difference in arrival times of waveform features (such as peaks and positive-going zero crossings) at the two ears is known as the interaural time difference, or ITD. The binaural physiology is capable of using phase information from ITD cues only at low frequencies below about 1500 Hz. However, the binaural system can successfully register an ITD that occurs at a high frequency such as 4000 Hz if the signal is modulated. The modulation, in turn, must have a rate that is less than about 1000 Hz.

ILD: Comparison between intensities in the left and right ears is known as the interaural level difference, or ILD. ILD cues exist physically only for frequencies above about 500 Hz. They become large and reliable for frequencies above 3000 Hz, making ILD cues most effective at high frequencies.

ATF: The anatomical transfer function (ATF), also known as the head-related transfer function (HRTF), is used by listeners to resolve front–back confusion and to determine elevation. Waves that come from behind tend to be boosted in the 1000 Hz frequency region, whereas waves that come from the forward direction are boosted near 3000 Hz. The most dramatic effects occur above 4000 Hz.

These localization cues can be implemented simultaneously when the source signal is a broadband sound containing a range of low to high frequencies. For example, octave bands of 1 kHz (707–1414 Hz) for ITD, 4 kHz (2828–5856 Hz) for ILD, and 8 kHz (5657–11,314 Hz) for ATF would fall within the effective frequency ranges required in 18.4.7.

Additional information on sound localization and auditory localization cues is contained in the following article: ~~http://www.aip.org/pt/nov99/locsound.html, I.1.2.16.1~~ . "How We Localize Sound," *Physics Today* , Volume 52, Issue 11, Page 24 (November 1999), www.physicstoday.scitation.org/doi/10.1063/1.882727

The ability to pinpoint the location of a sound source is based on the physics of sound and the physiology of the human hearing mechanism. The brain processes a large amount of neural signals, some of which provide cues to the sound source's location. People are able to hear sound ranging from about 20 Hz to 20,000 Hz. Unfortunately, pure tones in this frequency range provide only limited localization information. The primary localization cues are provided by interaural time differences (ITDs) (lower frequencies), interaural intensity differences (IIDs) (mid to higher frequencies), and the head-related transfer function (HRTF) (higher frequencies). In enclosed spaces that can be somewhat reverberant, the precedence effect (PE) also provides directional information.

The interaural time difference (ITD) and interaural intensity difference (IID) are termed binaural cues because they depend on both ears separated by the width of the head. At lower frequencies (longer wavelength), the time delay between arriving sound signals is detectable. ITD is most evident in frequencies below about 500 Hz with clicks or short bursts of sound. At higher frequencies (shorter wavelength), the loudness/intensity differences between the ears is more noticeable because of partial shielding of the more distant ear by the head. IID is most evident for frequencies above 3000 Hz.

The head-related transfer function (HRTF) relies on the effect of the external ear on perceived sound. The HRTF describes the transforming effect of the head, torso, and external ear on sound as it travels from the sound source to the ear canals. The HRTF changes depending on sound source location, providing an additional localization cue. HRTF operates over a range of frequencies but seems to be most effective in the 5000 Hz to 10,000 Hz range. Combined with the listener's head motion, HRTF provides an independent localization method to complement ITD and IID capabilities.

The precedence effect (PE) is important for discriminating between the direct sound signal and reflected sound, a common situation within buildings. The ear is capable of discerning and fixating on the first sound received (line-of-sight direct signal) and disregarding later signals (reflected sound). The acoustical signal arriving first at the ears suppresses the ability to hear other signals (including reverberation) that arrive up to about 40 milliseconds after the initial signal.

All of the preceding cues are utilized simultaneously when the source signal is broadband sound containing a range of low and high frequencies, and when the sound arrives in bursts rather than as steady state sound. The combination of different cues provides reinforcement and redundancy of information to enhance the ability to locate the sound source. Broadband sound tends to eliminate potential ambiguities that occur for pure tone or narrowband sound sources.

Other types of sound patterns can be used as directional sounders that can be used for audible exit marking. Some scientific research has been performed to develop a directional sounder that utilizes a tonal sound different from the example above. As with the directional sound example presented above, the development of this alternative signal is similarly rooted in the vast research data that exists for sound localization and directional auditory cues.

An example of an alternative directional sound signal can be a sequence of two harmonic two-tone complexes. This sequence starts with a complex of low fundamental frequencies of 262 and 330 Hz having duration of 200 ms. This sound is then followed by a 200-ms silence. Next the sequence continues with a second sound that is a complex of low fundamental frequencies of 330 and 392 Hz having a duration of 200 ms. After another 200-ms silence, this whole pattern is repeated.

Localizability was ensured by the dense harmonic structure of the signal, with closely spaced harmonics up

to 20 kHz. In addition sharp signal onsets were included to aid the detection of interaural time differences, thus increasing localizability.

Statement of Problem and Substantiation for Public Input

The existing web link no longer points or directs you to the original article. The article details have been added as well as an updated link that will direct you the abstract of the article. However, the article is no longer available to view for free, if you want to read the article you must pay for a subscription. Even though the article does still exist, this may not be best practice to direct users of the standard to a resource that they must pay for. The committee could consider if the reference is necessary or critical to this section (could delete the entire paragraph) or update to a more recent published article or reference.

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorad
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 12:36:24 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5048-NFPA 72-2019
Statement: The existing web link no longer points or directs the user to the original article. The article details have been added.

Public Input No. 222-NFPA 72-2019 [Section No. A.18.5.4]

A.18.5.4

The prescriptive requirements of Section 18.5 assume the use of appliances having very specific characteristics of light color, intensity, distribution, and so on. The appliance and application requirements are based on extensive research. However, the research was limited to typical residential and commercial applications such as school classrooms, offices, hallways, and hotel rooms. While these specific appliances and applications will likely work in other spaces, their use might not be the most effective solution and might not be as reliable as other visual notification methods.

For example, in large warehouse spaces and large distribution spaces such as super stores, it is possible to provide visual signaling using the appliances and applications of this chapter. However, mounting visual notification appliances at a height of 80 in. to 96 in. (2.03 m to 2.44 m) along aisles with rack storage subjects the visual notification appliances to frequent mechanical damage by forklift trucks and stock. Also, the number of appliances required would be very high. It might be possible to use other appliances and applications not specifically addressed by this chapter at this time. Alternative applications must be carefully engineered for reliability and function and would require permission of the authority having jurisdiction.

Tests of a system in large warehouse/super stores designed using the prescriptive approach of 18.5.5.5 showed that high ambient light levels resulted in both indirect and direct signaling effects. The signal-to-noise ratio produced by the operating visual notification appliances was low in many locations. However, with visual notification appliances located over the aisles or unobstructed by stock, indirect and some direct notification was sometimes achieved. Direct notification occurs even when occupants do not look up toward the ceiling-mounted visual notification appliances due to the extended cone of vision shown in Figure A.18.5.4(a). The visual notification appliance intensity and spacing resulting from the prescriptive design was generally sufficient for occupant notification by a combination of direct and indirect signaling. Testing showed that the best performance was achieved where visual notification appliances were directly over aisles or where visual notification appliances in adjacent aisles were not obstructed by stock. The performance-based design method will almost always result in aisles not having a line of visual notification appliances in them, because the spacing of visual notification appliances can be greater than the spacing of aisles. Also, it is recognized that aisles might be relocated after installation of the system. Good design practice is to place visual notification appliances over aisles, especially those that are likely to remain unchanged such as main aisles, and over checkout areas. Where reorganization of aisles results in visual notification appliances not in or over an aisle, or where that is the base design, it is important to have a clear view from that aisle to a nearby visual notification appliance. See Figure A.18.5.4(b). Some spaces might have marginal visual notification appliance effect (direct or indirect). However, occupants in these large stores and storage occupancies move frequently and place themselves in a position where they receive notification via the visual notification appliances. In addition, complete synchronization of the visual notification appliances in the space produced a desirable effect.

Visual notification using the methods contained in 18.5.5.5 is achieved by indirect signaling. This means the viewer need not actually see the appliance, just the effect of the appliance. This can be achieved by producing minimum illumination on surfaces near the appliance, such as the floor, walls, and desks. There must be a sufficient change in illumination to be noticeable. The tables and charts in Section 18.5 specify a certain candela-effective light intensity for certain size spaces. The data were based on extensive research and testing. Appliances do not typically produce the same light intensity when measured off-axis. To ensure that the appliance produces the desired illumination (effect), it must have some distribution of light intensity to the areas surrounding the appliance. ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired*, specifies the distribution of light shown to provide effective notification by indirect visual signaling.

Figure A.18.5.4(a) Extended Cone of Vision. ***(Courtesy of R. P. Schifiliti Associates, Inc.)***

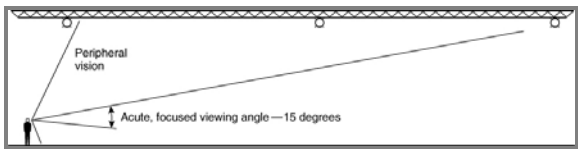
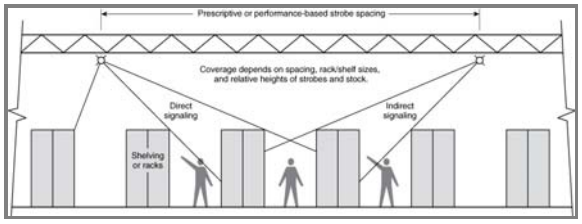


Figure A.18.5.4(b) Visual Notification Appliances in Stores. ***(Courtesy of R. P. Schifiliti Associates, Inc.)***



Additional Proposed Changes

File Name	Description	Approved
visible_signaling_in_racks_rev_1.png	Revised FIGURE A.18.5.4(b) Visual Notification Appliances in Stores. (Courtesy of R. P. Schifiliti Associates, Inc.)	

Statement of Problem and Substantiation for Public Input

Replace existing FIGURE A.18.5.4(b) Visual Notification Appliances in Stores. (Courtesy of R. P. Schifiliti Associates, Inc. with new figure. Changed "strobe" to visual appliance in two locations.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 12:30:46 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5021-NFPA 72-2019
Statement: This revision changes "strobe" to "visual notification appliance" in two locations in the figure to be consistent with terminology.

All visual signal requirements have been moved into UL 1638. UL 1638 contains both public and private mode signaling requirements for visual signals. The Listing category for public mode visual signals still remains as UUKC, Signaling Appliances for the Hearing Impaired.

Public Input No. 429-NFPA 72-2019 [Section No. A.18.5.4]

A.18.5.4

The prescriptive requirements of Section 18.5 assume the use of appliances having very specific characteristics of light color, intensity, distribution, and so on. The appliance and application requirements are based on extensive research. However, the research was limited to typical residential and commercial applications such as school classrooms, offices, hallways, and hotel rooms. While these specific appliances and applications will likely work in other spaces, their use might not be the most effective solution and might not be as reliable as other visual notification methods.

For example, in large warehouse spaces and large distribution spaces such as super stores, it is possible to provide visual signaling using the appliances and applications of this chapter. However, mounting visual notification appliances at a height of 80 in. to 96 in. (2.03 m to 2.44 m) along aisles with rack storage subjects the visual notification appliances to frequent mechanical damage by forklift trucks and stock. Also, the number of appliances required would be very high. It might be possible to use other appliances and applications not specifically addressed by this chapter at this time. Alternative applications must be carefully engineered for reliability and function and would require permission of the authority having jurisdiction.

Tests of a system in large warehouse/super stores designed using the prescriptive approach of 18.5.5.5 showed that high ambient light levels resulted in both indirect and direct signaling effects. The signal-to-noise ratio produced by the operating visual notification appliances was low in many locations. However, with visual notification appliances located over the aisles or unobstructed by stock, indirect and some direct notification was sometimes achieved. Direct notification occurs even when occupants do not look up toward the ceiling-mounted visual notification appliances due to the extended cone of vision shown in Figure A.18.5.4(a). The visual notification appliance intensity and spacing resulting from the prescriptive design was generally sufficient for occupant notification by a combination of direct and indirect signaling. Testing showed that the best performance was achieved where visual notification appliances were directly over aisles or where visual notification appliances in adjacent aisles were not obstructed by stock. The performance-based design method will almost always result in aisles not having a line of visual notification appliances in them, because the spacing of visual notification appliances can be greater than the spacing of aisles. Also, it is recognized that aisles might be relocated after installation of the system. Good design practice is to place visual notification appliances over aisles, especially those that are likely to remain unchanged such as main aisles, and over checkout areas. Where reorganization of aisles results in visual notification appliances not in or over an aisle, or where that is the base design, it is important to have a clear view from that aisle to a nearby visual notification appliance. See Figure A.18.5.4(b). Some spaces might have marginal visual notification appliance effect (direct or indirect). However, occupants in these large stores and storage occupancies move frequently and place themselves in a position where they receive notification via the visual notification appliances. In addition, complete synchronization of the visual notification appliances in the space produced a desirable effect.

Visual notification using the methods contained in 18.5.5.5 is achieved by indirect signaling. This means the viewer need not actually see the appliance, just the effect of the appliance. This can be achieved by producing minimum illumination on surfaces near the appliance, such as the floor, walls, and desks. There must be a sufficient change in illumination to be noticeable. The tables and charts in Section 18.5 specify a certain candela-effective light intensity for certain size spaces. The data were based on extensive research and testing. Appliances do not typically produce the same light intensity when measured off-axis. To ensure that the appliance produces the desired illumination (effect), it must have some distribution of light intensity to the areas surrounding the appliance. ANSI/~~UL 1971, Standard for~~ UL 1638 Visual Signaling Devices for ~~the Hearing Impaired,~~ Fire Alarm and Signaling Systems, Including Accessories, specifies the distribution of light shown to provide effective notification by indirect visual signaling.

Figure A.18.5.4(a) Extended Cone of Vision. ***(Courtesy of R. P. Schifiliti Associates, Inc.)***

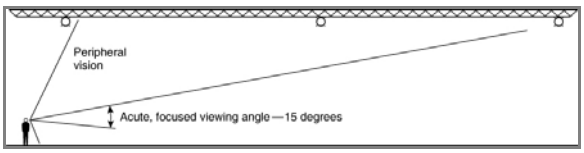
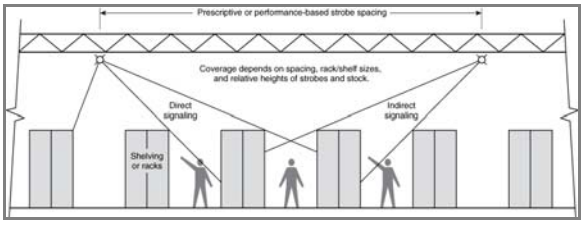


Figure A.18.5.4(b) Visual Notification Appliances in Stores. ***(Courtesy of R. P. Schifiliti Associates, Inc.)***



Statement of Problem and Substantiation for Public Input

The polar distribution requirements for public mode visual signals has been moved to UL 1638.

Submitter Information Verification

Submitter Full Name: Daniel Grosch
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 09:52:37 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5021-NFPA 72-2019

Statement: This revision changes "strobe" to "visual notification appliance" in two locations in the figure to be consistent with terminology.

All visual signal requirements have been moved into UL 1638. UL 1638 contains both public and private mode signaling requirements for visual signals. The Listing category for public mode visual signals still remains as UUKC, Signaling Appliances for the Hearing Impaired.

Public Input No. 223-NFPA 72-2019 [Section No. A.18.5.5.5]

A.18.5.5.5

The visual notification appliance intensities listed in Table 18.5.5.5.1(a) or Table 18.5.5.5.1(b), 18.5.5.6, or Table 18.5.5.8.3 or determined in accordance with the performance requirements of 18.5.5.7 are the minimum required intensities. It is acceptable to use a higher intensity visual notification appliance in lieu of the minimum required intensity.

Areas large enough to exceed the rectangular dimensions given in Figure A.18.5.5.5(a) through Figure A.18.5.5.5(c) require additional appliances. Often, proper placement of appliances can be facilitated by breaking down the area into multiple squares and dimensions that fit most appropriately *[see Figure A.18.5.5.5(a) through Figure A.18.5.5.5(d)]*. An area that is 40 ft (12.2 m) wide and 80 ft (24.4 m) long can be covered with two 60 cd appliances. Irregular areas and areas with dividers or partitions need more careful planning to make certain that at least one 15 cd appliance is installed for each 20 ft × 20 ft (6.1 m × 6.1 m) area and that light from the appliance is not blocked.

Figure A.18.5.5.5(a) Irregular Area Spacing.

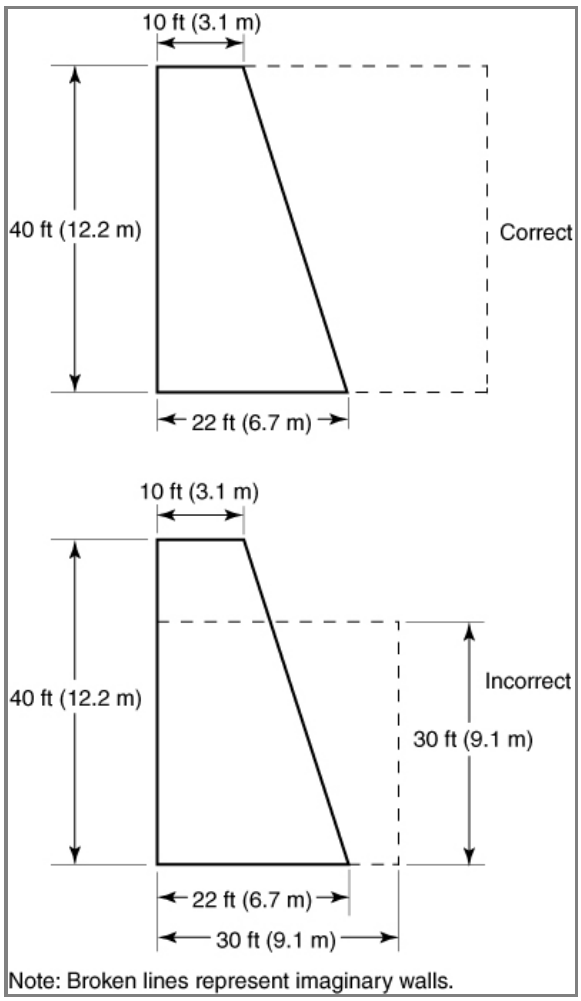


Figure A.18.5.5.5(b) Spacing of Wall-Mounted Visual Notification Appliances in Rooms.

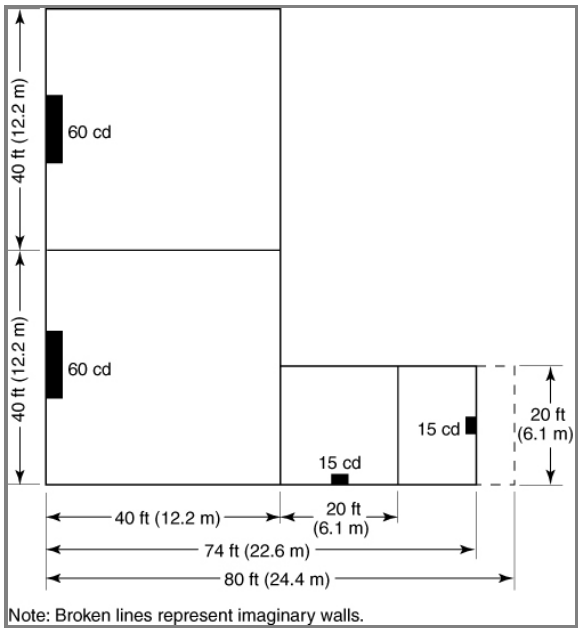


Figure A.18.5.5.5(c) Room Spacing Allocation — Correct.

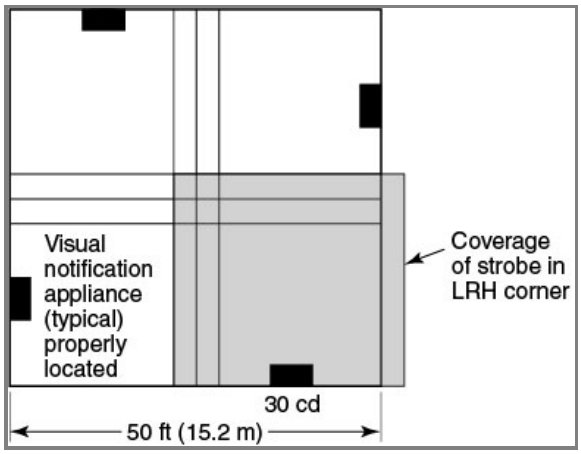
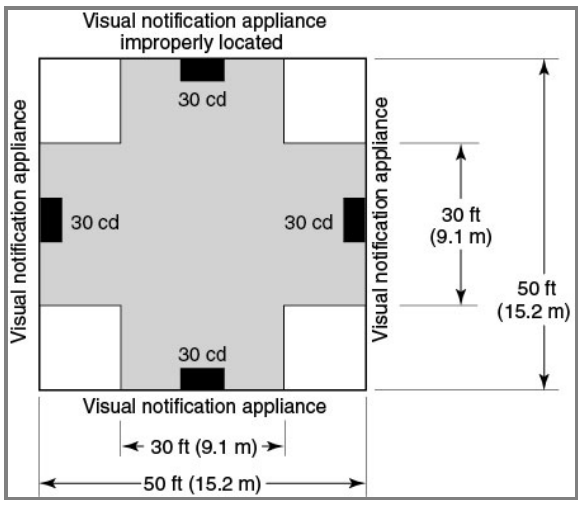


Figure A.18.5.5.5(d) Room Spacing Allocation — Incorrect.



Statement of Problem and Substantiation for Public Input

Change text labels in FIGURE A.18.5.5.5(c) Room Spacing Allocation — Correct. by deleting "strobe" and adding "visual appliance" on the right side of the figure.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 12:35:06 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5051-NFPA 72-2019
Statement: This revision changes "strobe" to "visual notification appliance" in Figure A.18.5.5.5(c) to be consistent with terminology.

Public Input No. 142-NFPA 72-2019 [New Section after A.18.5.5.8.3]

TITLE OF NEW CONTENT

A.18.5.5.8.4 For sleeping areas, the use of visual notification appliances with other intensities at distances greater than 16 ft (4.9 m) has not been researched and is not addressed in this Code.

Statement of Problem and Substantiation for Public Input

Text moved from existing A.18.5.5.8.3 to this new annex section as it belongs to this paragraph (18.5.5.8.4) not 18.5.5.8.3.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 141-NFPA 72-2019 [Section No. A.18.5.5.8.3]	
Public Input No. 141-NFPA 72-2019 [Section No. A.18.5.5.8.3]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 29 14:28:51 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5054-NFPA 72-2019

Statement: The first paragraph is text moved from existing A.18.5.5.8.3 to this new annex section as it belongs to this paragraph (18.5.5.8.4) not 18.5.5.8.3.

Additional annex material is added for visual signals to parallel annex material for 18.4.6.3 which discusses the need to provide low frequency audible signals in areas where sleeping might reasonably occur. An example is given for the living room area of an apartment. If logic assumes that a person would benefit from a low frequency audible signal because they might be sleeping in a room other than a traditional bedroom, it makes sense to provide the same visual signalling requirements for any room with, or without, a pillow in an accessible dwelling unit or guest room where sleeping may reasonably occur.

The Technical Committee acknowledges that there is a need to provide clarification for the requirements of the provision of low frequency sounders and visual notification appliances for areas where sleeping may occur, such as but not limited to, bedrooms, living rooms, or other occupiable locations. A Task Group is being formed to address this at Second Draft.

Public Input No. 414-NFPA 72-2019 [New Section after A.18.5.5.8.3]

TITLE OF NEW CONTENT

A.18.5.5.8.4 Visual notification is intended to be provided in sleeping areas at a distance not to exceed 16 feet from the expected location of a pillow on a bed located within the room. The intent of the visual appliance is to wake a hearing impaired indivual who is sleeping. Individuals with hearing impairments might also sleep in other areas including the living room, family room, and den of a dwelling unit and living areas of guest rooms within a hotel or motel. Visual notification complying with 18.5.5.8.3 would be a benefit to an individual with a hearing impairment in any areas that might reasonably be used for sleeping.

Statement of Problem and Substantiation for Public Input

Annex material for 18.4.6.3 discusses the need to provide low frequency audible signals in areas where sleeping might reasonably occur. An example is given for the living room area of an apartment. If logic assumes that a person would benefit from a low frequency audible signal because they might be sleeping in a room other than a traditional bedroom, wouldn't it make sense to provide the same visual signalling requirements for any room with, or without, a pillow in an accessible dwelling unit or guest room where sleeping may reasonably occur.

Submitter Information Verification

Submitter Full Name: Warren Olsen
Organization: Fire Safety Consultants, Inc.
Affiliation: Illinois Fire Inspectors Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 19:51:33 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5054-NFPA 72-2019

Statement: The first paragraph is text moved from existing A.18.5.5.8.3 to this new annex section as it belongs to this paragraph (18.5.5.8.4) not 18.5.5.8.3.

Additional annex material is added for visual signals to parallel annex material for 18.4.6.3 which discusses the need to provide low frequency audible signals in areas where sleeping might reasonably occur. An example is given for the living room area of an apartment. If logic assumes that a person would benefit from a low frequency audible signal because they might be sleeping in a room other than a traditional bedroom, it makes sense to provide the same visual signalling requirements for any room with, or without, a pillow in an accessible dwelling unit or guest room where sleeping may reasonably occur.

The Technical Committee acknowledges that there is a need to provide clarification for the requirements of the provision of low frequency sounders and visual notification appliances for areas where sleeping may occur, such as but not limited to, bedrooms, living rooms, or other occupiable locations. A Task Group is being formed to address this at Second Draft.

Public Input No. 141-NFPA 72-2019 [Section No. A.18.5.5.8.3]

A.18.5.5.8.3

~~For sleeping areas, the use of visual notification appliances with other intensities at distances greater than 16 ft (4.9 m) has not been researched and is not addressed in this Code.~~

~~This section on visual notification appliances for alerting sleeping persons intends that stand-alone visual notification appliances be located in accordance with 18.5.5 . If the visual notification appliance is an integral part of a smoke detector or smoke alarm, the unit must be mounted in accordance with the requirements for the smoke detector or smoke alarm. In either case (stand-alone or combination), Table 18.5.5.8.3 is then consulted to determine the minimum required intensity. Where the appliance is mounted less than 24 in. (610 mm) from the ceiling, it must have a minimum 177 cd effective rating because it might be in a smoke layer at the time it is called upon to operate. If the appliance is 24 in. (610 mm) or more from the ceiling, it is permitted to be rated 110 cd effective or more.~~

The required intensity of a visual notification appliance used to alert sleeping persons is dependent on how close it is to the ceiling. A light that is within 24 in of the ceiling might be partially obscured by smoke at the time is called upon to operate. Therefore, the code requires it to have a higher candela effective rating. The most common way to use the table is to decide first where the light will be located. Then, determine how far that is from the ceiling. If the distance is greater than or equal to 24 in, the light is permitted to have an output of 110 cd eff. If the distance from the strobe to the ceiling is greater than 24 in., the strobe must have a rated output of at least 177 cd eff.

For example, if a light is to be wall mounted, the lens is required by 18.5.5.1 to be mounted not less than 80 in. (2.03 m) and not greater than 96 in. (2.44 m) above the finished floor. If it intended to be installed at 90 in. and the ceiling height is 10 ft., the distance to the ceiling would be 30 in. Table 18.5.5.7.3, then indicates that the light must have a 110 cd eff (or greater) rated light output.

A second example might be a light that is part of a smoke detector base. Smoke detectors are required by Chapter 17 of this code to be located either on the ceiling or on a wall, no more than 12 in. down from the ceiling to the top of the detector. Therefore, a light on a smoke detector base will be less than 24 in from the ceiling. Table 18.5.5.7.3, then indicates that the light must have a 177 cd eff (or greater) rated light output.

Note that the requirement for increasing the intensity when mounted close to the ceiling applies only to visual notification appliances used in sleeping areas to awaken sleeping people. It is assumed that in nonsleeping situations, a visual notification appliance is not needed to alert someone if there is a developing smoke layer.

Statement of Problem and Substantiation for Public Input

Deletes 1st paragraph that belongs to 18.5.5.8.4 not 18.5.5.3. A separate PI has been made to relocate the 1st paragraph. The remaining text is changed to provide clear instructions and examples.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 142-NFPA 72-2019 [New Section after A.18.5.5.8.3]	
Public Input No. 142-NFPA 72-2019 [New Section after A.18.5.5.8.3]	

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:
City:
State:
Zip:
Submittal Date: Mon Apr 29 14:20:53 EDT 2019

Committee: SIG-NAS

Committee Statement

Resolution: FR-5052-NFPA 72-2019

Statement: The first paragraph belongs with 18.5.5.8.4 not 18.5.5.8.3 (see FR 5054). The remaining text is changed to provide clear instructions and examples.

Public Input No. 246-NFPA 72-2019 [Section No. A.18.11]

~~A.18.11~~ —

~~*Standard Emergency Service Interface.* Annunciators, information display systems, and controls for portions of a system provided for use by emergency service personnel should be designed, arranged, and located in accordance with the needs of the organizations intended to use the equipment.~~

~~Where annunciators, information display systems, and controls for portions of the system are provided for use by emergency service personnel, these should have a common design and operation to avoid confusion of users.~~

Additional Proposed Changes

File Name	Description	Approved
A2018_Floor_Actions_Tech_Session.pdf	2018 tech session CAM 72-4	

Statement of Problem and Substantiation for Public Input

This annex should be removed since it provides explanation for something that is not required by any code. It was overwhelmingly supported by a 357-70 majority during the 2018 tech-session to remove this annex and its associated section from NFPA 72.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 245-NFPA 72-2019 [Section No. 18.11]	annex for same section
Public Input No. 245-NFPA 72-2019 [Section No. 18.11]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 05 04:56:33 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: CI-5035-NFPA 72-2019

Statement: Note to the Correlating Committee: The SIG-NAS Technical Committee believes this requirement and its associated annex material has value and should remain in NFPA 72. Because it includes more than just notification appliances such as annunciators, it should be under the jurisdiction of the Fundamentals committee.

Public Input No. 256-NFPA 72-2019 [Section No. A.21.5]

A.21.5

~~The continuous monitoring of smoke and temperature is to allow the responding fire fighters to know when the tenability conditions at the floor elevator lobbies are changing. This can be accomplished at a minimum by monitoring elevator lobbies, machine rooms, control rooms, machinery spaces, or control spaces smoke detector(s) for the presence of smoke and a minimum of three ranges of temperature in the elevator lobbies, machine rooms, machinery spaces, or control rooms that provide full bodily access for fire fighters, as follows:~~

(1) ~~Normal ≤90°F (32°C)~~

(2) ~~Monitoring (supervisory) between 90°F (32°C) and 135°F (57°C)~~

(3) ~~Unsafe (alarm) above 135°F (57°C)~~

~~Indications at the fire alarm control unit would typically be as follows:~~

~~For smoke:~~

(1) ~~No indication for normal~~

(2) ~~Red/alarm messaging or unsafe~~

~~For heat:~~

(1) ~~Green (no indication on fire alarm control unit) for a normal range~~

(2) ~~Amber/yellow/supervisory messaging for monitor range~~

(3) ~~Red/alarm messaging for unsafe~~

~~Note 1: Temperature monitoring should not be required in areas or locations not accessible to fire fighters, such as elevator control spaces and elevator machinery spaces located inside the elevator hoistway.~~

~~Note 2: If fire service access elevators or occupant evacuation elevators are provided in buildings not provided with a fire command center, such as low-rise buildings, the required annunciator(s) should be installed in another approved location as determined by the authority having jurisdiction.~~

~~In most cases, a separate annunciator would be recommended to provide an overall status of the elevator lobbies, machine rooms, or control rooms that provide full bodily access for fire fighters in the building.~~

~~The lowest temperature defined in Table 17.6.2.1 , Temperature Classification and Color Code for Heat-Sensing Fire Detectors, is 100°F (38°C), so a thermostat or other approved heat sensor(s) should be used to monitor temperatures less than 100°F (38°C).~~

Statement of Problem and Substantiation for Public Input

The Annex talks about full body access areas being monitored. The requirement for smoke detection in elevator lobbies and elevator equipment spaces as required by NFPA 72 and the building codes coupled with the requirement for activation of the fire fighters warning signal in the cars provides the required warning of hazardous conditions. These requirements are excessive. If the elevators are being used during a fire, it is known there are hazardous conditions in the building. Detection of smoke in the elevator lobbies, shafts or elevator machine rooms provides the warning that the elevators won't continue to be safe for use. Temperature sensing is redundant.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 255-NFPA 72-2019 [Section No. 21.5]	Code section referencing Annex A

Submitter Information Verification

Submitter Full Name: Raymond Grill
Organization: Arup
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 11:07:18 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: SIG-PRO had a Task Group on this section (21.5) during the last code cycle, and the TG agreed to monitor the temperature in the lobbies. The concern was that potential high temperatures in FSAE lobbies and other FSAE associated spaces could occur even without direct smoke, such as due to radiant heat, etc. If the fire is outside the lobby and the elevator lobby doors are closed, the firefighters need to know the temperature in the affected lobbies and FSAE spaces before they make the decision to take the elevator to a specific lobby or location.

Public Input No. 614-NFPA 72-2019 [Section No. A.21.6.2.6]

A.21.6.2.6

Prerecorded automatic voice messages provided by the in-building fire emergency voice/alarm communications system need to be coordinated with the variable message signs provided separately by the elevator system to all affected elevator lobbies and floors served by the elevator(s) operating in Occupant Evacuation Operation (OEO) so that occupants will understand what to expect and how to react. Additional visual information will be provided in each affected elevator lobby by the elevator system to further inform occupants of the status of the elevators. Refer also to 24.3.6 and associated Annex A material (Messages for One-Way Emergency Communications Systems) for additional information. It is important to note that all elevator lobbies served by elevator(s) operating in OEO, both within the elevator evacuation zone and on other floors outside that zone, will be considered as affected lobbies, and they will be provided with variable messages controlled by the elevator system. The fire alarm system ~~will not provide~~ will provide automatic voice messages in the affected elevator lobbies ~~, but rather~~ and it will provide automatic messages to all evacuation floors ~~having those affected lobbies~~ via audible/visual appliances located outside those lobbies. The messages provided by the fire alarm system and the elevator system on the affected floors and lobbies must be coordinated so as not to conflict with each other. It is especially important to address additional automatic or manual alarm actuation(s) and the impact on expanding the elevator evacuation zone and the corresponding voice messaging that has to adjust to the change, therefore audible messages to the elevator lobby are essential . Table A.21.6.2.6 gives sample voice message content to be added to normal messaging (to be coordinated with the variable message display provided by the elevator contractor). Voice messaging is permitted to all other floor(s) in the building not in the elevator evacuation zone and not served by elevator(s) performing OEO in accordance with the facility emergency response plan approved by the authority having jurisdiction. For further information on voice messaging strategies refer to NIST Technical Note 1779, *General Guidance on Emergency Communication Strategies for Buildings* and *FPRF Elevator Messaging Strategies*.

Table A.21.6.2.6 Sample Voice Message Content

Condition	Sample Voice Message
Specific block of floors being evacuated	“Elevators and stairs are available for evacuation.”
~~Floors~~ Lobbies of floors not in the elevator evacuation zone within an elevator group performing OEO	“Elevators are not available; they are temporarily dedicated to other floors.”
-	-
On the discharge level	“Elevators are dedicated to evacuation. Do not enter elevator.”
If some elevators have been recalled but other elevator(s) are still available	“Elevators and stairs are available for evacuation.”
If all elevators serving a floor or elevator evacuation zone are recalled (if only one elevator lobby)	“Elevators are out of service. Use stairs to evacuate.”

Statement of Problem and Substantiation for Public Input

Very few OEE systems have been installed. In witnessing an actual operation of the non evacuation floors where the entire floor gets the "elevators are out of service" message with strobe lights, the occupants get confused. If in an ordinary building we do not give messages to the non-evacuation floors, why is this different. The only people who need to know are the people in the lobbies trying to use the elevators. On the evacuation floors it is essential that the message be broadcast to the lobbies in case the message changes. For example, if the alarm floor is the floor below and someone is waiting in the lobby to evacuate using the elevator and the smoke on the floor below reaches the elevator lobby and puts the elevator in recall, the people in the other lobbies need to know the evacuation sequence has changes and the elevators are no longer available. Conflict with the two way communication system is less important than getting the proper message to the lobbies. Again, in a typical high-rise, the message is broadcast in the lobby.

Submitter Information Verification

Submitter Full Name: David Burkhart
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 15:58:09 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: OEO operation is different from standard FA systems in buildings without OEE+ OEO. The main difference is that elevators might not be available for occupants that are not required to evacuate, since the elevators serve the Elevator Evacuation Zone. Therefore, the occupants that do not have available elevators should be aware of this specific OEO condition.

Public Input No. 559-NFPA 72-2019 [Section No. A.23.3.3.1]

A.23.3.3.1

The following functions are included in Annex A to provide guidelines for utilizing building systems and equipment in addition to proprietary fire alarm equipment in order to provide life safety and property protection. Building functions that should be monitored, initiated, or controlled during a fire alarm condition include, but should not be limited to, the following:

(1) Elevator operation consistent with ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*

(2) Unlocking of stairwell and exit doors *(see NFPA 80 and NFPA 101)*

(3) Release of fire and smoke dampers *(see NFPA 90A and NFPA 90B)*

(4) Monitoring and initiating of ~~self-contained automatic~~ fire extinguishing system(s) or suppression system(s) and equipment *(~~see~~ including, but not limited to NFPA 10, NFPA 11, NFPA 11A, NFPA 12, NFPA 12A, NFPA 13, NFPA 13R, NFPA 14, NFPA 15, NFPA 16, NFPA 17, NFPA 17A, ~~and NFPA 750~~ NFPA 18, NFPA 750, NFPA 770, NFPA 2001, and NFPA 2010)*

Statement of Problem and Substantiation for Public Input

NFPA 72 SIG PRO task group on Carbon Monoxide proposed these revisions to expand the list of standards referenced by this annex section. Additionally, the introductory annex language was modified to include monitoring since this was included in bullet four. "Self-contained automatic" was removed so as not to be overly specific in the list of related standards.

Submitter Information Verification

Submitter Full Name: Brandon Wilkerson
Organization: Poole Fire Protection
Affiliation: NFPA 72 SIG PRO Carbon Monoxide Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:15:49 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5053-NFPA 72-2019
Statement: It is unnecessary to list all relevant standards. The intent is for the user to reference the applicable standard.

Public Input No. 258-NFPA 72-2019 [Section No. A.23.6.1]

A.23.6.1

The intent of 23.6.1 applies to both short-circuit faults and open-circuit faults.

Fire alarm and signaling system communications technologies have evolved to the point that SLCs are now the prevalent means of monitoring initiation devices, controlling output devices, and communicating between panels, annunciators, and controllers.

The extent of coverage of traditional IDCs is inherently limited based on the quantity of powered initiation devices or code limitations. Similarly, the extent and coverage of NACs also are limited by the power required to operate the devices. SLCs, unlike IDCs and NACs, have few limitations, and it is now common that a single SLC can monitor and control more than 250 devices. In addition, a single SLC can be the only pathway by which alarms are initiated, emergency control functions are controlled, and audible and visual notification appliances are actuated.

A total catastrophic failure of a fire alarm and life safety system due to a single open or short on an SLC can negate most, if not all, of this Code's requirements for specifying an acceptable minimum level of performance and reliability for the protection of life and property from fire.

Designers should carefully consider the potential that a single SLC short or open caused by a fire or inadvertent damage to the SLC could disable an entire SLC prior to the activation of an alarm condition along with the subsequent alarm signaling and emergency control functions.

With traditional IDCs and NACs, a single open, ground, or short fault on one circuit could not affect the performance of other IDCs, NACs, and emergency control circuits. As such, the occurrence of a single short or open could limit the extent of the failure to a particular zone or area.

One method for providing an acceptable level of performance and reliability of SLCs is to limit the potential catastrophic failure to one zone, in a way similar to how traditional IDCs and NACs have been and are now required to do.

A single zone could be designated in the following ways:

(1) By floor where an SLC would not span multiple floors

(2) By floor area, where a large floor would be split into multiple zones based on a maximum floor area size (e.g., 22,500 ft^2)

(3) By fire barrier or smoke barrier compartment boundaries, which an SLC would not cross

(4) By maximum length or circuit, where an SLC would not be longer than a predetermined length (e.g., 300 ft)

See the definition of zone (3.3.324) and Figure A.23.6.1(a) through Figure A.23.6.1(d) for additional clarification.

Figure A.23.6.1(a) depicts a Class B SLC with four zones. Wiring of more zones would require one isolator for each additional zone. The isolator can be integrated into the device or a separate component. If a single short or open occurs beyond the isolators, only one zone will be affected.

Figure A.23.6.1(a) Class B Isolation Method.

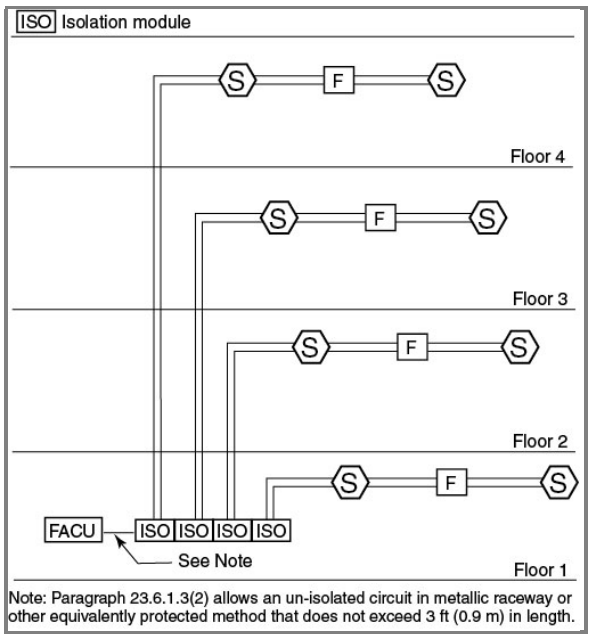


Figure A.23.6.1(b) depicts a Class A SLC with four zones. Wiring of more zones would require one isolator for each additional zone. The isolator can be integrated into the device or a separate component. If a single short or open occurs, only one zone will be affected. If a single open occurs, no devices will be affected.

Figure A.23.6.1(b) Class A Isolation Method.

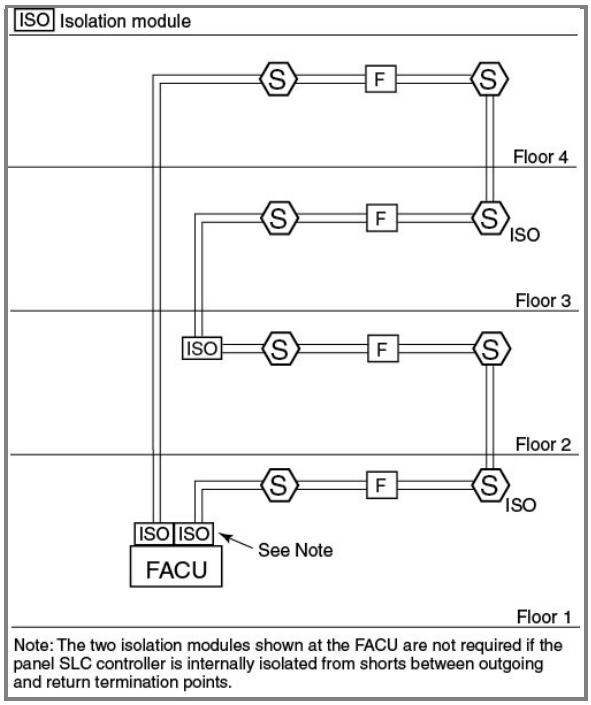


Figure A.23.6.1(c) depicts a hybrid Class A SLC loop with Class B SLC branches serving four zones that is designated as a Class B SLC. Wiring of more zones would require one isolator for each additional zone. The isolator can be integrated into the device or a separate component. If a single short occurs, only one zone will be affected. If a single open occurs, it might affect only one zone.

Figure A.23.6.1(c) Hybrid Isolation Method.

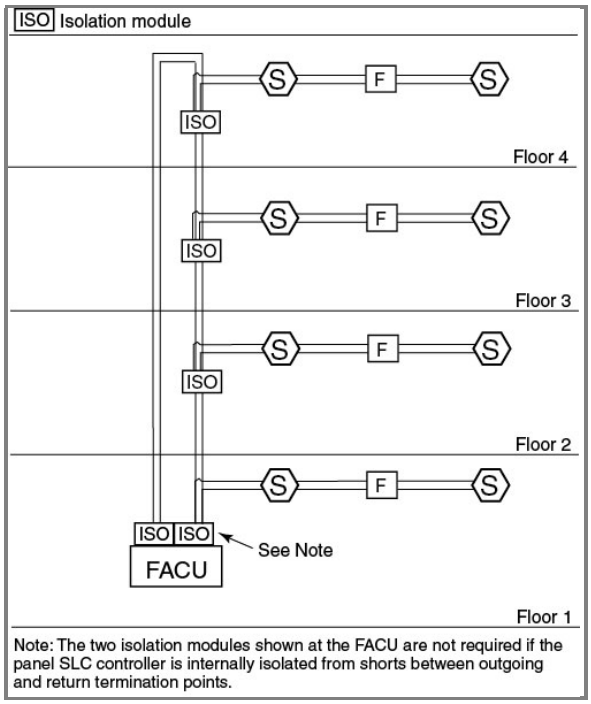
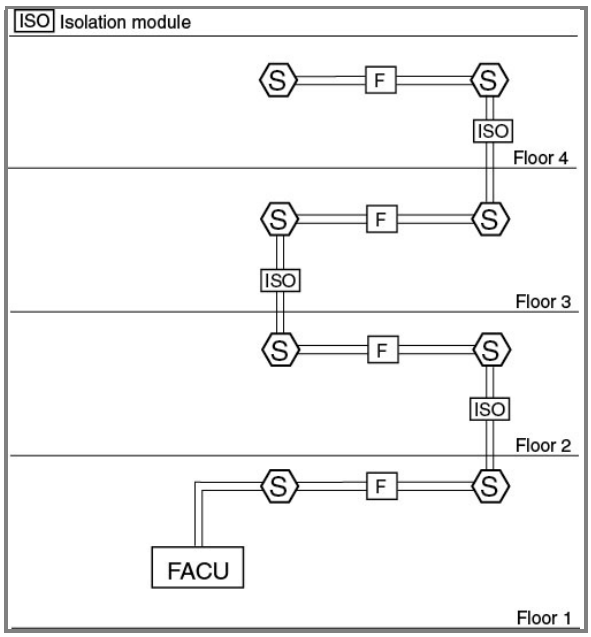


Figure A.23.6.1(d) depicts an incorrect Class B SLC configuration with four zones. If a single short or open

~~occurs, one or more zones could be affected depending on the location of the single short.~~

~~Figure A.23.6.1(d) Incorrect Use of Isolators on an SLC.~~



is to clarify that this requirement applies only to SLCs that connect to addressable devices and not to SLCs that interconnect fire alarm control units (FACU). Fire incidents have occurred where substantial losses were incurred due to the shorting and failure of an SLC damaged by fire prior to the activation of an alarm. In addition SLC shorts caused inadvertently as part of building operations, and

activities can cause a catastrophic failure of the fire and life system to operate if a fire occurs subsequently to the occur-rence of a fault that had not been corrected. A single short on an SLC of an NFPA 72 fully code compliant system not only can disable the capability of the system to activate an alarm, but, in addition, the alarm notification appliances and critical life safety emergency control functions including atrium smoke control, stairwell pressurization, door unlocking, and HVAC shutdown can all be disabled as well. In some configurations, even off-premises alarm, trouble, and supervisory reporting functions can be disabled. When an SLC is shorted, the results can be catastrophic.

Statement of Problem and Substantiation for Public Input

If we need two pages of explanation for application of a section, it is too complicate.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 257-NFPA 72-2019 [Section No. 23.6.1]	

Submitter Information Verification

Submitter Full Name: Raymond Grill
Organization: Arup
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 11:49:38 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: The existing annex section is helpful to the design engineer to understand potential variables in decision making on zones.

Public Input No. 479-NFPA 72-2019 [Section No. A.23.6.3.3.1.2]

A.23.6.3.3.1.2

Cable installations should be tested with appropriate field test measurement equipment in accordance with applicable standards such as TIA 526, *Standard Test Procedures for Fiber Optic Systems*, or other standards acceptable to the authority having jurisdiction. For example, testing requirements for Category 5 or higher balanced twisted-pair cabling should include the following:

(1) Wire map (e.g., continuity, pairing)

(2) Length

(3) Insertion loss

(4) NEXT loss

(5) ACR-F (formerly called *ELFEXT*)

(6) Propagation delay and delay skew

(7) Return loss

(8) Power sum near-end crosstalk (PSNEXT) loss

(9) PSACR-F (formerly called *PSELFEXT*)

Testing requirements for ~~optical~~ fiber-optic cabling should include the following:

(1) Attenuation

(2) Optical bandwidth

(3) Length

Statement of Problem and Substantiation for Public Input

Standardizes "fiber-optic" used as an adjective.

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:07:10 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5056-NFPA 72-2019
Statement: The Technical Committee revises the text as "fiber-optic" is used as an adjective.

Public Input No. 398-NFPA 72-2019 [New Section after A.23.6.3.6.2]

A. 23.6.3.6.2 (2) Power over Ethernet cabling, as installed in cable bundles, is subject to NFPA 70 NEC section 725.144. This section was revised in the 2020 edition with the intent of clarifying requirements for power over ethernet network cabling installed in bundles. Research has shown that in extreme circumstances, the cumulative heat generated in cable bundles may pose a risk of fire. The tables below are derived from the NEC current limitations presented in Table 725.144, but temperature adjusted (according to NEC 2020 310.15(B)(2)) to 45 degrees ambient, the maximum ambient temperature allowed by TIA-568. These tables do not include values for 26 AWG cabling because it is not TIA-568 compliant for field installation of PoE circuits.

These tables have been simplified by separating the 725.144 table into three dedicated tables for each valid cable gauge, and indicating current per conductor compliance, or not. Maximum current per conductor has been calculated based on IEEE 802.3-2015 standards based on PoE Type. Currently IEEE 802.3-2015 recognizes four PoE types (Type 1 – 4). Each type establishes a maximum power limit as supplied by the power sourcing equipment (PSE), normally a PoE switch or injector. Type 1 is limited to 15.4W, Type 2 limited to 30W, Type 3 limited to 60W, and Type 4 limited to 90W. Switches that claim to provide 100W are not considered compliant. The maximum average current per conductor can be calculated for Type 1 at 175mA, Type 2 at 300mA, Type 3 at 300mA, and Type 4 at 433mA. It is not intuitive that Type 2 and Type 3 have the same maximum average current, but Type 1 & 2 only use two pairs in the cable as current carriers, while Type 3 and 4 use all four pairs of category cables. Also, based on the Type, the maximum voltages presented at the PSE are different, explaining variation in the progression of the maximum current per conductor based on Type. Also, in other literature, PoE currents are often expressed as maximum current per pair as double the values above. This is because in a PoE circuit, source current is supplied entirely on one pair (or two pairs for Type 3&4), while return current is entirely conducted on the other pair(s). With two conductors per pair, the values above are derived.

Additional Proposed Changes

File Name	Description	Approved
PoE_Grid_PI_TABLES.pdf	Tables to be included in the PI	

Statement of Problem and Substantiation for Public Input

There has been concern expressed within NFPA communities regarding the installations of unrestricted PoE cable bundle sizes. Research has shown that under certain circumstances there may be a risk of fire due the heat dissipated in PoE cables building up in large bundles. This has led to new current limitations for conductors in cable bundles in the 2020 NEC. However, Class N networks can reasonably be expected to be deployed as PoE cables, and NFPA 72 provides no reference or guidance to this issue. This PI derives from the various standards that define compliant PoE circuitry and installation criteria, and the NEC 2020. The results are simplified, to make the determination of what is allowed and what is not - more straight forward to network installers and designers.

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 17:54:27 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: In general, the Technical Committee agrees with the concept proposed by the submitter. However, the proposed tables should be recalculated for 49 degrees to eliminate conflict with the NEC and resubmitted for consideration at Second Draft. Also, the meaning of the checks and X's in the tables should be clarified.

Public Input No. 536-NFPA 72-2019 [Section No. A.23.8.4.9]

~~**A.23.8.4.9** —~~

~~See NFPA 720 for more information.~~

Statement of Problem and Substantiation for Public Input

Carbon monoxide task group proposes removal of reference to NFPA 720 since this standard has been withdrawn and all carbon monoxide requirements are being transitioned into NFPA 72.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 251-NFPA 72-2019 [Section No. 21.1 [Excluding any Sub-Sections]]	
Public Input No. 537-NFPA 72-2019 [Section No. 23.8.4.9]	
Public Input No. 566-NFPA 72-2019 [Section No. 18.3.3]	

Submitter Information Verification

Submitter Full Name: Brandon Wilkerson
Organization: Poole Fire Protection
Affiliation: NFPA 72 Carbon Monoxide Task Group (SIG PRO)
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 09:52:23 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5099-NFPA 72-2019
Statement: The Technical Committee removes the reference to NFPA 720 since this standard has been withdrawn and all carbon monoxide requirements have been transitioned into NFPA 72.

Public Input No. 205-NFPA 72-2019 [Section No. A.23.8.5.1.2]

A.23.8.5.1.2

The manual means required by 23.8.5.1.2 is intended to provide a backup means to manually actuate the fire alarm system when the automatic fire detection system or waterflow devices are out of service due to maintenance ~~or~~ and follow-up testing, or where human discovery of the fire precedes automatic sprinkler system or automatic detection system activation. ~~The~~ The manual means is only intended for use by the system technician or the building owner and should be located by the sprinkler riser or fire alarm control unit.

During maintenance and follow-up testing, the manual fire alarm box required by 23.8.5.1.2 should be connected to a separate circuit that is not placed “on test” when the detection or sprinkler system is placed “on test.” ~~The manual means is only intended for use by the system technician or the building owner and should be located by the sprinkler riser or fire alarm control unit~~ ” Aside from those instances where maintenance is needed, the manual fire alarm box required by this section is still subject to the periodic testing requirements outlined in Chapter 14 .

Statement of Problem and Substantiation for Public Input

The current wording of this annex note implies (although it's understood that this is not the intent) that the manual fire alarm box on a dedicated function fire alarm system is never tested as it is not to be placed "on test" during maintenance "or testing". Therefore, the wording has been changed to reflect that this applies to "follow-up testing" to any maintenance done on the system. Additionally, the sentence referring to intended use has been moved to paragraph one for improved coherence. Finally, a sentence has been added at the end to eliminate the implication of the current wording and make it clearer that periodic testing requirements still apply to the manual fire alarm box on this type of system.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 30 15:01:47 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5102-NFPA 72-2019
Statement: The current wording of this annex note implies (although it's understood that this is not the intent) that the manual fire alarm box on a dedicated function fire alarm system is never tested as it is not to be placed "on test" during maintenance "or testing". Therefore, the wording has been changed to reflect that this applies to "follow-up testing" to any maintenance done on the system. Additionally, the sentence referring to intended use has been moved to paragraph one for improved coherence. Finally, a sentence has been added at the end to eliminate the implication of the current wording and make it clearer that periodic testing requirements still apply to the manual fire alarm box on this type of system.

Public Input No. 153-NFPA 72-2019 [Section No. A.23.10.2]

A.23.10.2

~~One or more of the following means might be considered acceptable to provide a level of survivability consistent with the intent of this requirement:~~

(1) ~~Installing a fire alarm system in a fully sprinklered building in accordance with NFPA 13~~

(2) ~~Routing notification appliance circuits separately~~

(3) ~~Using short-circuit fault-tolerant signaling line circuits for controlling evacuation signals~~

The requirement for notification appliances to operate in those notification zones that are not attacked by fire will also require that circuits and equipment that are common to more than one

~~signaling zone~~

notification zone be designed and installed such that the fire will not disable them. For instance, a signaling line circuit used to control notification appliances in multiple notification zones should be properly designed and installed so that one fire would not impair more than one notification zone. Power supply requirements of Chapter 10 apply to these systems. The secondary power supply requirements of that chapter meet the intent of these survivability requirements.

Statement of Problem and Substantiation for Public Input

A.23.10.2 seems to indicate that a fully sprinklered building is equivalent to pathway survivability requirements, which it is not, and creates a conflict with Chapter 24.

See related changes to 23.10.2 (PI 74).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 74-NFPA 72-2019 [Section No. 23.10.2]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: Automatic Fire Alarm Association (AFAA)
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 10 13:01:23 EDT 2019
Committee: SIG-PRO

Committee Statement

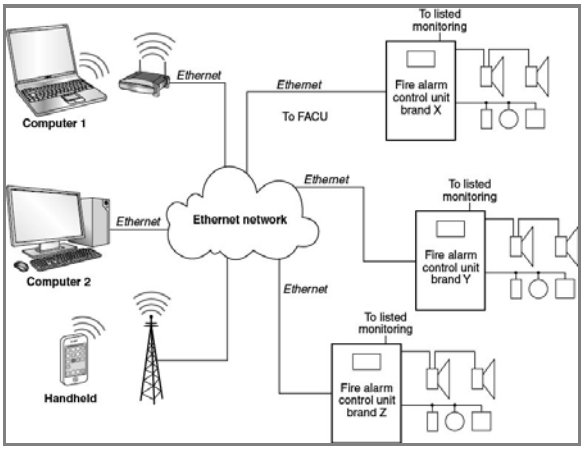
Resolution: This section permits performance-based evaluation of the level of survivability required when partial evacuation is permitted in a facility utilizing tones. Tonal systems are only required to have 5 minutes of alarm standby power and voice systems are required to have 15 minutes of alarm standby power. Additionally, tonal systems do not require 2 hours of communication that would be required for a voice system.

Public Input No. 234-NFPA 72-2019 [Section No. A.23.12.4]

A.23.12.4

Off-~~site~~ premise logging of fire alarm data can be useful to preserve information in the face of fire or building failure to facilitate accurate reconstruction of the event. It can also be beneficial to send data off-premises to incident command personnel to enhance situational awareness and response decisions and to maintain safe and efficient operations. Figure A.23.12.4 shows an example of a network to accomplish these goals.

Figure A.23.12.4 Supplemental Reporting Network.



Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 16:01:49 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5070-NFPA 72-2019
Statement: "Off-premises" is the correct term.

Public Input No. 481-NFPA 72-2019 [Section No. A.23.16]

A.23.16

The term *wireless* has been replaced with the term *low-power radio* to eliminate potential confusion with other transmission media such ~~as optical fiber~~ as fiber-optic cables.

Low-power radio devices are required to comply with the applicable *low-power* requirements of Title 47, Code of Federal Regulations, Part 15.

Statement of Problem and Substantiation for Public Input

Standardizes the use of "fiber-optic" as an adjective.

Submitter Information Verification

Submitter Full Name: Frank Van Overmeiren
Organization: Fire Protection & Code Consult
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 18:08:29 EDT 2019
Committee: SIG-PRO

Committee Statement

Resolution: FR-5071-NFPA 72-2019
Statement: The Technical Committee revises the text as "fiber-optic" is used as an adjective.

Public Input No. 549-NFPA 72-2019 [Section No. A.24.3.1.2]

A.24.3.1.2

In certain acoustically challenging areas, listed fire alarm loudspeakers might not be capable of producing an intelligible message. Non–fire alarm listed loudspeakers are permitted to be installed in these limited areas. A failure of a non-listed loudspeaker should not disrupt the operation of listed fire alarm loudspeakers and operation of the fire alarm or mass notification control ~~equipment~~ units . Typically, a dedicated loudspeaker circuit and other audio components such as amplifiers could be necessary to meet this functionality.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:43:19 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 563-NFPA 72-2019 [Section No. A.24.3.8]

A.24.3.8

The layers can be used in combination. In all cases, the system design needs to follow the risk analysis and be integrated into the emergency response plan. Research has shown that more than one layer has been used to be effective. Multiple layers provide an extra level of notification (a safety net). The overall MNS application is likely to exploit a number of public and individual systems or components that combine to produce a reliable and robust solution to achieve emergency notification objectives.

Layer 1 could consist of elements such as the following:

(1) Emergency voice/alarm communications systems (EVACS)
(2) In-building mass notification system (MNS)
(3) One-way voice communication systems (PA)
(4) Two-way voice communication systems
(5) Visual notification appliances
(6) Textual/digital signage/displays

Layer 2 could consist of elements such as the following:

(1) Wide-area outdoor MNS
(2) High power loudspeaker arrays (HPLAs)
(3) Wide-area network based MNS*

Layer 3 could consist of elements such as the following:

(1) Short message service (SMS)
(2) Email
(3) Computer pop-ups
(4) Smartphone applications (apps)
(5) Reverse 911/automated dialing

Layer 4 could consist of elements such as the following:

(1) Radio broadcast (satellite, AM/FM)
(2) Television broadcast (satellite, digital)
(3) Location specific messages/notifications
(4) Weather radios
(5) Social networks

Also see *Optimizing Fire Alarm Notification for High Risk Groups* research project.

* Traditionally, Layer 2 MNS wide area mass notification encompasses exterior notification, including high power speaker arrays. As controls for interconnected networks of buildings have developed, it has become more common practice to apply the term wide area MNS as synonymous with wide area network based MNS. A central location, that controls emergency notification appliances remotely, either directly or indirectly through remote activation or control of a in-building mass notification system may be considered wide area mass notification. It is a frequent occurrence for emergency response plans to involve instigating a heightened level of security at multiple locations, when a threat is reported at one location. For example, when a school reports a code red lockdown active shooter event, it is common for school district officials to want to remotely instigate a lockout at nearby schools.

Statement of Problem and Substantiation for Public Input

See Reason statement for PI 562, this annex addition is intended to provide the reader additional understanding of the difference between wide area MNS which most relates to exterior notification and wide area network based

MNS which refers to centralized control of both in-building and exterior MNS, dispite the similiar language.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 562-NFPA 72-2019 [Section No. 24.3.8]	Annex material in support of PI 562

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 12:24:35 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: The layers are intended to be categories of the intended audience for the MNS at a high level and not to include requirements.

Public Input No. 373-NFPA 72-2019 [Section No. A.24.3.10]

A.24.3.10

Fire emergency voice/alarm communications systems (EVACS) that are listed in accordance with ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, can be used for MNS only if they are also listed in accordance with ANSI/UL 2572 . A control unit only listed in accordance with ANSI/UL 2572, *Mass Notification Systems*, cannot be used as a fire alarm control unit.

Statement of Problem and Substantiation for Public Input

The Chapter 24 requirements for an EVACS listed to ANSI/UL 864 are outlined in section 24.4: In-Building Fire Emergency Voice/Alarm Communications Systems (EVACS). These requirements are reflected in testing for compliance under ANSI/UL 864, not in ANSI/UL 2572. Conversely the requirements for MNS are outlined in section 24.5 In-Building Mass Notification Systems. These requirements are reflected in testing for compliance under ANSI/UL 2572, not ANSI/UL 864. This resolves the problem by where under UL864, equipment testing does not reflect the requirements of MNS as stipulated by this code in 24.5.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 372-NFPA 72-2019 [Section No. 24.3.10]	Related Annex material

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 16:18:00 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5208-NFPA 72-2019

Statement: UL 2572 has specific requirements on how mass notification systems need to function. UL 864 does not have these requirements. The industry has matured and many manufacturers have equipment listed to UL 2572 and therefore NFPA 72 needs to remove all other listings other than 2572. In addition, modifications have been made to the annex language as well.

Public Input No. 293-NFPA 72-2019 [Section No. A.24.3.12]

A.24.3.12

There are many credible risk assessment methodologies that can be utilized and/or referenced in conducting the risk assessment required in 24.3.12, some of which are listed as follows:

(1) *CARVER — Target Analysis and Vulnerability Assessment Methodology*, Washington, DC: U.S. Department of Defense (see Field Manual 34-36, Special Operation Forces Intelligence and Electronics Warfare Operation, Sept. 30, 1991), www.defense.gov

(2) *General Security Risk Assessment Guidelines*. Alexandria, VA: American Society for Industrial Security International, www.asisonline.org

(3) *NFPA 1600* Quincy, MA: National Fire Protection Association, www.nfpa.org

(4) NFPA 730 Quincy, MA: National Fire Protection Association, www.nfpa.org

(5) *Responsible Care Code*, Washington, DC: American Chemistry Council, www.americanchemistry.com

(6) *Risk and Resilience Management of Water & Wastewater Systems*, Denver, CO: American Water Works Association, www.awwa.org

(7) *VAMCAP® Vulnerability Assessment Methodology for Critical Asset Protection*, Wilmington, DE: SafePlace Corporation, www.safeplace.com

(8) *Vulnerability Assessment Methodologies*, Albuquerque, NM: Sandia National Laboratories, www.sandia.gov

(9) SFPE Engineering Guide to Fire Risk Assessment, www.sfpe.org.

Refer to A.7.8.2(1) and Figure A.7.3.6 for a risk analysis checklist.

Statement of Problem and Substantiation for Public Input

The SFPE Engineering Guide to Fire Risk Assessment is another credible resource that can provide guidance for the required risk assessment. Specifically, the SFPE Guide provides information that is focused on fire safety design.

Submitter Information Verification

Submitter Full Name: Chris Jelenewicz
Organization: SFPE
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 11:57:03 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5304-NFPA 72-2019
Statement: The SFPE Engineering Guide to Fire Risk Assessment is another credible resource that can provide guidance for the required risk assessment. Specifically, the SFPE Guide provides information that is focused on fire safety design.

Public Input No. 333-NFPA 72-2019 [New Section after A.24.4]

A.24.4.2.1 Where an evacuation message is being provided, the Temporal 3 signal specified in 18.4.2 should be provided unless otherwise dictated by the emergency response plan or AHJ. This is regardless as to whether the cause of the evacuation is fire, carbon monoxide (CO), gas leak, bomb threat, or any other emergency situation requiring evacuation of a building.

Statement of Problem and Substantiation for Public Input

At the request of a Correlating Committee task group, this change seeks to clarify that the evacuation signal shall be the national standard Temporal 3 signal described in 18.4.2. This is regardless of the nature of the emergency requiring the full evacuation of the building. The Temporal 3 tone will get the attention of the majority of occupants (with the rest alerted by visual notification appliances) and the voice message used will indicate the need to evacuate. The general public does not recognize the difference between Temporal 3 and Temporal 4 tones and would not differ their response to the evacuation signal based on the tone used. The intent of 24.4.2.1 is to use the national standard evacuation tone, followed by the appropriate voice message, regardless of the nature of the emergency situation. Evacuation means full evacuation and while the voice message used can vary, the evacuation tone does not have to. The language used in the new Annex material would still allow an individual emergency response plan or AHJ to dictate a special or unique pre- or post-tone if required for some other specific reason.

This change is being done to eliminate the confusion where evacuation due to a CO alarm should require a Temporal 4 pre- and post-tone. The use of this tone in a building ECS provides little to no benefit when the requirement is to evacuate the building.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 334-NFPA 72-2019 [New Section after A.24.4.8]	

Submitter Information Verification

Submitter Full Name: Larry Rietz
Organization: JENSEN HUGHES
Affiliation: Correlating Committee Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 12:09:29 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5242-NFPA 72-2019
Statement: The reference is needed for instances where carbon monoxide detectors are included in the system. The Technical Committee adds Annex text for further clarification.

Public Input No. 7-NFPA 72-2018 [Section No. A.24.4.2.2.2]

A.24.4.2.2.2

Generally speaking, in a standard building configuration with normal ceiling height [8 ft to 12 ft (2.4 m to 3.7 m)], normal ceiling construction (e.g., drop acoustical ceiling tiles), standard wall configurations, and finishes and carpeted floors, ceiling-mounted loudspeakers should be installed in all normally occupiable spaces and in corridors spaced at a maximum of twice the ceiling height or as determined by a commercially available computer acoustical/loudspeaker modeling program. Where wall-mounted loudspeakers are used, manufacturer recommendations should be reviewed and/or computer modeling should be employed. One of the goals of loudspeaker placement is to provide the shortest practical distance from the source (loudspeaker) to the recipient (person hearing the signal). In many applications, a combination of wall- and ceiling-mounted loudspeakers might be required. The audibility and intelligibility of the loudspeakers can be impacted by the tap/setting at which the loudspeaker is connected and should meet the audibility requirements of the Code while still having the message intelligible. Connecting to a high setting to meet the audibility requirements of the Code could distort the intelligibility of the signal.

In an ADS that is a non-acoustically challenging area, designing for audibility will typically result in an intelligible system provided minimum loudspeaker guidelines are followed. Areas typically considered to be non-acoustically challenging include traditional office environments, hotel guest rooms, dwelling units, and spaces with carpeting and furnishings.

Special attention must be given to acoustically challenging ADSs. Such areas might incorporate appreciable hard surfaces (e.g., glass, marble, tile, metal, etc) or appreciably high ceilings (e.g., atriums, multiple ceiling heights). These conditions will require more stringent design guidelines to ensure intelligibility (e.g., a closer than normal loudspeaker spacing with lower taps). This can help reduce the effect of excessive reverberation and result in better intelligibility. In extreme cases there could be areas where intelligibility is not attainable, but this can be acceptable if there is an ADS within 30 ft (9.1 m) where the intelligibility of the system is deemed adequate.

In an ADS where the ambient noise level exceeds 85 dB it is acknowledged that intelligibility might not be attainable and, in such a case, an alternate means of notification ~~is~~ will likely be required.

Design guidance is provided in the NEMA Standards Publication SB 50-2008, *Emergency Communications Audio Intelligibility Applications Guide*.

Statement of Problem and Substantiation for Public Input

This is a grammatical change to improve clarity and intent and in keeping with parameters for Annex language. Only in those instances where intelligibility is not attainable due to the ambient level would additional appliances "likely" be required.

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Wed Oct 17 10:02:08 EDT 2018
Committee: SIG-ECS

Committee Statement

Resolution: FR-5312-NFPA 72-2019
Statement: This is a grammatical change to improve clarity and intent and in keeping with parameters for Annex language. Only in those instances where intelligibility is not attainable due to the ambient level would additional appliances "likely" be required.

Public Input No. 551-NFPA 72-2019 [Section No. A.24.4.5.1]

A.24.4.5.1

The choice of the location(s) for the in-building fire emergency voice/alarm communications control equipment should also take into consideration the ability of the fire alarm system to operate and function during any probable single event. Although *NFPA 72* does not regulate either building construction or contents, system designers should consider the potential for an event that could damage the equipment, including remotely located control ~~devices~~ units , to disable the system or a portion thereof. Where practical, it is prudent to minimize unnecessary fire exposures of fire alarm control ~~equipment through~~ units and other devices through the use of fire-rated construction or enclosures, by limiting adjacent combustibles and ignition sources, or other appropriate means.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:46:37 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 334-NFPA 72-2019 [New Section after A.24.4.8]

A.24.4.8.4 Where a partial evacuation message is being provided, the Temporal 3 signal specified in 18.4.2 should be provided unless otherwise dictated by the emergency response plan or AHJ. This is regardless as to whether the cause of the evacuation is fire, carbon monoxide (CO), gas leak, bomb threat, or any other emergency situation requiring partial evacuation of a building.

Statement of Problem and Substantiation for Public Input

At the request of a Correlating Committee task group, this change seeks to clarify that the evacuation signal shall be the national standard Temporal 3 signal described in 18.4.2. This is regardless of the nature of the emergency requiring the partial evacuation of the building. The Temporal 3 tone will get the attention of the majority of occupants (with the rest alerted by visual notification appliances) and the voice message used will indicate the need to evacuate. The general public does not recognize the difference between Temporal 3 and Temporal 4 tones and would not differ their response to the evacuation signal based on the tone used. The intent of 24.4.8.4 is to use the national standard evacuation tone, followed by the appropriate voice message, regardless of the nature of the emergency situation. Partial evacuation means full evacuation of a selected portion of the building (i.e., NOT relocation) and while the voice message used can vary, the evacuation tone does not have to. The language used in the new Annex material would still allow an individual emergency response plan or AHJ to dictate a special or unique pre- or post-tone if required for some other specific reason.

This change is being done to eliminate the confusion where partial evacuation due to a CO alarm should require a Temporal 4 pre- and post-tone. The use of this tone in a building ECS provides little to no benefit when the requirement is to evacuate a portion the building.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 333-NFPA 72-2019 [New Section after A.24.4]	Related input

Submitter Information Verification

Submitter Full Name: Larry Rietz
Organization: JENSEN HUGHES
Affiliation: Correlating Committee Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 12:14:02 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5320-NFPA 72-2019

Statement: At the request of a Correlating Committee Task Group, this change seeks to clarify that the evacuation signal shall be the national standard Temporal 3 signal described in 18.4.2. This is regardless of the nature of the emergency requiring the partial evacuation of the building. The Temporal 3 tone will get the attention of the majority of occupants (with the rest alerted by visual notification appliances) and the voice message used will indicate the need to evacuate. The general public does not recognize the difference between Temporal 3 and Temporal 4 tones and would not differ their response to the evacuation signal based on the tone used. The intent of 24.4.8.4 is to use the national standard evacuation tone, followed by the appropriate voice message, regardless of the nature of the emergency situation. Partial evacuation means full evacuation of a selected portion of the building (i.e., NOT relocation) and while the voice message used can vary, the evacuation tone

does not have to. The language used in the new Annex material would still allow an individual emergency response plan or AHJ to dictate a special or unique pre- or post-tone if required for some other specific reason.

This change is to eliminate the confusion where partial evacuation due to a CO alarm should require a Temporal 4 pre- and post-tone. The use of this tone in a building ECS provides little to no benefit when the requirement is to evacuate a portion the building.

Public Input No. 391-NFPA 72-2019 [New Section after A.24.4.8]

A.24.4.8.3.1 The NIST/NFPA report on General Guidance on Emergency Communication Strategies for Buildings, March 2014, The Fire Protection Research Foundation (see Annex G), recommends emergency messaging repetition (5.2.4.2 Message Repetition). It also recommends emergency messaging be repeated at intervals rather then consecutively. "The second (or third message), provided some interval of time later, may catch a different population who were either busy or distracted during the time period when the first warning message was issued." Section 24.4.8.3.1 requires that EVAC messages used for fire emergency relocation or partial evacuation be repeated at least three times. Therefore EVAC systems that transmit digitally stored audio messages are to be configured to meet these requirements. First responders and other individuals required to make live fire related relocation or partial evacuation messages, must also be trained to repeat the entire message sequence (including the alert tone) at least three times. The interval for repeating the messages should be established in the emergency response plan.

A.24.4.8.3.2

Only first responders or other trained authorized emergency personnel should be able to intentionally and manually silence or reset the automatic pre-recorded message sequence. This is required to ensure the safe evacuation or relocation of all occupants regardless of the time it takes to complete this task. It should not be permitted to allow for an automatic termination of the alarm since the actual time for relocation and evacuation during real fire emergencies is never known due to potential unpredicted scenarios. The alert status of visual appliances should be maintained. However, since the duration of the alarm is indeterminate, audible alerts and messaging that are periodically suspended can contribute to an improved response by the occupants. Suspending the audible portion of the alarm can support a better community response to the instructions, especially in the case where the abled bodied are attempting to aid the infirmed or emotionally challenged.

Research from the National Research Council of Canada: Occupant Behaviour and Evacuation found "In public buildings, such as airport terminals or sport centres, occupant training is not practical; for these, much of the responsibility for safety will rest with staff. Consequently, staff training is paramount. Occupants are very likely to look for staff members to obtain information; they are regarded as knowledgeable, they are expected to know the situation, the best course of action and the closest exit. Whether heard on a speaker or seen in uniform or wearing a name tag, staff are likely to be listened to."

National Council on Disability published Effective Emergency Management: Making Improvements for Communities and People with Disabilities Aug.12, 2009, which finds: "People with disabilities should not be viewed as one more special interest group that drains resources from the common pool. Accommodating this large group often translates into being better equipped to serve all people. Anyone, at any moment, can incur a disability, particularly during emergencies. (Kailes and Enders 2006, p. 13)".

Further, Shields, Boyce, and Silcock (1997) note that "staff trained in emergency evacuation should provide guidance to people who are evacuating public facilities. Familiar and trusted staff can alert a significant portion of the public in such instances and ensure an efficient evacuation". On the basis of census results, Morrow (1999, p. 5) argues that a "sizable segment" of any community's population will need additional assistance during evacuation.

A.24.4.8.3.3 Fire related emergency relocation instructions and non-evacuation messages are repeated a minimum of three times. For pre-recorded messages, the actual number of times the message sequence plays is indeterminate, and the interval between each sequence playing is not defined by code, but rather intended to be defined in the emergency response plan. Research shows (see Annex G: Guidelines for Emergency Communication Strategies for Buildings and Campuses) that messages should be repeated at intervals, not consecutively. In determining the interval, consider the following:

(1) Too long between message sequences may be misunderstood by occupants that the emergency has been resolved.

(2) Too long between message sequences may not sufficiently communicate the sense of urgency that is intended.

(3) Too little time between message sequences may impair the ability of occupants to comply with

instructions particularly for occupants that need assistance.

(4) Too little time between message sequences may make it difficult for occupants to mark a change in the message contents if partial evacuation or relocation instructions are changed and re-issued.

(5) Upon the loss of primary power, secondary power is required to support continuous notification for only 15 minutes. This time may be extended based on the period of repetition of automatic messages. Too little time between message sequences may exhaust power reserves before emergency first responder personnel arrive, compromising their ability to manually transmit additional live evacuation or relocation messages.

Statement of Problem and Substantiation for Public Input

These additions to the Annex are intended to support PI 390. They work together to provide context for the creation of emergency response (fire) plans that address the issue of repeated automatic messaging for fire (and consequential use of fire alarm) emergencies involving relocation and/or partial evacuation. Please see the substantiation for PI390 for a more comprehensive discussion.

Mostly this annex material was intended to point readers to some of the research that was done on this topic, to aid in making informed decisions in emergency response planning with citable references and reasoning.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 390-NFPA 72-2019 [New Section after 24.4.8.3.1]	Annex Material intended to work together with code change proposals

Submitter Information Verification

Submitter Full Name: Michael Pallett
Organization: Telecor Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 23 13:08:18 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5253-NFPA 72-2019

Statement: There was significant debate during the 2019 code cycle regarding the merits of continuous repetition of audible messaging during fire related partial evacuation and/or relocation. Continuous verbal messaging, repeating the same instructions over and over without a break, is considered by some to be the safest approach. Not letting up for even an instant, until a fire response official can attend the site, evaluate the risks, and then manually silence the audible messaging has been positioned as what should be the default procedure across the nation. However, there is too much that can go wrong with this approach to be considered the default position taken by this Code. Some of the reasons are spelled out in related annex public inputs. But the fundamental problem with a barrage of continuous messaging is the impairment created for effective interpersonal communications between the occupants (including staff) that may be assisting a confused, impaired, or disabled individual in following the instructions being provided. It has been argued on the floor of the NFPA conference that emergency procedure cannot cater to the minority. This attitude is specifically disallowed by the ADA where, by law one must provide emergency response plans that are inclusive of people with disabilities.

Additionally, Effective Emergency Management: Making Improvements for Communities and People with Disabilities, published by the National Council on Disability in Aug.12, 2009, concludes: "People

with disabilities are often forgotten during the response phase of a disaster. Historically, our society has approached people with disabilities by implying they need to take on “extra” personal responsibility to avoid the consequences of disaster rather than by addressing the built environment and social responsibility in an effort to create a safer setting for everyone. When people with disabilities are remembered, they are often grouped into one homogeneous population and provided with instructions that are not appropriately communicated or that are impossible for everyone to follow. "

It is our responsibility to respect the rights of all people, whether young children, or people physically, sensory, cognitively, or emotionally impaired, and to expect that emergency response plans are being created to consider the existence of all people of all abilities.

Yet in the argument for continuous notification some suggest convincingly that the existing code, in only requiring the message sequence to be repeated three times, does not go far enough. They argue that the scope of this requirement is small, and this section only applies to fire related emergencies. Where in reality, a fire alarm activation is not exclusively used only in instances of fire. This series of public inputs addresses those concerns in a balance way with the support of research referenced in the Annex to establish an informed basis for the creation of inclusive emergency response plans.

Public Input No. 552-NFPA 72-2019 [Section No. A.24.5.10]

A.24.5.10

Refer to 24.5.2 for requirements related to operation of the system by authorized personnel. It is recognized that, based on the risk analysis, control units, equipment ~~and~~ , and circuits could need different levels of protection for different facilities. Access to the fire alarm/mass notification interface should be consistent with the action outlined in the emergency response plan. It could have been prior practice in some jurisdictions to locate the fire alarm control unit in the main lobby of a facility. However, it might not be appropriate to locate the mass notification system autonomous control unit within the lobby if the general public would have access to deactivate mass notification system components. Based on the risk analysis, it could be appropriate to locate the autonomous control unit within a secured room while providing local operating consoles for use by other authorized personnel.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:51:28 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 235-NFPA 72-2019 [Section No. A.24.7.6]

A.24.7.6

A distributed recipient mass notification system could support multiple server and multiple site configurations to achieve a “hot standby” failover configuration (i.e., no down time in case of failure in a single server), as well as to support higher load scenarios (e.g., more users). This could be accomplished with premises-based systems or hosted configurations.

Backup configuration can either be a net-centric system architecture located behind internet firewalls or hosted off-~~site~~ premise , outside the owner’s internet firewall utilizing a hosted software and hardware configuration operated and maintained by DRMNS provider(s), or incorporate features of both configurations.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 16:02:35 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5305-NFPA 72-2019
Statement: Off-site is not the correct term. Throughout 72, the term used is "off-premises."

Public Input No. 300-NFPA 72-2019 [New Section after A.24.8]

A.24.4.8.3.1

Only responding firefighters or other emergency personnel should be able to intentionally and manually silence or reset the automatic pre-recorded messages sequence. This is required to ensure the safe evacuation or relocation of all occupants regardless the time it takes to complete this task. It should not be permitted to allow for an automatic cut-off of pre-recorded evacuation or relocation messages since the actual time for relocation and evacuation during real fire emergencies is never known due to potential unpredicted scenarios.

Approved alternative fire alarm notification s chemes, such as a sequence that contains only a fixed number of repetitions of the pre-recorded messages and associated alert tones, or as indicated in 24.4.8.3.4, _ shall be permitted as long as the occupants are effectively notified and are provided instructions in a timely and safe manner in accordance with the emergency response plan.

Statement of Problem and Substantiation for Public Input

This annex clarifies the intent of Section 24.4.8.3.1

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 299-NFPA 72-2019 [Section No. 24.4.8.3.1]	Annex to a proposed PI

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affiliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 16:51:28 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5257-NFPA 72-2019
Statement: The Technical Committee adds annex text for clarification.

Public Input No. 236-NFPA 72-2019 [Section No. A.24.10]

A.24.10

Generally, an area of refuge (area of rescue assistance) two-way emergency communications system, a stairway communications system, an elevator landing communications system, and an occupant evacuation elevator lobby communications system are all members of the same system type fulfilling the same functions in different locations. These systems are required to be installed in different buildings by applicable building codes, and they are considered as life-safety emergency communication systems to be used by building occupants during fire and non-fire emergencies. Because they are similar and all are two-way emergency communications systems, it is appropriate that they are mandated by a common set of requirements. These systems are different in nature from the two emergency communications systems specified in 24.3.7.2(1) and 24.3.7.2(2) that are meant to be used by fire fighters or other first responders or emergency personnel.

“Areas of refuge” or “areas of rescue assistance” are areas that have direct access to an exit, where people who are unable to use stairs can remain temporarily in safety to await further instructions or assistance during emergency evacuation or other emergency situations. It is, therefore, important that a method to communicate exists between that remote location and a constantly attended location either within the building or at an off-~~site~~ premise remote location where appropriate action for assistance can be initiated by trained personnel.

Stairway communications systems are typically provided in high-rise buildings between the fire command center and remote points located at not less than every fifth floor in stairways where the stairway doors are locked from the stair side to prevent building re-entry. It is important that a method to communicate exists between that remote location in the stairs and a constantly attended location either within the building or at an off-~~site~~ premise remote location so that appropriate action for assistance can be initiated.

Elevator car communications systems should not be confused with an elevator landing communications system, or an occupant evacuation elevator lobby communications system. The elevator car two-way communications system is installed in accordance with the requirements of ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*. Inspection and testing of elevator car two-way communications systems is performed in accordance with ASME A17.2, *Guide for Inspection of Elevators, Escalators and Moving Walks*.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 16:03:23 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5307-NFPA 72-2019
Statement: Off-site is not the correct term. Throughout 72, the term used is "off-premises."

Public Input No. 237-NFPA 72-2019 [Section No. A.24.10.2.3]

A.24.10.2.3

Typically the fire command center is not occupied during non-fire emergencies, and therefore the master control unit should have dial-out capability to an off-~~site~~ premise constantly attended monitoring station. During fire emergencies, fire fighters will be in the fire command center, and they will be able to provide assistance and guidance to occupants in need.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 16:05:20 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5290-NFPA 72-2019
Statement: Off-site is not the correct term. The term used throughout NFPA 72 is "off-premises." In addition, modifications have been made to the annex language as well.

Public Input No. 238-NFPA 72-2019 [Section No. A.24.10.5]

A.24.10.5

To ensure a timely response to a call for assistance, the call is to be forwarded to an approved off-~~site~~ premise constantly attended location, such as a supervising station, 911 communications center, or other monitoring location. Typically, when the person in need is able to communicate, it is expected that the monitoring personnel can quickly establish the exact location of the building and the location within the building the call was made from and communicate this information to the emergency responders. However, if the person initiating the call is unable to provide the specific location within the building (or unable to communicate at all), the appropriate emergency responders will be dispatched to the specific building address. They should be able to locate the master control unit at the building's central control point and establish the exact call location within the building on the master control unit display.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 16:05:57 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5292-NFPA 72-2019
Statement: Off-site is not the correct term. The term used throughout NFPA 72 is "off-premises." In addition, modifications have been made to the annex language as well.

Public Input No. 239-NFPA 72-2019 [Section No. A.24.10.6]

A.24.10.6

One method by which a signal is transmitted to the off-~~site~~ premise monitoring station utilizes telephone connections in conjunction with caller ID to identify the phone number and a name associated with the building. The call is initially identified at the off-~~site~~ premise monitoring location via caller ID information (provided by the telephone service), a prerecorded message, or other approved means, prior to initiating the two-way communications. Information provided can be used to access a database of building addresses and other related information to aid emergency responders attending the location. The intention of this section is to ensure that off-~~site~~ premise monitoring personnel have instant access to the building address so that emergency responders can be immediately dispatched to the correct location.

Statement of Problem and Substantiation for Public Input

Off-site is not the correct term. Throughout 72 we use the term "off premise." This change is also being proposed to align with UL language in the listing documents.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 04 16:06:44 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5293-NFPA 72-2019
Statement: Off-site is not the correct term. The term used throughout NFPA 72 is "off-premises." In addition, modifications have been made to the annex language as well.

Public Input No. 431-NFPA 72-2019 [New Section after A.24.11]

Two way communications systems training

If the microphone will be used by authorized personnel there should be backup personnel who are assigned and trained on the proper usage.

Statement of Problem and Substantiation for Public Input

The annex should state that it is important to have more than one trained operator for these systems.

Submitter Information Verification

Submitter Full Name: Rodger Reiswig
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 24 10:06:16 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: FR-5297-NFPA 72-2019
Statement: The operation of these systems is unique and will require a person that is properly educated on how to receive, dispatch and process these calls. The issue of training becomes even more important when multiple calls are coming into the master unit and how those calls will be handled, priority, stacking etc.

Public Input No. 553-NFPA 72-2019 [Section No. A.24.11.1]

A.24.11.1

For the purposes of this chapter, an emergency command center is considered to be a mass notification system facility(s), with communications and control ~~equipment serving~~ units serving more than one building, where responsible authorities receive information from premises sources or systems, or from (higher level) regional or national sources or systems, and then disseminate appropriate information to a building, multiple buildings, outside campus areas, municipalities, or a combination of these in accordance with the emergency response plan established for the premises. A mass notification system could include at least one emergency command center with optional secondary/alternate emergency command centers.

Statement of Problem and Substantiation for Public Input

The term "control equipment" is not defined in the standard. The term "control unit" is defined in the standard and is the term that is appropriate to convey the intended meaning.

Submitter Information Verification

Submitter Full Name: Frank Savino
Organization: United Fire Protection Corpora
Affiliation: Task Group SIG-PRO
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 11:53:58 EDT 2019
Committee: SIG-ECS

Committee Statement

Resolution: A definition of "control equipment" has been proposed by SIG-FUN clarifying this issue.

Public Input No. 328-NFPA 72-2019 [Section No. A.26.1]

A.26.1

Table A.26.1 provides a tool for users of the Code to easily and systematically look up requirements for protected premises, central station service, remote supervising station, and proprietary supervising station alarm systems.

Table A.26.1 Alarm System Performance Criteria

Attribute	Protected Premises Fire Alarm System	Central Station Service Alarm System	Remote Supervising Station Alarm System	Proprietary Supervising Station Alarm System
Applicability	All fire alarm systems	Supervising station service provided by a prime contractor. There is a subscriber *(26.3.2, 26.3.3, and 26.3.4)* .	Where central station service is neither required nor elected, properties under various ownership monitored by a remote supervising station *(26.5.1.1 and 26.5.1.2)*	Supervising station monitoring contiguous or noncontiguous properties under one ownership and responsible to the owner of the protected property *(26.4.2.1 and 26.4.2.2)*
Listing	Equipment listed for the use intended *(10.3)*	Equipment listed for the use intended *(10.3)* . Compliance documentation *(26.3.4)* .	Equipment listed for use intended *(10.3)*	Equipment listed for use intended *(10.3)*
Design	According to Code by experienced persons *(10.5.1)*	According to Code by experienced persons *(10.5.1)*	According to Code by experienced persons *(10.5.1)*	According to Code by experienced persons *(10.5.1)*
Compatibility	Detector devices pulling power from initiating or signaling circuits listed for control unit *(10.3.3)*	Detector devices pulling power from initiating or signaling circuits listed for control unit *(10.3.3)*	Detector devices pulling power from initiating or signaling circuits listed for control unit *(10.3.3)*	Detector devices pulling power from initiating or signaling circuits listed for control unit *(10.3.3)*
Performance and limitations	85% and 110% of the nameplate rated input voltage, 32°F (0°C) and 120°F (49°C) ambient temperature, 85% relative humidity at 86°F (30°C) *(10.3.5)*	85% and 110% of the nameplate rated input voltage, 32°F (0°C) and 120°F (49°C) ambient temperature, 85% relative humidity at 86°F (30°C) *(10.3.5)*	85% and 110% of the nameplate rated input voltage, 32°F (0°C) and 120°F (49°C) ambient temperature, 85% relative humidity at 86°F (30°C) *(10.3.5)*	85% and 110% of the nameplate rated input voltage, 32°F (0°C) and 120°F (49°C) ambient temperature, 85% relative humidity at 86°F (30°C) *(10.3.5)*
Documentation	Authority having jurisdiction notified of new or changed specifications, wiring diagrams, battery calculations, floor plans. Statement from contractor that system meets manufacturer's published instructions and NFPA requirements *(7.5.2)* . Record of completion *(7.5.6)*. Results of evaluation required in 23.4.3.1	Authority having jurisdiction notified of new or changed specifications, wiring diagrams, battery calculations, floor plans. Statement from contractor that system meets manufacturer's published instructions and NFPA requirements *(7.5.2)* . Record of completion *(7.5.6)*. Results of evaluation required in 23.4.3.1 *(23.4.3.3)* .	Authority having jurisdiction notified of new or changed specifications, wiring diagrams, battery calculations, floor plans. Statement from contractor that system meets manufacturer's published instructions and NFPA requirements *(7.5.2)* . Record of completion *(7.5.6)*. Results of evaluation required in 23.4.3.1 *(23.4.3.3)* .	Authority having jurisdiction notified of new or changed specifications, wiring diagrams, battery calculations, floor plans. Statement from contractor that system meets manufacturer's published instructions and NFPA requirements *(7.5.2)* . Record of completion *(7.5.6)*. Results of evaluation required in 23.4.3.1 *(23.4.3.3)* .

Attribute	Protected Premises Fire Alarm System	Central Station Service Alarm System	Remote Supervising Station Alarm System	Proprietary Supervising Station Alarm System
	(23.4.3.3) .			
Supervising station facilities	None	UL 827-compliant for the supervising station and any subsidiary station *(26.3.5.1 and 26.3.5.2)*	Communications centers or other location acceptable to the authority having jurisdiction *(26.5.3)*	Fire-resistive, detached building or cut-off room not near or exposed to hazards. Access restricted, NFPA 10, 26-hour emergency lighting *(26.4.3).*
Testing and maintenance	Chapter 14	Chapter 14. Pass code must be provided to place system into test mode *(26.3.8.3.5.6)* .	Chapter 14	Chapter 14
Runner service	No	Yes Alarm — arrive at the protected premises within 2 hours where equipment needs to be reset. Guard's tour — 30 minutes. Supervisory — 2 hours. Trouble — 4 hours. *(26.3.8)*	No	Yes Alarm — arrive at the protected premises within 2 hours where equipment needs to be reset. Guard's tour — 30 minutes. Supervisory— 2 hours. Trouble — 4 hours. *(26.4.6.1.6)*
Operations and management requirements	None	Prime contractor provides all elements of central station service under a variety of contractual arrangements *(26.3.3)*	None	Supervising station is under same ownership and management responsibility as premises being supervised *(26.4.2.1)*
Staff	None	Minimum of two persons on duty at supervising station. Operation and supervision primary task *(26.3.7).*	Minimum of two persons on duty at supervising station at all times. Other duties permitted per the authority having jurisdiction *(26.5.5)* .	Two operators of which ~~one may~~ one is permitted to be the runner. When runner is not in attendance at station, time between contact not to exceed 15 minutes. Primary duties are monitoring alarms and operations of station *(26.4.5).*
Monitor supervisory signals	Control unit and command center *(10.14.1 and 10.14.2)*	Control unit, command center, and central station *(10.14.1 and 10.14.2)*	Control unit, command center, and remote supervising station *(10.14.1 and 10.14.2)*	Control unit, command center, and proprietary supervising station *(10.14.1 and 10.14.2)*

Retransmission of signals	None	Alarm to public service communications center and subscriber. Supervisory, trouble, and guard service to designated personnel *(26.3.8)*.	Alarm to public service communications center when monitored privately. Supervisory and trouble signals to owner's designated representative *(26.5.6)* .	Alarm to public service communications center and plant brigade. Supervisory, trouble, and guard service to designated personnel *(26.4.6.1.6)*.
Retransmission time	None	Alarm — immediate. Supervisory — immediate. Guard's tour supervisory — without unreasonable delay. Trouble — immediate. *(26.3.8)*	Alarm — immediate. Supervisory — immediate. Trouble — immediate. *(26.5.6)*	Alarm — immediate. Supervisory — immediate. Guard's tour supervisory — at once. Trouble — immediate. *(26.4.6.1.6)*
Records	Current year and 1 year after *(7.7.1)*	Complete records of all signals received must be retained for at least 1 year. Reports provided of signals received to authority having jurisdiction in a form it finds acceptable *(26.3.9)*.	At least 1 year *(26.5.8.1)*.	Complete records of all signals received shall be retained for at least 1 year. Reports provided of signals received to authority having jurisdiction in a form it finds acceptable *(26.4.7)*.

Statement of Problem and Substantiation for Public Input

Task Group work to modify annex to eliminate "may" to be in compliance with the MOS.

Submitter Information Verification

Submitter Full Name: Art Black
Organization: Carmel Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 10:25:55 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5249-NFPA 72-2019
Statement: This revision eliminates "may" to be in compliance with the MOS.

Public Input No. 3-NFPA 72-2018 [Section No. A.26.2.2(4)]

A.26.2.2(4)

The 90-second allowance for a supervising station to call the protected ~~premise~~ premises to verify the validity of the received alarm signal is in addition to the time allowed for the supervising station to initiate the retransmission to the communications center.

Statement of Problem and Substantiation for Public Input

The word "Premise" is a thought. Premises is a property or area including a structure on a property.
Though plural for the word "Premise" (thought) is "Premises" (thoughts) is spelled the same as "Premises" (property) it is not the same.
The singular for "Premises" is still "Premises".

Premise never means property.

Submitter Information Verification

Submitter Full Name: Ronald Smith
Organization: TEAMWired
Street Address:
City:
State:
Zip:
Submittal Date: Thu Oct 11 12:07:09 EDT 2018
Committee: SIG-SSS

Committee Statement

Resolution: FR-5254-NFPA 72-2019
Statement: The Technical Committee changes "premise" to "premises."

The word "Premise" is a thought. Premises is a property or area including a structure on a property.

Though plural for the word "Premise" (thought) is "Premises" (thoughts) is spelled the same as "Premises" (property) it is not the same.

The singular for "Premises" is still "Premises".

Premise never means property.

Public Input No. 38-NFPA 72-2019 [Section No. A.26.5.3]

A.26.5.3

As a minimum, the room or rooms containing the remote supervising station equipment should have a 1-hour fire rating, and the entire structure should be protected by an alarm system complying with Chapter 23.

As a useful guide for determining the nature of the design and integrity necessary to achieve proper protection, the remote supervising station building or that portion of a building occupied by a remote supervising station should compare the construction, fire protection, restricted access, emergency lighting, and power facilities to the requirements stated in the latest edition of ANSI/UL 827, *Standard for Central-Station Alarm Services*.

If the remote supervising station is located within an emergency response agency (ERA), the ERA should ~~consider meeting the~~ meet the requirements of ~~Chapter 4 of NFPA 1221.~~ 26.3.5.1

Statement of Problem and Substantiation for Public Input

Alarm monitoring by governmental agencies or Emergency Response agencies (ERA) should be held to the same Standard as private monitoring companies. While well intentioned, the only way to ensure compliance with the Standard is to have a Nationally Recognized Testing Laboratory (NRTL) list the ERA.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 32-NFPA 72-2019 [Section No. 26.5.3.1 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Richard Kleinman
Organization: AFA Protective Systems Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 23 09:44:30 EST 2019
Committee: SIG-SSS

Committee Statement

Resolution: Central Station Service requirements are not applicable to Remote Supervising Station alarm systems. Currently, the use of a governmental communications center using NFPA 1221 is permitted for monitoring remote station signals but is not the only option. No substantiation has been provided that the other options should not be used.

Public Input No. 37-NFPA 72-2019 [Section No. A.26.5.3.1.4]

A.26.5.3.1.4

A listed central station ~~might~~ shall be considered an acceptable alternate location for receipt of fire alarm, supervisory, and trouble signals.

Statement of Problem and Substantiation for Public Input

A listed central supervising station has shown an independent nationally recognized testing laboratory (NRTL) that it meets the requirements of NFPA 72 and UL827 and/or Factory Mutual's testing procedures. An end user should be able to choose to have their premise's fire alarm system monitored by a listed entity. While some jurisdictions have requirements that exceed those of NFPA 72, those requirements would need to be met, in addition to being Listed, in order for a listed central supervising station, or AHJ, to provide service in that jurisdiction.
This change will permit Listed or qualified entities to provide service....as long as they meet the Standard by being Listed for the purpose.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 36-NFPA 72-2019 [Section No. 26.5.3.1.4]	

Submitter Information Verification

Submitter Full Name: Richard Kleinman
Organization: AFA Protective Systems Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 23 09:42:11 EST 2019
Committee: SIG-SSS

Committee Statement

Resolution: The term "shall", which indicates a requirement, is not allowed in the annex per the Manual of Style.

Public Input No. 329-NFPA 72-2019 [Section No. A.26.6.1]

A.26.6.1

Refer to Table A.26.6.1 for communications methods.

Table A.26.6.1 Communications Methods for Supervising Stations

Criteria	Performance-Based Technologies 26.6.3	Digital Alarm Communicator Systems 26.6.4	Two-Way Radio Frequency (RF) Multiplex Systems 26.6.5.1	One-Way Private Radio Alarm Systems 26.6.5.2
FCC approval when applicable	Yes	Yes	Yes	Yes
Conform to *NFPA 70*	Yes	Yes	Yes	Yes
Monitoring for integrity of the transmission and communications channel	Monitor for integrity	Both the premises unit and the system unit monitor for integrity in a manner approved for the means of transmission employed. A single signal received on each incoming DACR line once every 6 hours.	Systems are periodically polled for end-to-end communications integrity.	Test signal from every transmitter once every 24 hours
Annunciate, at the supervising station, the degradation and restoration of the transmission or communications channel	Within 60 minutes for a single communication path and within 6 hours for multiple communication paths	Within 4 minutes using alternate phone line to report the trouble	Not exceed 90 seconds from the time of the actual failure	Only monitor the quality of signal received and indicate if the signal falls below minimum signal quality specified in Code
Redundant communication path where a portion of the transmission or communications channel cannot be monitored for integrity				

-

	Employ a combination of two separate transmission channels alternately tested at intervals not exceeding 6 hours	Redundant path not required — supervising station always indicates a communications failure	Minimum of two independent RF paths must be simultaneously employed
Interval testing of the backup path(s)			

-

	When two phone lines are used, test alternately every 6 hours. Testing for other back-up technologies, see 26.6.4.1.4(B).	Backup path not required	No requirement, because the quality of the signal is continuously monitored	
Annunciation of communication failure or ability to communicate at the protected premises	Systems where the transmitter at the local premises unit detects a communication failure, the premises unit will annunciate	Indication of failure at premises due to line failure or failure to communicate after from 5 to 10 dialing attempts	Not required — always annunciated at the supervising station that initiates corrective action	Monitor the interconnection of the premises unit elements of transmitting equipment, and indicate a failure at the

	the failure within 200 seconds of the failure			premises or transmit a trouble signal to the supervising station.
Time to restore signal-receiving, processing, display, and recording equipment	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes.	Spare digital alarm communicator receivers required for switchover to backup receiver in 30 seconds. One backup system unit for every five system units.	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes
Loading capacities for system units and transmission and communications channels	512 independent alarm systems on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.	See Table 26.6.4.2.2(D) for the maximum number of transmitters on a hunt group in a system unit	512 buildings and premises on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.	512 buildings and premises on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.
End-to-end communication time for an alarm	90 seconds from initiation of alarm until displayed to the operator and recorded on a medium from which the information can be retrieved	Off-hook to on-hook not to exceed 90 seconds per attempt. 10 attempts maximum. 900 seconds maximum for all attempts.	90 seconds from initiation until it is recorded	90% probability to receive an alarm in 90 seconds, 99% probability in 180 seconds, 99.999% probability in 450 seconds
Record and display rate of subsequent alarms at supervising station	Not slower than one every 10 additional seconds	Not addressed	When any number of subsequent alarms come in, record at a rate not slower than one every additional 10 seconds	When any number of subsequent alarms come in, record at a rate not slower than one every additional 10 seconds
Signal error detection and correction	Signal repetition, parity check, or some equivalent means of error detection and correction must be used.	Signal repetition, digital parity check, or some equivalent means of signal verification must be used.	Not addressed	Not addressed
Path sequence priority	No need for prioritization of paths. The requirement is that both paths are equivalent.	The first transmission attempt uses the primary channel.	Not addressed	Not addressed
Carrier diversity				

	Where long distance service (including WATS) is used, the second telephone number must be provided by a different long distance service provider where there are multiple providers.	Not addressed	Not addressed
Throughput probability			

	Demonstrate 90% probability of a system unit immediately answering a call or follow the loading in Table 26.6.4.2.2(D). One-way radio backup demonstrates 90% probability of transmission.	Not addressed	90% probability to receive an alarm in 90 seconds, 99% probability in 180 seconds, 99.999% in probability 450 seconds

Unique premises identifier	If a transmitter shares a transmission or communication channel with other transmitters, it must have a unique transmitter identifier.	Yes	Yes	Yes
Unique flaws	From time to time,			
~~there may be~~				
unique flaws are present in a communication system.Unique requirements				
~~must~~				
should be written for these unique flaws.	If call forwarding is used to communicate to the supervising station, verify the integrity of this feature every 4 hours.	None addressed	None addressed	
Signal priority	If the communication methodology is shared with any other usage, all alarm transmissions must preempt and take precedence over any other usage. Alarm signals take precedence over supervisory signals.	Chapter 1 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.	Chapter 1 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.	Chapter 1 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.
Sharing communications equipment on premises	If the transmitter is sharing on-premises communications equipment, the shared equipment must be listed for the purpose (otherwise the transmitter must be installed ahead of the unlisted equipment).	Disconnect outgoing or incoming telephone call and prevent its use for outgoing telephone calls until signal transmission has been completed.	Not addressed	Not addressed

Statement of Problem and Substantiation for Public Input

Task Group work to modify text to meet MOS

Submitter Information Verification

Submitter Full Name: Art Black
Organization: Carmel Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 10:29:48 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5252-NFPA 72-2019
Statement: The Technical Committee recognizes that digital communications are fast enough without the need for prioritization of alarm signals. Table A.26.6.1 is revised accordingly.

The word "may" is removed to meet the Manual of Style.

Chapter 1 is changed to Chapter 10 to reflect the realignment of chapter contents.

Public Input No. 330-NFPA 72-2019 [Section No. A.26.6.1]

A.26.6.1

Refer to Table A.26.6.1 for communications methods.

Table A.26.6.1 Communications Methods for Supervising Stations

Criteria	Performance-Based Technologies 26.6.3	Digital Alarm Communicator Systems 26.6.4	Two-Way Radio Frequency (RF) Multiplex Systems 26.6.5.1	One-Way Private Radio Alarm Systems 26.6.5.2
FCC approval when applicable	Yes	Yes	Yes	Yes
Conform to *NFPA 70*	Yes	Yes	Yes	Yes
Monitoring for integrity of the transmission and communications channel	Monitor for integrity	Both the premises unit and the system unit monitor for integrity in a manner approved for the means of transmission employed. A single signal received on each incoming DACR line once every 6 hours.	Systems are periodically polled for end-to-end communications integrity.	Test signal from every transmitter once every 24 hours
Annunciate, at the supervising station, the degradation and restoration of the transmission or communications channel	Within 60 minutes for a single communication path and within 6 hours for multiple communication paths	Within 4 minutes using alternate phone line to report the trouble	Not exceed 90 seconds from the time of the actual failure	Only monitor the quality of signal received and indicate if the signal falls below minimum signal quality specified in Code
Redundant communication path where a portion of the transmission or communications channel cannot be monitored for integrity				

-

	Employ a combination of two separate transmission channels alternately tested at intervals not exceeding 6 hours	Redundant path not required — supervising station always indicates a communications failure	Minimum of two independent RF paths must be simultaneously employed
Interval testing of the backup path(s)			

-

	When two phone lines are used, test alternately every 6 hours. Testing for other back-up technologies, see 26.6.4.1.4(B).	Backup path not required	No requirement, because the quality of the signal is continuously monitored	
Annunciation of communication failure or ability to communicate at the protected premises	Systems where the transmitter at the local premises unit detects a communication failure, the premises unit will annunciate	Indication of failure at premises due to line failure or failure to communicate after from 5 to 10 dialing attempts	Not required — always annunciated at the supervising station that initiates corrective action	Monitor the interconnection of the premises unit elements of transmitting equipment, and indicate a failure at the

	the failure within 200 seconds of the failure			premises or transmit a trouble signal to the supervising station.
Time to restore signal-receiving, processing, display, and recording equipment	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes.	Spare digital alarm communicator receivers required for switchover to backup receiver in 30 seconds. One backup system unit for every five system units.	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes
Loading capacities for system units and transmission and communications channels	512 independent alarm systems on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.	See Table 26.6.4.2.2(D) for the maximum number of transmitters on a hunt group in a system unit	512 buildings and premises on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.	512 buildings and premises on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.
End-to-end communication time for an alarm	90 seconds from initiation of alarm until displayed to the operator and recorded on a medium from which the information can be retrieved	Off-hook to on-hook not to exceed 90 seconds per attempt. 10 attempts maximum. 900 seconds maximum for all attempts.	90 seconds from initiation until it is recorded	90% probability to receive an alarm in 90 seconds, 99% probability in 180 seconds, 99.999% probability in 450 seconds
Record and display rate of subsequent alarms at supervising station	Not slower than one every 10 additional seconds	Not addressed	When any number of subsequent alarms come in, record at a rate not slower than one every additional 10 seconds	When any number of subsequent alarms come in, record at a rate not slower than one every additional 10 seconds
Signal error detection and correction	Signal repetition, parity check, or some equivalent means of error detection and correction must be used.	Signal repetition, digital parity check, or some equivalent means of signal verification must be used.	Not addressed	Not addressed
Path sequence priority	No need for prioritization of paths. The requirement is that both paths are equivalent.	The first transmission attempt uses the primary channel.	Not addressed	Not addressed
Carrier diversity				

	Where long distance service (including WATS) is used, the second telephone number must be provided by a different long distance service provider where there are multiple providers.	Not addressed	Not addressed
Throughput probability			

	Demonstrate 90% probability of a system unit immediately answering a call or follow the loading in Table 26.6.4.2.2(D). One-way radio backup demonstrates 90% probability of	Not addressed	90% probability to receive an alarm in 90 seconds, 99% probability in 180 seconds, 99.999% in probability

	transmission.		450 seconds	
Unique premises identifier	If a transmitter shares a transmission or communication channel with other transmitters, it must have a unique transmitter identifier.	Yes	Yes	Yes
Unique flaws	From time to time, there may be unique flaws in a communication system. Unique requirements must be written for these unique flaws.	If call forwarding is used to communicate to the supervising station, verify the integrity of this feature every 4 hours.	None addressed	None addressed
Signal priority	If the communication methodology is shared with any other usage, all alarm transmissions must preempt and take precedence over any other usage. Alarm signals take precedence over supervisory signals.			

~~Chapter 1~~

Chapter 10 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.

~~Chapter 1~~

Chapter 10 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.

~~Chapter 1~~

Chapter 10 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.

Sharing communications equipment on premises	If the transmitter is sharing on-premises communications equipment, the shared equipment must be listed for the purpose (otherwise the transmitter must be installed ahead of the unlisted equipment).	Disconnect outgoing or incoming telephone call and prevent its use for outgoing telephone calls until signal transmission has been completed.	Not addressed	Not addressed

Statement of Problem and Substantiation for Public Input

Changing "Chapter 1" to "Chapter 10" to reflect realignment of chapter contents.

Submitter Information Verification

Submitter Full Name: Art Black
Organization: Carmel Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 10:32:59 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5252-NFPA 72-2019

Statement: The Technical Committee recognizes that digital communications are fast enough without the need for prioritization of alarm signals. Table A.26.6.1 is revised accordingly.

The word "may" is removed to meet the Manual of Style.

Chapter 1 is changed to Chapter 10 to reflect the realignment of chapter contents.

Public Input No. 331-NFPA 72-2019 [Section No. A.26.6.1]

A.26.6.1

Refer to Table A.26.6.1 for communications methods.

Table A.26.6.1 Communications Methods for Supervising Stations

Criteria	Performance-Based Technologies 26.6.3	Digital Alarm Communicator Systems 26.6.4	Two-Way Radio Frequency (RF) Multiplex Systems 26.6.5.1	One-Way Private Radio Alarm Systems 26.6.5.2
FCC approval when applicable	Yes	Yes	Yes	Yes
Conform to *NFPA 70*	Yes	Yes	Yes	Yes
Monitoring for integrity of the transmission and communications channel	Monitor for integrity	Both the premises unit and the system unit monitor for integrity in a manner approved for the means of transmission employed. A single signal received on each incoming DACR line once every 6 hours.	Systems are periodically polled for end-to-end communications integrity.	Test signal from every transmitter once every 24 hours
Annunciate, at the supervising station, the degradation and restoration of the transmission or communications channel	Within 60 minutes for a single communication path and within 6 hours for multiple communication paths	Within 4 minutes using alternate phone line to report the trouble	Not exceed 90 seconds from the time of the actual failure	Only monitor the quality of signal received and indicate if the signal falls below minimum signal quality specified in Code
Redundant communication path where a portion of the transmission or communications channel cannot be monitored for integrity				

-

	Employ a combination of two separate transmission channels alternately tested at intervals not exceeding 6 hours	Redundant path not required — supervising station always indicates a communications failure	Minimum of two independent RF paths must be simultaneously employed
Interval testing of the backup path(s)			

-

	When two phone lines are used, test alternately every 6 hours. Testing for other back-up technologies, see 26.6.4.1.4(B).	Backup path not required	No requirement, because the quality of the signal is continuously monitored	
Annunciation of communication failure or ability to communicate at the protected premises	Systems where the transmitter at the local premises unit detects a communication failure, the premises unit will annunciate	Indication of failure at premises due to line failure or failure to communicate after from 5 to 10 dialing attempts	Not required — always annunciated at the supervising station that initiates corrective action	Monitor the interconnection of the premises unit elements of transmitting equipment, and indicate a failure at the

	the failure within 200 seconds of the failure			premises or transmit a trouble signal to the supervising station.
Time to restore signal-receiving, processing, display, and recording equipment	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes.	Spare digital alarm communicator receivers required for switchover to backup receiver in 30 seconds. One backup system unit for every five system units.	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes	Where duplicate equipment not provided, spare hardware required so a repair can be effected within 30 minutes
Loading capacities for system units and transmission and communications channels	512 independent alarm systems on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.	See Table 26.6.4.2.2(D) for the maximum number of transmitters on a hunt group in a system unit	512 buildings and premises on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.	512 buildings and premises on a system unit with no backup. Unlimited if you can switch to a backup in 30 seconds.
End-to-end communication time for an alarm	90 seconds from initiation of alarm until displayed to the operator and recorded on a medium from which the information can be retrieved	Off-hook to on-hook not to exceed 90 seconds per attempt. 10 attempts maximum. 900 seconds maximum for all attempts.	90 seconds from initiation until it is recorded	90% probability to receive an alarm in 90 seconds, 99% probability in 180 seconds, 99.999% probability in 450 seconds
Record and display rate of subsequent alarms at supervising station	Not slower than one every 10 additional seconds	Not addressed	When any number of subsequent alarms come in, record at a rate not slower than one every additional 10 seconds	When any number of subsequent alarms come in, record at a rate not slower than one every additional 10 seconds
Signal error detection and correction	Signal repetition, parity check, or some equivalent means of error detection and correction must be used.	Signal repetition, digital parity check, or some equivalent means of signal verification must be used.	Not addressed	Not addressed
Path sequence priority	No need for prioritization of paths. The requirement is that both paths are equivalent.	The first transmission attempt uses the primary channel.	Not addressed	Not addressed
Carrier diversity				

	Where long distance service (including WATS) is used, the second telephone number must be provided by a different long distance service provider where there are multiple providers.	Not addressed	Not addressed
Throughput probability			

	Demonstrate 90% probability of a system unit immediately answering a call or follow the loading in Table 26.6.4.2.2(D). One-way radio backup demonstrates 90% probability of	Not addressed	90% probability to receive an alarm in 90 seconds, 99% probability in 180 seconds, 99.999% in probability

	transmission.		450 seconds	
Unique premises identifier	If a transmitter shares a transmission or communication channel with other transmitters, it must have a unique transmitter identifier.	Yes	Yes	Yes
Unique flaws	From time to time, there may be unique flaws in a communication system. Unique requirements must be written for these unique flaws.	If call forwarding is used to communicate to the supervising station, verify the integrity of this feature every 4 hours.	None addressed	None addressed
Signal priority	If the communication methodology is shared with any other usage, all alarm transmissions must			
transmissions should preempt and take precedence over any other usage , including all on-site communications equipment . Alarm signals take precedence over supervisory signals.	Chapter 1 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.	Chapter 1 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.	Chapter 1 on fundamentals requires that alarm signals take priority over supervisory signals unless there is sufficient repetition of the alarm signal to prevent the loss of an alarm signal.	
Sharing communications equipment on premises	If the transmitter is sharing on-premises communications equipment, the shared equipment must be listed for the purpose (otherwise the transmitter must be installed ahead of the unlisted equipment).	Disconnect outgoing or incoming telephone call and prevent its use for outgoing telephone calls until signal transmission has been completed.	Not addressed	Not addressed

Statement of Problem and Substantiation for Public Input

Task Group work to bring table into compliance with existing usage.

Submitter Information Verification

Submitter Full Name: Art Black
Organization: Carmel Fire Protection
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 10:35:27 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5252-NFPA 72-2019
Statement: The Technical Committee recognizes that digital communications are fast enough without the need for prioritization of alarm signals. Table A.26.6.1 is revised accordingly.

The word "may" is removed to meet the Manual of Style.

Chapter 1 is changed to Chapter 10 to reflect the realignment of chapter contents.

Public Input No. 337-NFPA 72-2019 [Section No. A.26.6.3]

A.26.6.3

Certain legacy technologies (active multiplex, McCulloh, directly connected non-coded and private microwave) have been removed from the text of the document. Existing systems utilizing these technologies are acceptable, because all these technologies also comply with the general provisions of 26.6.3.

The object of 26.6.3 is not to give details of specific technologies but rather give basic operating parameters of the transmission supervision rates of technologies. The following list represents examples of current technologies that can be configured to meet the requirements and the intent of 26.6.3:

(1) Transmitters using IP (Internet Protocol)

(2) IP transmission over the public open Internet or over private IP facilities maintained by an organization for its own use

(3) Transmitters using various (non-dialup) digital cellular technology

Wired IP Transmission. There are two types of wired IP transmission devices. One where the IP network is connected directly to the fire alarm control unit (integrated IP or native IP). The second uses an intermediary module that can include the following:

(1) IP dialer capture module

(2) IP data capture module (such as RS-232, keypad bus, RS-485)

(3) Relay contact monitoring module

Devices referred to as “IP dialer capture modules” (an IP communicator used with a DACT) are transmission devices that connect to the DACT output of the fire alarm control unit and convert the output data stream to IP (Internet protocol). As such, they are considered to use IP technology in their connection to the IP network. Therefore they should be treated in this Code under the requirements of 26.6.3, performanced-based technologies, and not under the requirements of 26.6.4, digital alarm communicator systems.

Digital Cellular. To accommodate an increase in the demand for mobile wireless communications as well as introducing new services over that same network, wireless voice communications no longer utilizes dedicated connections to pass voice band frequencies. ~~Current ubiquities methods such as 2G and 3G have established a new and different environment to operate. In place of the voice band, the voice conversation is converted into a stream of bits and packaged within data packets that conform to messaging protocols, packets are addressed to a destination point, delivered into the network, received by the destination point, and are converted back into an intelligible voice-grade message. The message exchange through this wireless data network is done through well known defined protocols such as “Global System for Mobile” communications (GSM) for voice communications as well as Code Division Multiple Access (CDMA) for both voice and data and General Packet Radio Service (GPRS) mobile data services. These protocols have been developed to operate in an optimal way for the intended application. For example, GSM is used to efficiently establish voice-grade connections that deliver an appropriate level of intelligible voice quality, but might not be good enough to pass tones that represent data. Data transmission is better served by GPRS and CDMA where a connection into the wireless network is always available without having to “dial,” and large amounts of data can be efficiently transmitted. However the data passed using GPRS or CDMA is not that of coded tones such as DTMF (Contact ID), but is computer type messages similar to IP.~~

When using digital cellular, a DACT might or might not be used.

For example, the digital cellular device might be used to backup the DACT or, if properly supervised, be used as a stand-alone device. If used, the DACT is connected to a digital cellular radio device that connects to the cellular network by means of an antenna. The digital cellular radio device is constantly connecting to the wireless network and is always ready to attempt to transmit to a destination address without having to “dial” a number. The radio device recognizes that the alarm panel is attempting to place a call by the DACT’s “off-hook” signaling. The radio device accepts the DACT tone signaling, converts it into a packeted data stream, and sends the packets into the wireless network for delivery to a pre-assigned destination address.

Statement of Problem and Substantiation for Public Input

Remove Annex A references to obsolete cellular technologies. 2G technology equipment has already passed sunset dates and 3G equipment can no longer be activated on cellular carrier networks.

Submitter Information Verification

Submitter Full Name: Greg Hansen
Organization: Vivint Inc.
Affiliation: SIG-HOU Committee Member
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 21 12:48:56 EDT 2019
Committee: SIG-SSS

Committee Statement

Resolution: FR-5256-NFPA 72-2019
Statement: The Technical Committee revises the text. 2G and 3G should no longer be referred to as new technologies but they will still be used worldwide for years to come.

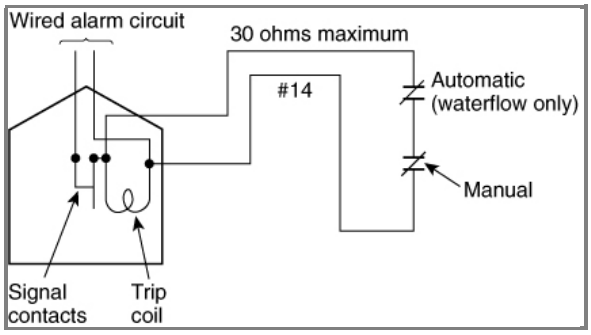
Public Input No. 519-NFPA 72-2019 [Section No. A.27.6.3.2.2.1(2)]

~~A.27.6.3.2.2.1(2)~~ —

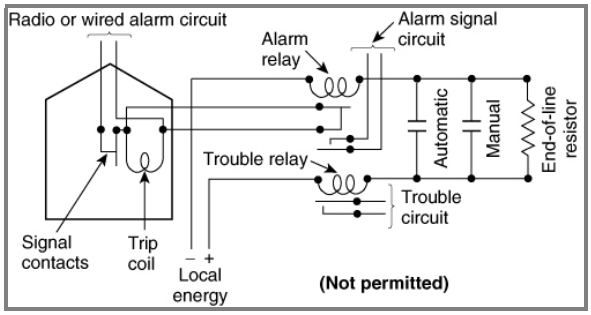
~~The shunt-type system *[see Figure A.27.6.3.2.2.1(2)(a) and Figure A.27.6.3.2.2.1(2)(b)]* is electrically connected to, and is an integral part of, the public emergency alarm reporting system. A ground fault on the auxiliary circuit is a fault on the public emergency alarm reporting system circuit, and an accidental opening of the auxiliary circuit sends a needless (or false) alarm to the communications center. An open circuit in the transmitting device trip coil is not indicated either at the protected property or at the communications center. Also, if an initiating device is operated, an alarm is not transmitted, but an open circuit indication is given at the communications center. If a public emergency alarm reporting system circuit is open when a connected shunt-type system is operated, the transmitting device does not trip until the public emergency alarm reporting system circuit returns to normal, at which time the alarm is transmitted, unless the auxiliary circuit is first returned to a normal condition.~~

~~Additional design restrictions for shunt-type systems are found in laws or ordinances.~~

~~**Figure A.27.6.3.2.2.1(2)(a) Shunt-Type Auxiliary Alarm System (Permitted).**~~



~~**Figure A.27.6.3.2.2.1(2)(b) Shunt-Type Auxiliary Alarm System (Not Permitted).**~~



Statement of Problem and Substantiation for Public Input

Shunt type auxiliary systems are no longer used. All reference to shunt type systems should be removed from Chapter 27. Appendix material related to shunt type auxiliary systems should be removed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 505-NFPA 72-2019 [Section No. 27.6.3.2.2.1]	

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid

Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 18:53:31 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5166-NFPA 72-2019
Statement: The Technical Committee deletes the text as new shunt-type auxiliary systems are no longer installed.

Public Input No. 520-NFPA 72-2019 [Section No. A.27.6.3.2.2.1(2)(g)]

~~**A.27.6.3.2.2.1(2)(g)** —~~

~~See Figure A.27.6.3.2.2.1(2)(b) .~~

Statement of Problem and Substantiation for Public Input

Shunt type auxiliary systems are no longer used. All reference to shunt type systems should be removed from Chapter 27. Appendix material related to shunt type auxiliary systems should be removed.

Submitter Information Verification

Submitter Full Name: Douglas Aiken
Organization: Lakes Region Mutual Fire Aid
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 25 18:55:56 EDT 2019
Committee: SIG-PRS

Committee Statement

Resolution: FR-5166-NFPA 72-2019
Statement: The Technical Committee deletes the text as new shunt-type auxiliary systems are no longer installed.

Public Input No. 283-NFPA 72-2019 [Section No. A.29.1.1]

A.29.1.1

Chapter 29 does not attempt to cover all equipment, methods, and requirements that might be necessary or advantageous for the protection of lives and property from fire.

NFPA 72 is a "minimum code." This chapter provides a number of requirements related to single- and multiple-station alarms and ~~household fire alarm systems that~~ household alarm systems (including connected detectors) that are deemed to be the practical and necessary minimum for average conditions at the present state of the art.

Currently Available Smoke Alarm Technology. The technologies used in currently available smoke alarms include ionization smoke detection and photoelectric detection. These detection types are defined in 3.3.276.2 and 3.3.276.4 and are further explained in A.3.3.276.2 and A.3.3.276.4. Ionization smoke detection is more responsive to invisible particles produced by most flaming fires. Photoelectric smoke detection is more responsive to the visible particles produced by most smoldering fire. Residential smoke alarms and commercial smoke detectors are currently available with either ionization technology or photoelectric technology or a combination of both technologies. The use of both technologies generally offers the advantage of providing a faster response to both flaming and smoldering fires, and is recommended for those who desire a higher level of protection than the minimum requirements of this Code.

Fatal home fires involving smoldering fires and flaming fires occur at night and during the day. It is not possible to reliably predict what type of fire will occur or at what hour of the day it will occur. Therefore, the preference of one technology over the other on the basis of the expectation of a particular type of fire (predominately smoldering or flaming) is not a sound basis for selection. While the current consensus of experts suggests that neither technology offers an advantage when the fire type is not known, there is a consensus that there would be a benefit to having both technologies since the type of fire cannot be predicted.

Based on recent analysis of the full scale fire tests documented by the National Institute of Standards and Technology in Report TN 1455-1-2008, *Performance of Home Smoke Alarms, Analysis of the Response of Several Available Technologies in Residential Fire Settings*, the minimum provisions of the Code using either technology are considered to provide an adequate level of protection for most individuals who are not intimate with the fire and are capable of self rescue. This would include occupants in the room of fire origin for both flaming and smoldering fires who escape through the normal path of egress. Protection beyond the minimum provisions of the Code using both technologies should be considered for situations involving individuals who are not capable of self rescue or who might need additional time for escape. These situations might include families where extra time is needed to awaken or assist others.

While it is true that ionization detection technology is more susceptible to nuisance alarms due to cooking, the use of this technology should not be dismissed, particularly where the additional protection of both technologies is suggested. In addition, there is no substantial evidence that suggests that either technology is more susceptible to nuisance alarms from bathroom steam. Provisions and guidance have been added to 29.11.3.4 to help minimize nuisance alarms from both sources. This is important since smoke alarms that are disabled due to frequent nuisance alarms offer no protection whatsoever. A higher level of protection would be afforded by using both technologies in all locations required by this Code with additional locations in other rooms of the dwelling. In considering this, pending the availability of smoke alarms specifically designed for nuisance alarm immunity, additional locations within 20 ft of a cooking appliance should be minimized, especially for smoke alarms using ionization technology.

While these considerations reflect the consensus of experts based on currently available test data that allows analysis of tenability along with alarm response, full scale fire testing and nuisance alarm testing of current technologies has continued and analysis of this data will also continue. In addition, new technologies are being considered with the prospect of enhanced detection response along with a higher immunity to nuisance activations. The work of the industry and the NFPA technical committee responsible for smoke alarm provisions will be ongoing.

Statement of Problem and Substantiation for Public Input

Committee task group recommendation based on correlating committee comment. The paragraph was expanded to specifically include detectors connected to household alarm systems.

Submitter Information Verification

Submitter Full Name: Cory Ogle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 12:47:37 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5068-NFPA 72-2019

Statement: A detailed description of smoke alarm technology will not be necessary for the new devices, however, legacy products will continue to exist for some period of time which is why this information should remain for the next code cycle.

The reference should be to “fire warning equipment and carbon monoxide warning equipment.”

Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]

A.29.1.1

Chapter 29 does not attempt to cover all equipment, methods, and requirements that might be necessary or advantageous for the protection of lives and property from fire.

NFPA 72 is a “minimum code.” This chapter provides a number of requirements related to single- and multiple-station alarms and household fire alarm systems that are deemed to be the practical and necessary minimum for average conditions at the present state of the art.

~~*Currently Available Smoke Alarm Technology.* The technologies used in currently available smoke alarms include ionization smoke detection and photoelectric detection. These detection types are defined in 3.3.276.2 and 3.3.276.4 and are further explained in A.3.3.276.2 and A.3.3.276.4 . Ionization smoke detection is more responsive to invisible particles produced by most flaming fires. Photoelectric smoke detection is more responsive to the visible particles produced by most smoldering fire. Residential smoke alarms and commercial smoke detectors are currently available with either ionization technology or photoelectric technology or a combination of both technologies. The use of both technologies generally offers the advantage of providing a faster response to both flaming and smoldering fires, and is recommended for those who desire a higher level of protection than the minimum requirements of this Code.~~

~~Fatal home fires involving smoldering fires and flaming fires occur at night and during the day. It is not possible to reliably predict what type of fire will occur or at what hour of the day it will occur. Therefore, the preference of one technology over the other on the basis of the expectation of a particular type of fire (predominately smoldering or flaming) is not a sound basis for selection. While the current consensus of experts suggests that neither technology offers an advantage when the fire type is not known, there is a consensus that there would be a benefit to having both technologies since the type of fire cannot be predicted.~~

~~Based on recent analysis of the full scale fire tests documented by the National Institute of Standards and Technology in Report TN 1455-1-2008, *Performance of Home Smoke Alarms, Analysis of the Response of Several Available Technologies in Residential Fire Settings* , the minimum provisions of the Code using either technology are considered to provide an adequate level of protection for most individuals who are not intimate with the fire and are capable of self rescue. This would include occupants in the room of fire origin for both flaming and smoldering fires who escape through the normal path of egress. Protection beyond the minimum provisions of the Code using both technologies should be considered for situations involving individuals who are not capable of self rescue or who might need additional time for escape. These situations might include families where extra time is needed to awaken or assist others.~~

~~While it is true that ionization detection technology is more susceptible to nuisance alarms due to cooking, the use of this technology should not be dismissed, particularly where the additional protection of both technologies is suggested. In addition, there is no substantial evidence that suggests that either technology is~~

There is no substantial evidence that suggests that any of the current technologies are more susceptible to nuisance alarms from bathroom steam.

~~Provisions~~

Installation provisions and guidance have been added to 29.11.3.4 to help minimize nuisance alarms from both sources. This is important since smoke alarms that are disabled due to frequent nuisance alarms offer no protection

~~whatsoever. A higher level of protection would be afforded by using both technologies in all locations required by this Code with additional locations in other rooms of the dwelling. In considering this, pending the availability of smoke alarms specifically designed for nuisance alarm immunity, additional locations within 20 ft of a cooking appliance should be minimized, especially for smoke alarms using ionization technology.~~

~~While these considerations reflect the consensus of experts based on currently available test data that allows analysis of tenability along with alarm response, full scale fire testing and nuisance alarm testing of current technologies has continued and analysis of this data will also continue. In addition, new technologies are being considered with the prospect of enhanced detection response along with a higher immunity to nuisance activations. The work of the industry and the NFPA technical committee responsible for smoke alarm provisions will be ongoing.~~

.

Statement of Problem and Substantiation for Public Input

We are proposing to delete many of the references to specific technology with the next edition of NFPA 72 to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268. End product safety standards such as UL 217 and UL 268 are technology independent. In addition, the performance

requirements for detecting fire types and cooking nuisance mitigation are independent of technology. Calling out technology requirements in an installation standard does not consider innovative technology solutions that could otherwise be used to comply with these end product standards. As an example, UL cooking nuisance research demonstrated that independent of smoke detection technology, and placement, all smoke alarms produced an alarm signal during normal cooking. Placement of the alarms in reference to the broiling hamburger cooking source and by 1.5% OBS/ft, resulted in an increased or delayed response, based on location, in almost all smoke alarms with many different types of technologies being tested.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 583-NFPA 72-2019 [Section No. 29.11.3.4]	
Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]	
Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]	
Public Input No. 592-NFPA 72-2019 [Section No. A.29.11.3.4(7)]	
Public Input No. 593-NFPA 72-2019 [Section No. B.4.7.1]	
Public Input No. 594-NFPA 72-2019 [Section No. B.4.7.3]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:13:44 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5068-NFPA 72-2019

Statement: A detailed description of smoke alarm technology will not be necessary for the new devices, however, legacy products will continue to exist for some period of time which is why this information should remain for the next code cycle.

The reference should be to “fire warning equipment and carbon monoxide warning equipment.”

Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]

A.29.3.3

This Code establishes minimum standards for the use of fire-warning equipment. The use of additional alarms or detectors over and above the minimum standard is encouraged. The use of additional devices can result in a combination of equipment (e.g., a combination of single- and multiple-station alarms or a combination of smoke alarms or smoke detectors that are part of a security/fire system and existing multiple-station alarms). Though a combination is allowed, one type of equipment must independently meet the requirements of the Code. Compliance with the requirements of the Code cannot rely on the combination of the following fire-warning equipment:

(1) Single-station alarms

(2) Multiple-station alarms

(3) Household fire alarm system (includes a security/fire system with smoke alarms or smoke detectors)

It is encouraged that the highest level of protection be used where possible. For example, if multiple-station alarms are added to an occupancy with compliant single-station alarms, the multiple-station alarms should be installed to replace all of the single-station alarms. Similarly, if a monitored household fire alarm system is added to a house that has compliant multiple-station alarms, monitored smoke alarms or smoke detectors should be installed to replace the multiple-station alarms or be installed to provide the same required coverage.

~~The responsiveness of ionization- and photoelectric-type smoke alarms depends on a number of factors, including the type of fire (smoldering, flaming), the chemistry of materials involved in the fire, and the properties of the resulting smoke. Several fire safety organizations recommend that a consumer utilize both ionization and photoelectric technologies in their home smoke alarm systems to permit the longest potential escape times for nonspecific fire situations. This will not preclude the development of new technology with equivalent performance.~~

Statement of Problem and Substantiation for Public Input

We are proposing to delete many of the references to specific technology with the next edition of NFPA 72 to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268. End product safety standards such as UL 217 and UL 268 are technology independent. In addition, the performance requirements for detecting fire types and cooking nuisance mitigation are independent of technology. Calling out technology requirements in an installation standard does not consider innovative technology solutions that could otherwise be used to comply with these end product standards. As an example, UL cooking nuisance research demonstrated that independent of smoke detection technology, and placement, all smoke alarms produced an alarm signal during normal cooking. Placement of the alarms in reference to the broiling hamburger cooking source and by 1.5% OBS/ft, resulted in an increased or delayed response, based on location, in almost all smoke alarms with many different types of technologies being tested.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 583-NFPA 72-2019 [Section No. 29.11.3.4]	
Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]	
Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]	
Public Input No. 592-NFPA 72-2019 [Section No. A.29.11.3.4(7)]	
Public Input No. 593-NFPA 72-2019 [Section No. B.4.7.1]	
Public Input No. 594-NFPA 72-2019 [Section No. B.4.7.3]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:21:25 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5073-NFPA 72-2019
Statement: In response to the new requirements in UL 217 (8th edition) and UL 268 (7th edition), the text has been deleted. The information has been incorporated into A.29.1.1 (FR-5068).

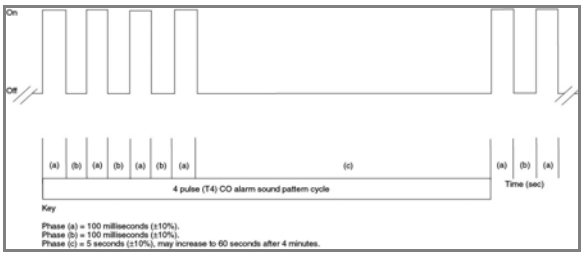
Public Input No. 275-NFPA 72-2019 [Section No. A.29.5.3]

A.29.5.3

The four pulse temporal pattern is illustrated in Figure A.29.5.3.

Figure A.29.5.3 Four Pulse Temporal Pattern.

Replace the text of the figure to read as follows: Phase (c) = 5 seconds (+-10%), should be permitted to increase to 60 seconds after 4 minutes.



Statement of Problem and Substantiation for Public Input

Committee task group recommendation based on correlating committee comment.

Submitter Information Verification

Submitter Full Name: Cory Ogle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 11:47:35 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5009-NFPA 72-2019

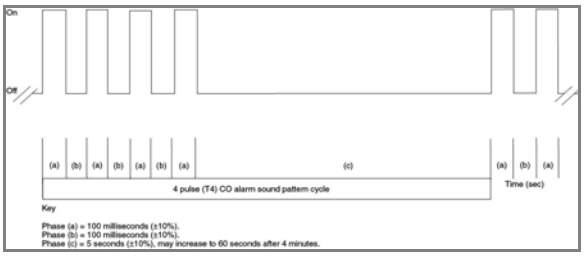
Statement: The section number is revised to correspond to the correct section in the body of the standard that relates to the four-pulse (T-4) temporal pattern. The text in the figure was revised to follow the NFPA Manual of Style and to correlate with the product standard (UL 2034).

Public Input No. 289-NFPA 72-2019 [Section No. A.29.5.3]

A.29.5.3 ~~—~~ 4 __

The four pulse temporal pattern is illustrated in Figure A.29.5.3~~3~~ 4 .

Figure A.29.5.3 ~~Four~~ 4 Four Pulse Temporal Pattern.



Statement of Problem and Substantiation for Public Input

Changed based on PI 284.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 284-NFPA 72-2019 [Section No. 29.5]	

Submitter Information Verification

Submitter Full Name: Cory Ogle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 15:16:45 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5009-NFPA 72-2019

Statement: The section number is revised to correspond to the correct section in the body of the standard that relates to the four-pulse (T-4) temporal pattern. The text in the figure was revised to follow the NFPA Manual of Style and to correlate with the product standard (UL 2034).

Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]

TITLE OF NEW CONTENT

A.29.5.10 The standard audible alarm signal used in all smoke alarms for the past 30 years utilized a typical frequency of 3Khz. Peer-reviewed research has concluded the wakening effectiveness of the 520 Hz low-frequency signal is superior to standard 3 KHz audible alarm signal for awakening high-risk segments of the population such as such as people over 65, people who are hard of hearing, school age children and people who are alcohol impaired. Therefore, smoke alarms are now required to produce the 520 Hz low-frequency audible alarm signal in areas intended for sleeping. If smoke alarms that are capable of producing the low-frequency audible alarm signal are not available, smoke detectors arranged to function in the same manner as smoke alarms are required. The following product solutions are currently available in the market if the smoke alarm is unable to produce the 520 Hz low-frequency audible alarm signal in sleeping rooms:

(1) Smoke detectors with integral sounder bases

(2) Fire alarm system horns and horn/strobes

The peer-reviewed research was conducted under the auspicious of the Fire Protection Research Foundation (*Optimizing Fire Alarm Notification for High Risk Groups*) as well as the coinciding reports (*Waking Effectiveness of Alarms for Adults Who Are Hard of Hearing* ; and *Waking Effectiveness of Alarms for the Alcohol Impaired*).

Statement of Problem and Substantiation for Public Input

This Public Input (PI) seeks to enhance the waking effectiveness of high risk segments of the population (over 65, people who are hard of hearing, school age children and people who are alcohol impaired) by providing a requirement for the 520 Hz low frequency audible fire alarm signal in all sleeping rooms. The requirement in this PI won't become widely enforced until 2025 or 2026 because the 2022 edition of NFPA 72 will be referenced in the 2024 edition of the ICC and NFPA model codes.

Smoke alarm manufacturers will be working to develop a product that will produce the 520 Hz low-frequency audible alarm signal because the 2021 edition of the International Fire Code will require smoke alarms that are installed in sleeping rooms of new hotels, dormitories and apartment buildings to produce the 520 Hz low-frequency audible alarm signal. Also, the NFPA 101 Residential Committee unanimously approved FR 6886 and FR 6892 that will require smoke alarms that are installed in sleeping rooms to produce the 520 Hz low-frequency audible alarm signal.

Any further delay in implementing a technology that is proven to enhance public life safety needs to be avoided. Peer-reviewed research has concluded the wakening effectiveness of the 520 Hz low-frequency signal is superior to standard 3KHz audible alarm signal for awakening high-risk segments of the population such as such as people over 65, people who are hard of hearing, school age children and people who are alcohol impaired.

Peer-Reviewed Research: Ian R. Thomas and Dorothy Bruck, Waking Effectiveness of Alarms for Adults Who Are Hard of Hearing (Melbourne, Australia: Victoria University), National Fire Protection Association, 2007

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]	
Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]	
Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]	
Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]	
Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]	
Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]	

Submitter Information Verification

Submitter Full Name: Isaac Papier
Organization: Papier Consulting Group LLC
Street Address:
City:
State:
Zip:
Submittal Date: Sat May 18 15:15:17 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A full mandate for 520 Hz has not been demonstrated to substantially increase overall occupant safety when considering other potential technical and application issues, such as limitations on being able to provide product that meets the full suite of requirements, and the cost-benefit to the consumer and general public safety. A Fire Protection Research Foundation study is currently underway to evaluate low-frequency signals at varying sound pressure levels.

Public Input No. 215-NFPA 72-2019 [New Section after A.29.5.10.1]

A.29.5.10

See A.18.4.6.3 for committees intent on what would constitute a sleeping area(s).

Statement of Problem and Substantiation for Public Input

Adding annex material to Section 29.5.10 that would point the user back to Chapter 18 and what has been outlined as what a sleeping area consist of. A PI was also submitted to change "Sleeping rooms" to "Sleeping areas" in Section 29.5.10 to be consistent with Chapter 18 language as well as clarity to the user that where someone could be sleeping is not necessarily a "room" and could be an area within the dwelling unit.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 216-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 216-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshal Association of Colorado.
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 31 16:06:56 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: The definition of a “sleeping area” in Section 3.3.258 does not consider a living room as a sleeping area.

Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]

~~**A.29.5.10.1** —~~

~~As an example, governing laws, codes, or standards might require a certain number of accommodations be equipped for those with hearing loss or other disability.~~

Statement of Problem and Substantiation for Public Input

This Public Input (PI) seeks to enhance the waking effectiveness of high risk segments of the population (over 65, people who are hard of hearing, school age children and people who are alcohol impaired) by providing a requirement for the 520 Hz low frequency audible fire alarm signal in all sleeping rooms. The requirement in this PI won't become widely enforced until 2025 or 2026 because the 2022 edition of NFPA 72 will be referenced in the 2024 edition of the ICC and NFPA model codes.

Smoke alarm manufacturers will be working to develop a product that will produce the 520 Hz low-frequency audible alarm signal because the 2021 edition of the International Fire Code will require smoke alarms that are installed in sleeping rooms of new hotels, dormitories and apartment buildings to produce the 520 Hz low-frequency audible alarm signal. Also, the NFPA 101 Residential Committee unanimously approved FR 6886 and FR 6892 that will require smoke alarms that are installed in sleeping rooms to produce the 520 Hz low-frequency audible alarm signal.

Any further delay in implementing a technology that is proven to enhance public life safety needs to be avoided. Peer-reviewed research has concluded the wakening effectiveness of the 520 Hz low-frequency signal is superior to standard 3KHz audible alarm signal for awakening high-risk segments of the population such as such as people over 65, people who are hard of hearing, school age children and people who are alcohol impaired.

Peer-Reviewed Research: Ian R. Thomas and Dorothy Bruck, Waking Effectiveness of Alarms for Adults Who Are Hard of Hearing (Melbourne, Australia: Victoria University), National Fire Protection Association, 2007

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]	
Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]	
Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]	
Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]	

Submitter Information Verification

Submitter Full Name: Isaac Papier
Organization: Papier Consulting Group LLC
Street Address:
City:
State:
Zip:
Submittal Date: Sat May 18 15:46:50 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A full mandate for 520 Hz has not been demonstrated to substantially increase overall occupant safety when considering other potential technical and application issues, such as limitations on being able to provide product that meets the full suite of requirements, and the cost-benefit to the consumer and general public safety. A Fire Protection Research Foundation study is currently underway to evaluate low-frequency signals at varying sound pressure levels.

Public Input No. 180-NFPA 72-2019 [Section No. A.29.5.10.1(2)]

A.29.5.10.1 ~~(2)~~

It is not the intent of this section to preclude devices that have been demonstrated through peer-reviewed research to awaken occupants with hearing loss as effectively as those using the frequency and amplitude specified in this section.

Statement of Problem and Substantiation for Public Input

This Public Input (PI) seeks to enhance the waking effectiveness of high risk segments of the population (over 65, people who are hard of hearing, school age children and people who are alcohol impaired) by providing a requirement for the 520 Hz low frequency audible fire alarm signal in all sleeping rooms. The requirement in this PI won't become widely enforced until 2025 or 2026 because the 2022 edition of NFPA 72 will be referenced in the 2024 edition of the ICC and NFPA model codes.

Smoke alarm manufacturers will be working to develop a product that will produce the 520 Hz low-frequency audible alarm signal because the 2021 edition of the International Fire Code will require smoke alarms that are installed in sleeping rooms of new hotels, dormitories and apartment buildings to produce the 520 Hz low-frequency audible alarm signal. Also, the NFPA 101 Residential Committee unanimously approved FR 6886 and FR 6892 that will require smoke alarms that are installed in sleeping rooms to produce the 520 Hz low-frequency audible alarm signal.

Any further delay in implementing a technology that is proven to enhance public life safety needs to be avoided. Peer-reviewed research has concluded the wakening effectiveness of the 520 Hz low-frequency signal is superior to standard 3KHz audible alarm signal for awakening high-risk segments of the population such as such as people over 65, people who are hard of hearing, school age children and people who are alcohol impaired.

Peer-Reviewed Research: Ian R. Thomas and Dorothy Bruck, Waking Effectiveness of Alarms for Adults Who Are Hard of Hearing (Melbourne, Australia: Victoria University), National Fire Protection Association, 2007

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]	
Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]	
Public Input No. 175-NFPA 72-2019 [Section No. 29.5.10 [Excluding any Sub-Sections]]	
Public Input No. 176-NFPA 72-2019 [New Section after A.29.5.10.1]	
Public Input No. 178-NFPA 72-2019 [Section No. 29.5.10.1]	
Public Input No. 179-NFPA 72-2019 [Section No. A.29.5.10.1]	

Submitter Information Verification

Submitter Full Name: Isaac Papier
Organization: Papier Consulting Group LLC
Street Address:
City:
State:
Zip:
Submittal Date: Sat May 18 15:49:02 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: A full mandate for 520 Hz has not been demonstrated to substantially increase overall occupant safety when considering other potential technical and application issues, such as limitations on being able to provide product that meets the full suite of requirements, and the cost-benefit to the consumer and general public safety. A Fire Protection Research Foundation study is currently underway to evaluate low-frequency signals at varying sound pressure levels.

Public Input No. 281-NFPA 72-2019 [Section No. A.29.8.1.1(2)]

A.29.8.1.1(2)

The term *dwelling unit* is defined in 3.3.83 and applies to one- and two-family dwellings and dwelling units of apartment buildings (including condominiums). The distance referenced for the location of the required smoke alarm should be measured on a horizontal projection of the ceiling and along the path of egress travel by an occupant.

Statement of Problem and Substantiation for Public Input

Committee task group recommendation based on correlating committee comment. The term "path of travel" may have caused confusion and explanation seemed necessary.

Submitter Information Verification

Submitter Full Name: Cory Ogle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 12:38:00 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5049-NFPA 72-2019
Statement: The term "path of travel" in 29.8.1.1(2) may have caused confusion and clarification of the term is added to the annex. This explanation follows the requirements of 17.7.3.2.4.5(3).

Public Input No. 282-NFPA 72-2019 [Section No. A.29.8.1.3.1]

A.29.8.1.3.1

The distance referenced for the spacing of smoke alarms should be measured on a horizontal projection of the ceiling. One smoke alarm per 500 ft^2 (46 m^2) is evaluated by dividing the total interior square footage of floor area per level by 500 ft^2 (46 m^2). The requirements do not preclude the installation of smoke alarms on walls in accordance with 29.11.3.3. Some building configurations, such as division of rooms and open foyers or great rooms, dictate that alarms be located so that they do not cover distinctly separate 500 ft^2 (46 m^2) areas but rather provide overlapping coverage relative to this spacing requirement.

Statement of Problem and Substantiation for Public Input

Committee task group recommendation based on correlating committee comment. The term "travel distance" may have caused confusion and explanation seemed necessary.

Submitter Information Verification

Submitter Full Name: Cory Ogle
Organization: Code Consultants, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 12:42:36 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5045-NFPA 72-2019
Statement: The term "travel distance" in 29.8.1.3.1 may have caused confusion and clarification of the term is added to the annex. This explanation follows the requirements of 17.7.3.2.4.5(3).

Public Input No. 312-NFPA 72-2019 [Section No. A.29.10.8.2.1]

~~A.29.10.8.2.1~~ —

For RF waves traveling along the earth's surface, the signal power loss (in dB), L_p, can be calculated using the following plane-earth propagation loss model:

$$L_p = 10\log\left[\frac{D_p^4}{h_{TX}^2 h_{RX}^2}\right] \quad \text{[A.29.10.8.2.}$$

where D_p represents the distance between the transmitter and receiver and h_{TX} and h_{RX} are the heights of the transmitter and receiver, respectively, above the earth.

The plane earth propagation model is a practical simplification and requires that h_{TX}, $h_{RX} << D_p$. It reflects the average expected attenuation due to distance of the RF carrier for a stationary set of radios with an essentially clear line of sight. It predicts maximum communications range only in the UHF band (300 MHz to 3 GHz) and is not dependent on frequency.

Inside a building, the model can be expanded to determine the total path loss, L_T, which includes the plane earth loss, L_p (equation A.29.10.8.2.1a), and the loss due to the building materials in the propagation path, L_b, as follows:

$$L_T = 10\log\left[\frac{D_p^4}{(h_{TX}h_{RX})^2}\right] + L_b \quad \text{[A.29.10.8.2.}$$

If an equivalent open area test distance, D_{EOAT}, is defined as follows:

$$L_T = 10\log\left[\frac{D_{EOAT}^4}{(h_{TX}h_{RX})^2}\right] \quad \text{[A.29.10.8.2.1}$$

then D_{EOAT} can be shown to be:

$$D_{EOAT} = 10^{\frac{-L_T}{40}}\sqrt{h_{TX}}\sqrt{h_{RX}} = D_p \cdot 10^{\frac{L_b}{40}} \quad \text{[A.29.10.8.2.1}$$

The D_{EOAT} function is used to calculate a test distance required to verify the functional range of wireless alarm products. As noted above in the right side of equation A.29.10.8.2.1d, the function represents two factors — one that describes the attenuation of a radio frequency signal due to plane earth propagation path loss (D_p), and one that describes the dwelling material losses (L_b) in the signal's propagation path. It is the combination of dwelling loss and propagation path loss that is used in the calculation of the test distance D_{EOAT}. The losses are expressed in dB, and the unit for distances is meter.

In reviewing average home sizes, a reliable (indoor) communication of 100 ft (30.5 m) is adequate for a majority of dwellings, based on an average house size of 2200 ft^2 (204 m^2) [National Association of Home Builders]. Construction materials of a home (walls and floors) can attenuate an RF signal, with the RF signal being attenuated more at higher frequencies [Stone, 1997]. Communication specifications for devices of this type are typically specified as open field (no obstructions) test distances and not in terms of attenuation. Therefore, the standard specifies a minimum open area test distance, D_{EOAT}, that the RF products must communicate. This distance is equal to 100 ft (30.5 m) (the longest straight line distance within a majority of homes) plus an additional distance that is equivalent to the attenuation of four walls and two floors (the most straight line obstructions in a majority of homes). The additional distance varies depending on the operating frequency of the product. Formulas for calculating D_{EOAT} are included below, along with examples for a number of different frequencies. These criteria are expected to yield reliable indoor communications at 100 ft (30.5 m) when used inside a majority of dwellings.

The building attenuation factor, L_b, represents the maximum attenuation value of typical floors and walls within a majority of structures. L_b is calculated using attenuation values of different materials. The following method is used to calculate L_b. The building materials attenuation coefficients specified in this application are taken from Stone, 1997. Other sources of appropriate building material attenuation coefficients can be used; however, testing organizations should apply values consistently for all products tested.

L_1 = frequency-dependent attenuation value for $\frac{1}{2}$ in. (13 mm) drywall

L_2 = frequency-dependent attenuation value for 1 $\frac{1}{2}$ in. (38 mm) structural lumber

~~L_3 = frequency-dependent attenuation value for 3/4 in. (19 mm) plywood~~

~~L_4 = frequency-dependent attenuation value for 1/2 in. (13 mm) glass/tile floor~~

~~L_w = Attenuation value of a wall = 2 × L_1 + L_2~~

~~L_f = Attenuation value of a floor = L_1 + L_2 + L_3 + L_4~~

~~Assuming four walls and two floors,~~

$$L_b = 4 \times L_w + 2 \times L_f$$ ~~[A.29.10.8.2.~~

~~The source for the equation in 29.10.8.2.1 is Stone, W. "Electromagnetic Attenuation in Construction Materials," National Institute of Standards and Technology, NISTIR 6055, 1997.~~

Statement of Problem and Substantiation for Public Input

Public Input was submitted to revise 29.10.8.2. In conjunction with that change, the information in Annex A 29.10.8.2.1 would not be needed. The most reproducible and repeatable method for transmitter/receiver testing is completed through unobstructed air. This is already stated in 29.10.8.2.1, so the equations only add complexity and confusion for manufacturers, installers, and the AHJ. To confirm connectivity, equipment shall be tested upon completion of installation to confirm connectivity of each device.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 311-NFPA 72-2019 [Section No. 29.10.8.2.1]	Chapter 29 revision for low-power wireless testing
Public Input No. 313-NFPA 72-2019 [Section No. I.1.2.16.9]	

Submitter Information Verification

Submitter Full Name: Greg Hansen
Organization: Vivint Inc.
Affiliation: SIG-HOU Task Group 2 input
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 19 19:42:33 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5095-NFPA 72-2019

Statement: The detail on testing interconnection of nonsupervised wireless alarms was added to NFPA 72 in 2010 because there were products on the market at that time and no reference to testing the wireless interconnection in the UL 217 product standard. Since that time, wireless interconnection has been incorporated into UL 217 and is being further refined as part of the regular ANSI process. The text is modified to establish performance criteria and remove test details that are being incorporated into UL 217.

Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]

A.29.11.3.4(4)

As per annex material located in A.29.8.1, it is not normally recommended that smoke alarms or smoke detectors be placed in kitchen spaces. This section of the code provides guidelines for safe installation if a need exists to install a smoke alarm or smoke detector in a residential kitchen space or cooking area.

Within this Code section, a fixed cooking appliance is any appliance that is intended to be permanently connected electrically to the wiring system or the fuel source. A stationary cooking appliance is any appliance that is intended to be fastened in place or located in a dedicated space, and is connected to the supply circuit or fuel source.

~~Smoke alarms and smoke detectors that are currently available to consumers are susceptible to particles released into the air during normal cooking procedures. If smoke alarms and smoke detectors are placed too close to the area where the cooking source originates, a high level of nuisance alarms can occur. Frequent nuisance alarms can result in an occupant disabling the smoke alarm or smoke detector.~~

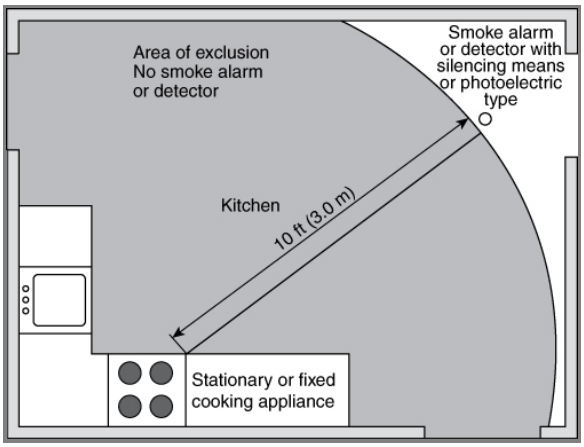
Nuisance alarm studies show that commercially available residential smoke alarms and smoke detectors are susceptible to nuisance alarms when installed too close to cooking appliances. Combined with the performance for cooking nuisance in UL 217 and UL 268. As the horizontal distance between the smoke alarm or smoke detectors and the cooking appliance increases, the frequency of nuisance alarms decreases. ~~Smoke alarms or smoke detectors that use ionization smoke detection have been shown to be more susceptible to cooking nuisance alarms than those that use photoelectric smoke detection when the alarms or detectors are installed within 10 ft (3.0 m) along a horizontal smoke travel path from a cooking appliance. Smoke alarms or smoke detectors that use photoelectric smoke detection produce nuisance alarms when installed less than 10 ft (3.0 m) from a cooking appliance, though to a lesser degree.~~

~~The occurrence of the higher frequency of nuisance alarms observed in smoke alarms or smoke detectors that use ionization detection have been documented in the fire research data. Due to the differences in technology between ionization detection and photoelectric detection, the sensitivity typically used for ionization detection is much higher than that used for photoelectric detection. This sensitivity difference is a result of each type of the detection being required to satisfy UL 217 performance tests. Removing detection technology from consideration, the frequency of nuisance alarms is solely due to the sensitivity of the detection method used. Thus, both ionization and photoelectric detector technologies will produce nuisance alarms due to cooking, but currently available smoke alarms and smoke detectors that use ionization detection typically produce more cooking-related nuisance alarms.~~

~~The higher sensitivities of currently available smoke alarms and smoke detectors that use ionization detection do provide a benefit at the expense of a potentially higher rate of cooking-related nuisance alarms. Research has demonstrated that ionization detection will typically respond faster than photoelectric detection to flaming fires, providing earlier warning to occupants that might allow for quicker intervention or faster egress. In general, the installation of smoke alarms or smoke detectors that use ionization detection will result in increased fire safety at the risk of a higher frequency of nuisance alarms. The installation of smoke alarms or smoke detectors that use photoelectric detection will result in reduced fire safety for flaming fires and a reduced risk of nuisance alarms. Based on the trade-off between faster response to fires and the frequency of nuisance alarms, detectors that utilize both technologies (i.e., ionization, photoelectric, and a combination) are allowed to be installed between 10 ft (3.0 m) and 20 ft (6.1 m) along a horizontal flow path from a standard or fixed cooking appliance if the specific detector is equipped with an alarm silencing means or is of the photoelectric-type.~~

Nuisance alarm studies provide data on cooking nuisances that emanate from both fixed cooking appliances and stationary cooking appliances (e.g., stove, oven) as well as portable cooking appliances (e.g., toaster). Based on these studies, which demonstrate the potential of all cooking appliances to generate nuisance sources, a zone of exclusion has been specified surrounding each stationary or fixed cooking appliance. The purpose of this zone is to limit the installation of smoke alarms and detectors in areas where stationary, fixed, or portable cooking appliances will be located within the residential kitchen space such that potential nuisance alarms are minimized. The size of the zone of exclusion is specified to attempt to take into account the unknown and transitory locations of portable cooking appliances. This zone of exclusion is determined by measuring a 10 ft (3.0 m) radial distance from the closest edge of a stationary or fixed cooking appliance. The zone of exclusion is not intended to pass through walls or doorways. Figure A.29.11.3.4(4)(a) provides an example of the zone of exclusion in a generalized residential kitchen.

Figure A.29.11.3.4(4)(a) Example of Zone of Exclusion (gray area) Within Typical Residential Kitchen.



If other areas of this code require that a smoke alarm or smoke detector be placed within a horizontal flow path distance between 10 ft (3.0 m) and 20 ft (6.1 m) from a stationary or fixed cooking appliance, the following method should be used to determine the distance~~, and only photoelectric detection or smoke alarms/detectors with alarm silencing means can be installed in this area~~ .

To install a smoke alarm or detector between 10 ft (3.0 m) and 20 ft (6.1 m) from the cooking appliance, an installer must first determine the 10 ft (3.0 m) area of exclusion. Once the area of exclusion is determined, an installer must then determine the horizontal flow distance. This is the horizontal distance along the ceiling from the closest edge of the cooking appliance to the smoke alarm or detector. The horizontal distance can consist of line segments due to impediments, such as interior partitions. Once an impediment is met, the measurement of the distance will then continue along the new horizontal path segment until the distance requirement is met or another impediment is encountered. Figure A.29.11.3.4(4)(b) provides an example for placement outside a kitchen in a nearby hallway. Figure A.29.11.3.4(4)(c) provides another example of appropriate placement outside of a kitchen in an adjacent room.

Figure A.29.11.3.4(4)(b) Example of Smoke Alarm or Smoke Detector Placement Between 10 ft (3.0 m) and 20 ft (6.1 m) Away in Hallway from Center of Stationary or Fixed Cooking Appliance.

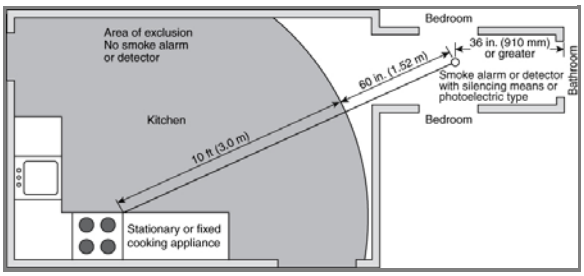
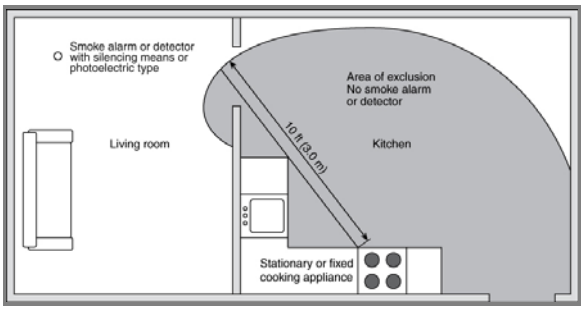


Figure A.29.11.3.4(4)(c) Example of Smoke Alarm or Smoke Detector Placement Between 10 ft (3.0 m) and 20 ft (6.1 m) Away in Hallway from Center of Stationary or Fixed Cooking Appliance.

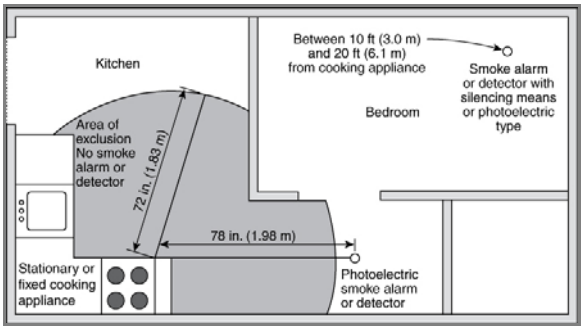


At a horizontal flow path distance of greater than 20 ft (6.1 m), any type of smoke alarm or smoke detector can be installed.

In rare cases, a residential dwelling can be of such size and configuration that an area of exclusion of 10 ft (3.0 m) from a stationary or fixed cooking appliance excludes the placement of a smoke alarm or smoke detector required by other areas of this Code. In these cases, a smoke alarm or smoke detector ~~using photoelectric detection~~ can be installed at least 72 in. (1.83 m) from the fixed or stationary cooking appliance. Figure A.29.11.3.4(4)(d) provides an example of this situation in practice where a smoke alarm or smoke detector is required outside of the sleeping area, but the space is in close proximity to the kitchen space.

In response to the above noted nuisance alarm studies, the 8th edition of UL 217 and the 7th edition of UL 268 have added a new performance test to help reduce nuisance alarms from normal cooking. This end product performance and Listing requirement align with Section 29.11.3.4(6) of this code. Smoke alarms incorporating the multi-criteria smoke detection technology and complying with these UL standards shall be Listed "for resistance to common nuisance sources from cooking" and are suitable for installation at distances from cooking appliances outlined in this code.

Figure A.29.11.3.4(4)(d) Example of Exception Placement of Photoelectric Smoke Alarm or Smoke Detector at 72 in. (1.83 m) from Stationary or Fixed Cooking Appliance.



Additional Proposed Changes

File Name	Description	Approved
UL_Smoke_Characterazation_Study.pdf		

Statement of Problem and Substantiation for Public Input

In addition to the new cooking nuisance requirements specified in UL 217 and UL 268, there's merit to requiring a minimum installation distance from the cooking source for all smoke detection technologies. This will continue to help reduce cooking nuisance alarms, but the data combined with the new cooking nuisance requirements do not support "silencing" features for some technologies and not others. Nor does it support the placement of some technologies to be closer to the cooking nuisance source while others must be placed at a further distance. Proximity to the cooking source and the use of "silencing" features for one technology vs another must be reconsidered.

In addition, technology specific requirements should
be removed and/or reconsidered to minimize installation confusion. For additional details related to the characterization of cooking nuisance sources, reference UL's research document titled:

"Characterization of Smoke Alarm Nuisance Sources from Cooking Scenarios"

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 583-NFPA 72-2019 [Section No. 29.11.3.4]	
Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]	
Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]	
Public Input No. 592-NFPA 72-2019 [Section No. A.29.11.3.4(7)]	
Public Input No. 593-NFPA 72-2019 [Section No. B.4.7.1]	
Public Input No. 594-NFPA 72-2019 [Section No. B.4.7.3]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC

Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:24:40 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5030-NFPA 72-2019

Statement: The last paragraph has been added to address alarms listed to the new UL nuisance test. During the transition to new editions of UL 217 and UL 268 guidance on existing technologies is still valid and remains in this Code.

Public Input No. 592-NFPA 72-2019 [Section No. A.29.11.3.4(7)]

A.29.11.3.4(7)

Studies indicate that smoke alarms and smoke detectors ~~that use ionization detection, photoelectric detection, or a combination of ionization and photoelectric detection, are~~ that are susceptible to nuisance alarms caused by steam. Little research has been done on the comparative response of these types of detection to steam. ~~Steam~~ These steam particles, in general, are visible, reflect light easily, and are typically produced in a size range ~~that would be more likely to actuate a photoelectric sensor. Thus~~ that are within the detection range for all smoke alarms. Thus , it is required that smoke alarms and smoke detectors be installed greater than 36 in. (910 mm) from the bathroom door where possible. Increasing the distance between the smoke alarm or smoke detector and the bathroom door can reduce the frequency of nuisance alarms from bathroom steam. Frequent nuisance alarms can result in the occupant disabling the smoke alarm. Each incremental increase in separation, up to 10 ft (3.0 m), between the bathroom door and the smoke alarm or smoke detector is expected to reduce the frequency of nuisance alarms.

Additional Proposed Changes

File Name	Description	Approved
UL_Smoke_Characterazation_Study.pdf		

Statement of Problem and Substantiation for Public Input

In addition to the new cooking nuisance requirements specified in UL 217 and UL 268, there's merit to requiring a minimum installation distance from the cooking source for all smoke detection technologies. This will continue to help reduce cooking nuisance alarms, but the data combined with the new cooking nuisance requirements do not support "silencing" features for some technologies and not others. Nor does it support the placement of some technologies to be closer to the cooking nuisance source while others must be placed at a further distance. Proximity to the cooking source and the use of "silencing" features for one technology vs another must be reconsidered.

In addition, technology specific requirements should
be removed and/or reconsidered to minimize installation confusion. For additional details related to the characterization of cooking nuisance sources, reference UL's research document titled:

"Characterization of Smoke Alarm Nuisance Sources from Cooking Scenarios"

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]	
Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]	
Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]	
Public Input No. 593-NFPA 72-2019 [Section No. B.4.7.1]	
Public Input No. 594-NFPA 72-2019 [Section No. B.4.7.3]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:

Zip:
Submittal Date: Wed Jun 26 14:40:06 EDT 2019
Committee: SIG-HOU

Committee Statement

Resolution: FR-5037-NFPA 72-2019
Statement: More recent studies have shown photoelectric sensors are more sensitive to steam. This section has been amended to reflect that research.

Public Input No. 250-NFPA 72-2019 [Section No. B.1.1]

B.1.1 Scope.

Annex B provides information intended to supplement Chapter 17. It includes a procedure for determining detector spacing based on the objectives set for the system, the size ~~,~~ and growth rate of ~~growth of fire to be detected, various ceiling heights, ambient temperatures, and~~ the design fire, the ceiling height, ambient temperature, and the response characteristics of the detectors. In addition to providing an engineering method for the design of detection systems using plume-dependent detectors, heat detectors, and smoke detectors, this annex also provides guidance on the use of radiant energy–sensing detectors.

Statement of Problem and Substantiation for Public Input

Revised for grammar, including tense and number, usage. This is a CC recommended change.

Submitter Information Verification

Submitter Full Name: Laurence Dallaire
Organization: Architect of the Capitol
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 05 15:59:23 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5190-NFPA 72-2019
Statement: The text was edited to improve the grammar.

Public Input No. 295-NFPA 72-2019 [Section No. B.1.3.3]

B.1.3.3

The designer of fire alarm systems needs to be knowledgeable in the applicable areas associated with undertaking a performance-based design, including fire dynamics, performance-based design, detector response, and so forth, and apply these principles judiciously. In addition, the majority of jurisdictions consider the design of fire alarm systems as “engineering work.” They therefore require licensed engineers to perform such work. Other jurisdictions allow technologists to lay out fire alarm systems as long as they follow the appropriate prescriptive requirements. Designers who are using a performance-based design approach need to review the relevant engineering licensure laws in the jurisdictions in which they are practicing, as performance-based designs might very likely be deemed engineering and of the type that requires licensure of a professional engineer. The SFPE Engineering Guide to Peer Review in the Fire Protection Design Process provides guidance to engineers who are asked to peer review this type of engineering design.

Statement of Problem and Substantiation for Public Input

The SFPE Engineering Guide to Peer Review in the Fire Protection Design Process provides detailed information on how to select a peer reviewer and the proper procedures to conduct a peer review.

Submitter Information Verification

Submitter Full Name: Chris Jelenewicz
Organization: SFPE
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 12:17:27 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5199-NFPA 72-2019
Statement: The new reference provides additional guidance.

Public Input No. 285-NFPA 72-2019 [Section No. B.2.3.2.6.2]

B.2.3.2.6.2

Some information is contained in Figure B.2.3.2.6.2 and Table B.2.3.2.6.2(a) through Table B.2.3.2.6.2(e).

Table B.2.3.2.6.2(a) Maximum Heat Release Rates — Warehouse Materials

Warehouse Materials	Growth Time (t_g) (sec)	Heat Release Density (q)		Classification
		kW/m^2	Btu/sec·ft^2	
1. Wood pallets, stack, 0.46 m (1 1/2 ft) high (6%–12% moisture)	150–310	1,248	110	fast–medium
2. Wood pallets, stack, 1.52 m (5 ft) high (6%–12% moisture)	90–190	3,745	330	fast
3. Wood pallets, stack, 3.05 m (10 ft) high (6%–12% moisture)	80–110	6,810	600	fast
4. Wood pallets, stack, 4.88 m (16 ft) high (6%–12% moisture)	75–105	10,214	900	fast
5. Mail bags, filled, stored 1.52 m (5 ft) high	190	397	35	medium
6. Cartons, compartmented, stacked 4.57 m (15 ft) high	60	2,270	200	fast
7. Paper, vertical rolls, stacked 6.10 m (20 ft) high	15–28	—	—	*
8. Cotton (also PE, PE/cot, acrylic/nylon/PE), garments in 3.66 m (12 ft) high racks	20–42	—	—	*
9. Cartons on pallets, rack storage, 4.57 m–9.14 m (15 ft–30 ft) high	40–280	—	—	fast–medium
10. Paper products, densely packed in cartons, rack storage, 6.10 m (20 ft) high	470	—	—	slow
11. PE letter trays, filled, stacked 1.52 m (5 ft) high on cart	190	8,512	750	medium
12. PE trash barrels in cartons, stacked 4.57 m (15 ft) high	55	2,837	250	fast
13. FRP shower stalls in cartons, stacked 4.57 m (15 ft) high	85	1,248	110	fast
14. PE bottles, packed in item 6	85	6,242	550	fast
15. PE bottles in cartons, stacked 4.57 m (15 ft) high	75	1,929	170	fast
16. PE pallets, stacked 0.91 m (3 ft) high	130	—	—	fast
17. PE pallets, stacked 1.83 m–2.44 m (6 ft–8 ft) high	30–55	—	—	fast
18. PU mattress, single, horizontal	110	—	—	fast
19. PE insulation board, rigid foam, stacked 4.57 m (15 ft) high	8	1,929	170	*
20. PS jars, packed in item 6	55	13,619	1,200	fast
21. PS tubs nested in cartons, stacked 4.27 m (14 ft) high	105	5,107	450	fast
22. PS toy parts in cartons, stacked 4.57 m (15 ft) high	110	2,042	180	fast
23. PS insulation board, rigid, stacked 4.27 m (14 ft) high	7	3,291	290	*
24. PVC bottles, packed in item 6	9	3,405	300	*
25. PP tubs, packed in item 6	10	4,426	390	*
26. PP and PE film in rolls, stacked 4.27 m (14 ft) high	40	3,972	350	*
27. Distilled spirits in barrels, stacked 6.10 m (20 ft) high	23–40	—	—	*
28. Methyl alcohol	—	738	65	—

Warehouse Materials	Growth Time (t_g) (sec)	Heat Release Density (q) kW/m^2	Heat Release Density (q) Btu/sec·ft^2	Classification
29. Gasoline	—	2,270	200	—
30. Kerosene	—	2,270	200	—
31. Diesel oil	—	2,043	180	—

PE: Polyethylene. PS: Polystyrene. PVC: Polyvinyl chloride. PP: Polypropylene. PU: Polyurethane. FRP: Fiberglass-reinforced polyester.

Note: The heat release rates per unit floor area are for fully involved combustibles, assuming 100 percent combustion efficiency. The growth times shown are those required to exceed 1000 Btu/sec heat release rate for developing fires, assuming 100 percent combustion efficiency.

*Fire growth rate exceeds design data.

Table B.2.3.2.6.2(b) Maximum Heat Release Rates from Fire Detection Institute Analysis

Materials	Approximate Values	
	kW	Btu/sec
Medium wastebasket with milk cartons	105	100
Large barrel with milk cartons	148	140
Upholstered chair with polyurethane foam	369	350
Latex foam mattress (heat at room door)	1265	1200
Furnished living room (heat at open door)	4217–8435	4000–8000

Table B.2.3.2.6.2(c) Unit Heat Release Rates for Fuels Burning in the Open

Commodity	Heat Release Rate	
	kW	Btu/sec
Flammable liquid pool	3291/m^2	290/ft^2 of surface
Flammable liquid spray	557/Lpm	2000/gpm of flow
Pallet stack	3459/m	1000/ft of height
Wood or PMMA* (vertical)		
0.6 m (2 ft) height	104/m	30/ft of width
1.8 m (6 ft) height	242/m	70/ft of width
2.4 m (8 ft) height	623/m	180/ft of width
3.7 m (12 ft) height	1038/m	300/ft of width
Wood or PMMA*		
Top of horizontal surface	715/m^2	63/ft^2 of surface
Solid polystyrene (vertical)		
0.6 m (2 ft) height	218/m	63/ft of width
1.8 m (6 ft) height	450/m	130/ft of width
2.4 m (8 ft) height	1384/m	400/ft of width
3.7 m (12 ft) height	2352/m	680/ft of width
Solid polystyrene (horizontal)	1362/m^2	120/ft^2 of surface
Solid polypropylene (vertical)		
0.6 m (2 ft) height	218/m	63/ft of width

1.8 m (6 ft) height	346/m	100/ft of width
2.4 m (8 ft) height	969/m	280/ft of width
3.7 m (12 ft) height	1626/m	470/ft of width
Solid polypropylene (horizontal)	795/m^2	70/ft^2 of surface

*Polymethyl methacrylate (Plexiglas™, Lucite™, Acrylic).

[**92B:** Table B.1, 1995.]

Table B.2.3.2.6.2(d) Characteristics of Ignition Sources

	Typical Heat Output		Burn Time[a] (sec)		Maximum Flame Height		Flame Width		Maximum Heat Flux	
	W	Btu/sec	mm	in.	mm	in.	kW/m^2	Btu/sec · ft^2
Cigarette 1.1 g (not puffed, laid on solid surface)								
Bone dry	5		0.0047					
	1200							
	—				—			
	—				—			
							42	3.7
Conditioned to 50% relative humidity							5	0.0047
	1200							
	—				—			
	—				—			
							35	3.1
Methenamine pill, 0.15 g (0.0053 oz)							45	0.043
	90							
	—				—			

—		—		
			4	0.35
Match, wooden, laid on solid surface			80	0.076
	20–30			
30		1.18		
14		0.092		
		18–20	1.59–1.76	
Wood cribs, BS 5852 Part 2				
No. 4 crib, 8.5 g (0.3 oz)		1,000	0.95	
	190			
—		—		
—		—		
		15 [d]		1.32
No. 5 crib, 17 g (0.6 oz)		1,900		1.80
	200			
—		—		
—		—		
		17 [d]		1.50
No. 6 crib, 60 g (2.1 oz)		2,600		2.46
	190			
—		—		
—		—		
		20 [d]		1.76
No. 7 crib, 126 g (4.4 oz)		6,400		6.07
	350			
—		—		

—	—		
		25 [d]	2.20
Crumpled brown lunch bag, 6 g (0.21 oz)		1,200	1.14
	80		
—	—		
—	—		
		—	—
Crumpled wax paper, 4.5 g (0.16 oz) (tight)		1,800	1.71
	25		
—	—		
—	—		
		—	—
Crumpled wax paper, 4.5 g (0.16 oz) (loose)		5,300	5.03
	20		
—	—		
—	—		
		—	—
Folded double-sheet newspaper, 22 g (0.78 oz) (bottom ignition)		4,000	3.79
	100		
—	—		
—	—		
		—	—
Crumpled double-sheet newspaper, 22 g (0.78 oz) (top ignition)		7,400	7.02
	40		
—	—		
—	—		
		—	—

Crumpled double-sheet newspaper, 22 g (0.78 oz) (bottom ignition)		17,000	16.12
	20		
	—	—	
	—	—	
		—	—
Polyethylene wastebasket, 285 g (10.0 oz), filled with 12 milk cartons [390 g (13.8 oz)]		50,000	47.42
	200 [b]		
550		21.7	
200		7.9	
		35 [c]	3.08
Plastic trash bags, filled with cellulosic trash [1.2–14 kg (42.3–493 oz)] [e]		120,000–350,000	113.81–331.96
	200 [b]		
	—	—	
	—	—	
	—	—	

Note: Based on Table B.5.3(b) of NFPA 92, 2012 edition.

[a]Time duration of significant flaming.

[b]Total burn time in excess of 1800 seconds.

[c]As measured on simulation burner.

[d]Measured from 25 mm away.

[e]Results vary greatly with packing density.

Table B.2.3.2.6.2(e) Furniture Heat Release Rates [3, 14, 16]

Test No.	Item/Description/Mass	Growth Time (t_g) (sec)	Classification
~~Fuel~~			
		Fire	
~~Intensity Coefficient~~			
		Growth Rate (α)	
-			
		Virtual Time (t_v) (sec)	
-			
		Maximum Heat Release Rates	

		kW/sec [2]	Btu/sec [3]	kW	Btu/sec	
15	Metal wardrobe, 41.4 kg (91.3 lb) (total)	50	fast	0.4220	0.4002	
		10				
		750	711			
18	Chair F33 (trial love seat), 29.2 kg (64.4 lb)	400	slow	0.0066	0.0063	
		140				
		950	901			
19	Chair F21, 28.15 kg (62.01 lb) (initial)	175	medium	0.0344	0.0326	
		110				
		350	332			
19	Chair F21, 28.15 kg (62.01 lb) (later)	50	fast	0.4220	0.4002	
		190				
		2000	1897			
21	Metal wardrobe, 40.8 kg (90.0 lb) (total) (initial)	250	medium	0.0169	0.0160	
		10				
		250	237			
21	Metal wardrobe, 40.8 kg (90.0 lb) (total) (average)	120	fast	0.0733	0.0695	
		60				
		250	237			
21	Metal wardrobe, 40.8 kg (90.0 lb) (total) (later)	100	fast	0.1055	0.1001	
		30				
		140	133			
22	Chair F24, 28.3 kg (62.4 lb)	350	medium	0.0086	0.0082	
		400				
		700	664			
23	Chair F23, 31.2 kg (68.8 lb)	400	slow	0.0066	0.0063	
		100				
		700	664			
24	Chair F22, 31.2 kg (68.8 lb)	2000	slow	0.0003	0.0003	

			150			
-						
	300	285				
25	Chair F26, 19.2 kg (42.3 lb)	200	medium	0.0264	0.0250	
-						
			90			
-						
	800	759				
26	Chair F27, 29.0 kg (63.9 lb)	200	medium	0.0264	0.0250	
-						
			360			
-						
	900	854				
27	Chair F29, 14.0 kg (30.9 lb)	100	fast	0.1055	0.1001	
-						
			70			
-						
	1850	1755				
28	Chair F28, 29.2 kg (64.4 lb)	425	slow	0.0058	0.0055	
-						
			90			
-						
	700	664				
29	Chair F25, 27.8 kg (61.3 lb) (later)	60	fast	0.2931	0.2780	
-						
			175			
-						
	700	664				
29	Chair F25, 27.8 kg (61.3 lb) (initial)	100	fast	0.1055	0.1001	
-						
			100			
-						
	2000	1897				
30	Chair F30, 25.2 kg (55.6 lb)	60	fast	0.2931	0.2780	
-						
			70			
-						
	950	901				
31	Chair F31 (love seat), 39.6 kg (87.3 lb)	60	fast	0.2931	0.2780	
-						
			145			
-						
	2600	2466				
37	Chair F31 (love seat), 40.4 kg (89.1 lb)	80	fast	0.1648	0.1563	
-						
			100			
-						
	2750	2608				

38	Chair F32 (sofa), 51.5 kg (113.5 lb)	100	fast	0.1055	0.1001	
		50				
	3000	2845				
39	1/2 in. plywood wardrobe with fabrics, 68.5 kg (151.0 lb)	35	*	0.8612	0.8168	
		20				
	3250	3083				
40	1/2 in. plywood wardrobe with fabrics, 68.32 kg (150.6 lb)	35	*	0.8612	0.8168	
		40				
	3500	3320				
41	1/8 in. plywood wardrobe with fabrics, 36.0 kg (79.4 lb)	40	*	0.6594	0.6254	
		40				
	6000	5691				
42	1/8 in. plywood wardrobe with fire-retardant interior finish (initial growth)	70	fast	0.2153	0.2042	
		50				
	2000	1897				
42	1/8 in. plywood wardrobe with fire-retardant interior finish (later growth)	30	*	1.1722	1.1118	
		100				
	5000	4742				
43	Repeat of 1/2 in. plywood wardrobe, 67.62 kg (149.08 lb)	30	*	1.1722	1.1118	
		50				
	3000	2845				
44	1/8 in. plywood wardrobe with fire-retardant latex paint, 37.26 kg (82.14 lb)	90	fast	0.1302	0.1235	
		30				
	2900	2751				
45	Chair F21, 28.34 kg (62.48 lb)	100	*	0.1055	0.1001	
		120				
	2100	1992				
46	Chair F21, 28.34 kg (62.48 lb)	45	*	0.5210	0.4941	

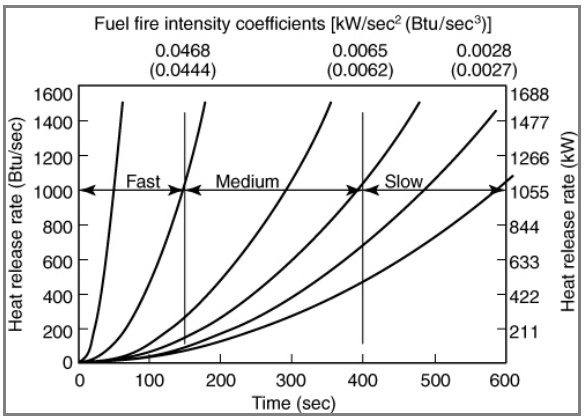
		130				
-						
	2600		2466			
47	Chair, adj. back metal frame, foam cushions, 20.82 kg (45.90 lb)	170	medium	0.0365	0.0346	
-						
		30				
-						
	250	237				
48	Easy chair CO7, 11.52 kg (25.40 lb)	175	medium	0.0344	0.0326	
-						
		90				
-						
	950	901				
49	Easy chair F34, 15.68 kg (34.57 lb)	200	medium	0.0264	0.0250	
-						
		50				
-						
	200		190			
50	Chair, metal frame, minimum cushion, 16.52 kg (36.42 lb)	200	medium	0.0264	0.0250	
-						
		120				
-						
	3000		2845			
51	Chair, molded fiberglass, no cushion, 5.28 kg (11.64 lb)	120	fast	0.0733	0.0695	
-						
		20				
-						
	35	33				
52	Molded plastic patient chair, 11.26 kg (24.82 lb)	275	medium	0.0140	0.0133	
-						
		2090				
-						
	700		664			
53	Chair, metal frame, padded seat and back, 15.54 kg (34.26 lb)	350	medium	0.0086	0.0082	
-						
		50				
-						
	280		266			
54	Love seat, metal frame, foam cushions, 27.26 kg (60.10 lb)	500	slow	0.0042	0.0040	
-						
		210				
-						
	300		285			
56	Chair, wood frame, latex foam cushions, 11.2 kg (24.69 lb)	500	slow	0.0042	0.0040	
-						
		50				
-						
	85		81			

57	Love seat, wood frame, foam cushions, 54.6 kg (120.37 lb)	350	medium	0.0086	0.0082	
		500				
	1000	949				
61	Wardrobe, 3/4 in. particleboard, 120.33 kg (265.28 lb)	150	medium	0.0469	0.0445	
		0				
	1200	1138				
62	Bookcase, plywood with aluminum frame, 30.39 kg (67.00 lb)	65	fast	0.2497	0.2368	
		40				
	25	24				
64	Easy chair, molded flexible urethane frame, 15.98 kg (35.23 lb)	1000	slow	0.0011	0.0010	
		750				
	450	427				
66	Easy chair, 23.02 kg (50.75 lb)	76	fast	0.1827	0.1733	
		3700				
	600	569				
67	Mattress and box spring, 62.36 kg (137.48 lb) (later)	350	medium	0.0086	0.0082	
		400				
	500	474				
67	Mattress and box spring, 62.36 kg (137.48 lb) (initial)	1100	slow	0.0009	0.0009	
		90				
	400	379				

Note: For tests 19, 21, 29, 42, and 67, different power law curves were used to model the initial and the latter realms of burning. In examples such as these, engineers should choose the fire growth parameter that best describes the realm of burning to which the detection system is being designed to respond.

*Fire growth exceeds design data.

Figure B.2.3.2.6.2 Power Law Heat Release Rates.



Additional Proposed Changes

File Name	Description	Approved
Revised_Figure_B.2.3.2.6.2.JPG	Revised Figure B.2.3.2.6.2	

Statement of Problem and Substantiation for Public Input

As pointed out by the Correlating Committee, the coefficient α is elsewhere defined and used as the fire growth rate. In multiple locations this same coefficient is referred to as the “fuel fire intensity coefficient”. It has been validated in each instance the coefficient is the same so therefore the changes are recommended to standardize terminology.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 286-NFPA 72-2019 [Sections B.3.2.1.1, B.3.2.1.2]	Standardization of terminology
Public Input No. 287-NFPA 72-2019 [Section No. B.7]	Standardization of terminology
Public Input No. 286-NFPA 72-2019 [Sections B.3.2.1.1, B.3.2.1.2]	
Public Input No. 287-NFPA 72-2019 [Section No. B.7]	

Submitter Information Verification

Submitter Full Name: Samuel Miller
Organization: BP
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 13:42:33 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5192-NFPA 72-2019
Statement: The coefficient α is elsewhere defined and used as the fire growth rate. In multiple locations this same coefficient is referred to as the “fuel fire intensity coefficient”. It has been validated in each instance the coefficient is the same so therefore the changes standardize terminology.

Trade mark product names were removed from the note to Table B.2.3.2.6.2(c).

Public Input No. 288-NFPA 72-2019 [Section No. B.2.3.3.3]

B.2.3.3.3

Various methods are available to evaluate whether a candidate design will achieve the previously established performance criteria. Some methods are presented in Section B.3, B4, and B5 .

Statement of Problem and Substantiation for Public Input

As pointed out by the Correlating Committee, In B.2.3.3.3, the text is not applicable only to heat detection. It is also applicable to smoke detection (B.4) and flame detection (B.5).

Submitter Information Verification

Submitter Full Name: Samuel Miller
Organization: BP
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 14:50:10 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5194-NFPA 72-2019
Statement: In B.2.3.3.3, the text is not applicable only to heat detection. It is also applicable to smoke detection, Section B.4 and flame detection, Section B.5.

Public Input No. 286-NFPA 72-2019 [Sections B.3.2.1.1, B.3.2.1.2]

Sections B.3.2.1.1, B.3.2.1.2

B.3.2.1.1 Design.

Data required to determine design include the following:

(1) Ceiling height or clearance above fuel (H)

(2) Threshold fire size at which response must occur (Q_d) or the time to detector response (t_d)

(3) Response time index (RTI) for the detector (heat detectors only) or its listed spacing

(4) Ambient temperature (T_a)

(5) Detector operating temperature (T_s) (heat detectors only)

(6) Rate of temperature change set point for rate-of-rise heat detectors (T_s/min)

(7) ~~Fuel fire intensity coefficient~~ Fire growth rate (α) or the fire growth time (t_g)

B.3.2.1.2 Analysis.

Data required to determine analysis include the following:

(1) Ceiling height or clearance above fuel (H)

(2) Response time index (RTI) for the detector (heat detectors only) or its listed spacing

(3) Actual installed spacing (S) of the existing detectors

(4) Ambient temperature (T_a)

(5) Detector operating temperature (T_s) (heat detectors only)

(6) Rate of temperature change set point for rate-of-rise heat detectors (T_s/min)

(7) ~~Fuel fire intensity coefficient~~ Fire growth rate (α) or the fire growth time (t_g)

Statement of Problem and Substantiation for Public Input

As pointed out by the Correlating Committee, the coefficient α is elsewhere defined and used as the fire growth rate. In multiple locations this same coefficient is referred to as the “fuel fire intensity coefficient”. It has been validated in each instance the coefficient is the same so therefore the changes are recommended to standardize terminology.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 287-NFPA 72-2019 [Section No. B.7]	Standardization of terminology
Public Input No. 285-NFPA 72-2019 [Section No. B.2.3.2.6.2]	Standardization of terminology
Public Input No. 285-NFPA 72-2019 [Section No. B.2.3.2.6.2]	
Public Input No. 287-NFPA 72-2019 [Section No. B.7]	

Submitter Information Verification

Submitter Full Name: Samuel Miller
Organization: BP
Street Address:
City:
State:
Zip:

Submittal Date: Thu Jun 13 14:02:04 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5201-NFPA 72-2019
Statement: The coefficient α is elsewhere defined and used as the fire growth rate. In multiple locations this same coefficient is referred to as the “fuel fire intensity coefficient”. It has been validated in each instance the coefficient is the same so therefore the changes standardize terminology.

Public Input No. 593-NFPA 72-2019 [Section No. B.4.7.1]

B.4.7.1 General.

Once smoke is transported to the detector, additional factors become important in determining whether response will occur. These include the aerodynamic characteristics of the detector and the type of sensor within the detector. The aerodynamics of the detector relate to how easily smoke can pass through the detector housing and enter the sensor portion of the unit. Additionally, the location of the entry portion to the sensor with respect to the velocity profile of the ceiling jet is also an important factor. Finally, different sensing ~~methods (e.g., ionization or photoelectric) will~~ methods and complex algorrithms will respond differently, depending on the smoke characteristics (smoke color, particle size, optical density, and so forth). ~~Within the family of photoelectric devices, there will be variations depending on the wavelengths of light and the scattering angles employed. The~~ The following paragraphs discuss some of these issues and various calculation methods.

Statement of Problem and Substantiation for Public Input

We are proposing to delete many of the references to specific technology with the next edition of NFPA 72 to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268. End product safety standards such as UL 217 and UL 268 are technology independent. In addition, the performance requirements for detecting fire types and cooking nuisance mitigation are independent of technology. Calling out technology requirements in an installation standard does not consider innovative technology solutions that could otherwise be used to comply with these end product standards. As an example, UL cooking nuisance research demonstrated that independent of smoke detection technology, and placement, all smoke alarms produced an alarm signal during normal cooking. Placement of the alarms in reference to the broiling hamburger cooking source and by 1.5% OBS/ft, resulted in an increased or delayed response, based on location, in almost all smoke alarms with many different types of technologies being tested.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]	
Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]	
Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]	
Public Input No. 592-NFPA 72-2019 [Section No. A.29.11.3.4(7)]	
Public Input No. 594-NFPA 72-2019 [Section No. B.4.7.3]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 26 14:47:04 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5196-NFPA 72-2019

Statement: Additional information was added to keep up with current technology. Regardless of testing standard revisions, the variations described and their impact on performance still remain. This is beneficial information to users of this section and therefore the guidance given on photoelectric devices should remain.

Public Input No. 594-NFPA 72-2019 [Section No. B.4.7.3]

B.4.7.3 Critical Velocity.

A smoke detector's critical velocity refers to the minimum velocity of the smoke necessary to enter the sensing chamber to cause an alarm without significant delays due to smoke entry lag. Alarms can occur at velocities less than the critical velocity value, but their response can be delayed or require greater smoke concentrations than would normally be necessary. Flow across a detector causes a pressure differential between the upstream and downstream sides of the detector. This pressure differential is the principal driving force for the smoke entering the unit.

~~Experimental work has indicated that the critical velocity is approximately 0.15 m/sec (0.49 ft/sec) for the ionization detectors tested in one particular study. [21] Once velocities were reduced below this level, the smoke concentration level outside the detector before an alarm condition increased dramatically when compared to smoke concentration levels when the velocity was above the critical value. Another study found that measured velocities at the time of alarm for ionization and photoelectric detectors in full-scale flaming fire tests generally supported this velocity value, with a mean value of 0.13 m/sec (0.43 ft/sec) and a standard deviation of 0.07 m/sec (0.23 ft/sec) [46]. Estimating the critical velocity can therefore be useful for design and analysis.~~

~~It is interesting to note that this critical velocity value (0.15 m/sec or 0.49 ft/sec) is close to that at which a smoke detector must respond in the UL smoke detector sensitivity chamber in order to become listed. [35] The location in the ceiling jet where this velocity occurs for a given fire and ceiling height might therefore be considered as a first approximation for locating detectors. This again assumes a horizontal, smooth ceiling. Care should also be taken when using this correlation, such that consideration is given to potential effects of coagulation and agglomeration, and settling of the smoke within the ceiling jet as it moves away from the fire source and loses its buoyancy. The velocity for smoke entry might be present, but the concentration of smoke might not be sufficient to actuate the detector.~~

Statement of Problem and Substantiation for Public Input

We are proposing to delete many of the references to specific technology with the next edition of NFPA 72 to align with the new testing criteria that are included in the 8th edition of UL 217 and the 7th Edition of UL 268. End product safety standards such as UL 217 and UL 268 are technology independent. In addition, the performance requirements for detecting fire types and cooking nuisance mitigation are independent of technology. Calling out technology requirements in an installation standard does not consider innovative technology solutions that could otherwise be used to comply with these end product standards. As an example, UL cooking nuisance research demonstrated that independent of smoke detection technology, and placement, all smoke alarms produced an alarm signal during normal cooking. Placement of the alarms in reference to the broiling hamburger cooking source and by 1.5% OBS/ft, resulted in an increased or delayed response, based on location, in almost all smoke alarms with many different types of technologies being tested.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 584-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 587-NFPA 72-2019 [Section No. A.17.7.5.4.2]	
Public Input No. 588-NFPA 72-2019 [Section No. A.29.1.1]	
Public Input No. 589-NFPA 72-2019 [Section No. A.29.3.3]	
Public Input No. 590-NFPA 72-2019 [Section No. A.29.11.3.4(4)]	
Public Input No. 592-NFPA 72-2019 [Section No. A.29.11.3.4(7)]	
Public Input No. 593-NFPA 72-2019 [Section No. B.4.7.1]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:

City:
State:
Zip:
Submittal Date: Wed Jun 26 14:52:33 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: The proposed deletion for proposed alignment with test standards is not necessary as the text is intended to provide guidance on impact of critical velocity. This impact is present regardless of the technology independent of the testing standards.

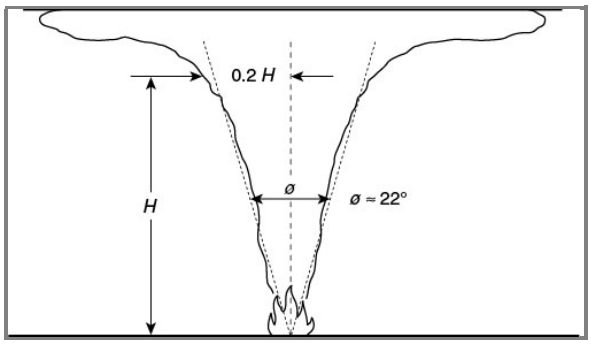
Public Input No. 109-NFPA 72-2019 [Section No. B.4.9.1]

~~B.4.9.1~~ –

~~Projected beam smoke detection is often used in large open spaces with high ceilings where the use of spot-type detectors is impractical due to the problems of smoke stratification. In these spaces, there is questionable basis for the use of the prescriptive spacings presented in Section 17.7 . However, beams can be installed such that, regardless of the fire origin, the plume will intersect at least one beam. To employ this strategy, the plume divergence is calculated as a function of the altitude at which the projected beam detectors are installed. The region of relatively uniform temperature and smoke density in a buoyant plume diverges at an angle of approximately 22 degrees, as shown in Figure B.4.9.1 .~~

~~Another method involves assessing the smoke obstruction through the plume to determine the reduction in light from the receiver to the transmitter of the beam-type smoke detector to determine whether the detector might respond. [47]~~

~~**Figure B.4.9.1 The Plume Divergence of an Unconstrained Fire.**~~



Statement of Problem and Substantiation for Public Input

The material in Annex B.4.9 would be more useful if moved to Annex A as new section A.17.7.3.7.2 to provide guidance for spacing of beams when there is stratification.

Submitter Information Verification

Submitter Full Name: Scott Lang
Organization: Honeywell International
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 09 14:46:59 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5345-NFPA 72-2019
Statement: The text is moved from B.4.9.1 to a new A.17.7.3.7.2. Material in B.4.9.1 provides specific guidance for locating beam smoke detectors in large open areas where stratification can impact detection capability.

Since this leaves no content in B.4.9, the header is deleted per the Manual of Style.

Public Input No. 294-NFPA 72-2019 [Section No. B.6 [Excluding any Sub-Sections]]

Several special application computer models are available to assist in the design and analysis of both heat detectors (e.g., fixed-temperature, rate-of-rise, sprinklers, fusible links) and smoke detectors. These computer models typically run on personal computers and are available from NIST website http://fire.nist.gov. The SFPE Engineering Guide for Substantiating a Fire Model for a Given Application provides guidance to the engineer on how to select a fire model.

Statement of Problem and Substantiation for Public Input

The SFPE Guide to Substantiating a Fire Model for a Given Application is an excellent resource for an engineer who is required to select a fire model. It covers model selection, how to validate & verify the selected model and how to document how the model was selected.

Submitter Information Verification

Submitter Full Name: Chris Jelenewicz
Organization: SFPE
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 12:05:49 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5215-NFPA 72-2019
Statement: The new reference provides additional guidance.

Public Input No. 291-NFPA 72-2019 [Section No. B.6.5]

B.6.5 References.

(1) Alpert, R. “Ceiling Jets,” *Fire Technology*, Aug. 1972.

(2) “Evaluating Unsprinklered Fire Hazards,” *SFPE Technology Report* 83-2.

(3) Babrauskas, V., Lawson, J. R., Walton, W. D., and Twilley, W. H. “Upholstered Furniture Heat Release Rates Measured with a Furniture Calorimeter,” (NBSIR 82-2604) (Dec. 1982). National Institute of Standards and Technology (formerly National Bureau of Standards), Center for Fire Research, Gaithersburg, MD 20889.

(4) Beyler, C. “A Design Method for Flaming Fire Detection,” *Fire Technology*, Vol. 20, No. 4, Nov. 1984.

(5) ~~DiNenno~~ Hurley , ~~P~~ M . ~~, ed~~ J . ~~Chapter 31~~ , Chapter 40, SFPE Handbook of Fire Protection Engineering , 5th edition, by Shifiliti, R. ~~Schifiliti, Sept. 1988.~~ P., Custer, R.L.P and Meacham, B.J., 2016.

(6) Evans, D. D. and Stroup, D. W. “Methods to Calculate Response Time of Heat and Smoke Detectors Installed Below Large Unobstructed Ceilings,” (NBSIR 85-3167) (Feb. 1985, issued Jul. 1986). National Institute of Standards and Technology (formerly National Bureau of Standards), Center for Fire Research, Gaithersburg, MD 20889.

(7) Heskestad, G. “Characterization of Smoke Entry and Response for Products-of-Combustion Detectors” Proceedings, 7th International Conference on Problems of Automatic Fire Detection, Rheinish-Westfalischen Technischen Hochschule Aachen (Mar. 1975).

(8) Heskestad, G. “Investigation of a New Sprinkler Sensitivity Approval Test: The Plunge Test,” FMRC Tech. Report 22485, Factory Mutual Research Corporation, 1151 Providence Turnpike, Norwood, MA 02062.

(9) Heskestad, G. and Delichatsios, M. A. “The Initial Convective Flow in Fire: Seventeenth Symposium on Combustion,” The Combustion Institute, Pittsburgh, PA (1979).

(10) Heskestad, G. and Delichatsios, M. A. “Environments of Fire Detectors — Phase 1: Effect of Fire Size, Ceiling Height and Material,” Measurements Vol. I (NBS-GCR-77-86), Analysis Vol. II (NBS-GCR-77-95). National Technical Information Service (NTIS), Springfield, VA 22151.

(11) Heskestad, G. and Delichatsios, M. A. “Update: The Initial Convective Flow in Fire,” *Fire Safety Journal*, Vol. 15, No. 5, 1989.

(12) International Organization for Standardization, *Audible Emergency Evacuation Signal*, ISO 8201, 1987.

(13) Klote, J. and Milke, J. “Principles of Smoke Management,” American Society of Heating, Refrigerating and Air Conditioning Engineers, Atlanta, GA, 2002.

(14) Lawson, J. R., Walton, W. D., and Twilley, W. H. “Fire Performance of Furnishings as Measured in the NBS Furniture Calorimeter, Part 1,” (NBSIR 83-2787) (Aug. 1983). National Institute of Standards and Technology (formerly National Bureau of Standards), Center for Fire Research, Gaithersburg, MD 20889.

(15) Morton, B. R., Taylor, Sir Geoffrey, and Turner, J. S. “Turbulent Gravitational Convection from Maintained and Instantaneous Sources,” Proc. Royal Society A, 234, 1–23, 1956.

(16) Schifiliti, R. “Use of Fire Plume Theory in the Design and Analysis of Fire Detector and Sprinkler Response,” Master’s Thesis, Worcester Polytechnic Institute, Center for Firesafety Studies, Worcester, MA, 1986.

(17) Title 47, Code of Federal Regulations, Communications Act of 1934 Amended.

(18) Schifiliti, R. and Pucci, W. “Fire Detection Modelling, State of the Art,” 6 May, 1996 sponsored by the Fire Detection Institute, Bloomfield, CT.

(19) Forney, G., Bukowski, R., Davis, W. “Field Modelling: Effects of Flat Beamed Ceilings on Detector and Sprinkler Response,” Technical Report, Year 1. International Fire Detection Research Project, Fire Protection Research Foundation, Quincy, MA. October, 1993.

(20) Davis, W., Forney, G., Bukowski, R. “Field Modelling: Simulating the Effect of Sloped Beamed Ceilings on Detector and Sprinkler Response,” Year 1. International Fire Detection Research Project Technical Report, Fire Protection Research Foundation, Quincy, MA. October, 1994.

(21) Brozovski, E. “A Preliminary Approach to Siting Smoke Detectors Based on Design Fire Size and Detector Aerosol Entry Lag Time,” Master’s Thesis, Worcester Polytechnic, Worcester, MA, 1989.

(22) Cote, A. *NFPA Fire Protection Handbook*, 20th edition, National Fire Protection Association, Quincy, MA, 2008.

(23) Tewarson, A., “Generation of Heat and Chemical Compounds in Fires,” *SFPE Handbook of Fire Protection Engineering*, Second Edition, NFPA and SFPE, 1995.

(24) Hollman, J. P. *Heat Transfer*, McGraw-Hill, New York, 1976.

(25) Custer, R. L. P., and Meacham, B. “Introduction to Performance Based Fire Safety,” SFPE, 1997.

(26) Schifiliti, R. P., Meacham B., Custer, R. L. P. “Design of Detection Systems,” *SFPE Handbook of Fire Protection Engineering*.

(27) Marrion, C. “Correction Factors for the Heat of Combustion in NFPA 72,” Appendix B, Fire Protection Engineering, SFPE, 1998.

(28) Marrion, C. “Designing and Analyzing the Response of Detection Systems: An Update to Previous Correlations,” 1988.

(29) Custer, R. and Bright, R. “Fire Detection: The State-of-the-Art,” NBS Tech. Note 839, National Bureau of Standards, Washington, 1974.

(30) Meacham, Brian J. “Characterization of Smoke from Burning Materials for the Evaluation of Light Scattering-Type Smoke Detector Response,” MS Thesis, WPI Center for Firesafety Studies, Worcester, MA, 1991.

(31) Delichatsios, M. A. “Categorization of Cable Flammability, Detection of Smoldering, and Flaming Cable Fires,” Interim Report, Factory Mutual Research Corporation, Norwood, MA, NP-1630, Nov. 1980.

(32) Heskestad, G. FMRC Serial Number 21017, Factory Mutual Research Corp., Norwood, MA, 1974.

(33) Marrion, C. E. “Lag Time Modeling and Effects of Ceiling Jet Velocity on the Placement of Optical Smoke Detectors,” MS Thesis, WPI Center for Firesafety Studies, Worcester, MA, 1989.

(34) Kokkala, M. et al. “Measurements of the Characteristic Lengths of Smoke Detectors,” *Fire Technology*, Vol. 28, No. 2, National Fire Protection Association, Quincy, MA, 1992.

(34a) Yamauchi et al. “A Calculation Method for Predicting Heat and Smoke Detector’s Response.”

(34b) Cleary et al. “Particulate Entry Lag in Spot Type Smoke Detectors,” IAFSS Proceedings, Boston, MA 2000.

(34c) Keski-Rahkonen, “Revisiting Modeling of Fluid Penetration into Smoke Detectors,” AUBE 2001.

(34d) Bjoerkman et al. “Determination of Dynamic Model Parameters of Smoke Detectors,” *Fire Safety Journal*, No 37, pp. 395–407, 2002.

(34e) Keski-Rahkonen, “A New Model for Time Lag of Smoke Detectors,” International Collaborative Project to Evaluate Fire Models for Nuclear Power Plant Application, Gaithersburg, MD May 2002.

(35) UL 268, *Standard for Smoke Detectors for Fire Alarm Signaling Systems*, Underwriters Laboratories, Inc., Northbrook, IL, 2009.

(36) Deal, Scott. “Technical Reference Guide for FPEtool Version 3.2,” NISTIR 5486, National Institute for Standards and Technology, U.S. Department of Commerce, Gaithersburg, MD, Aug. 1994.

(37) Mowrer, F. W. “Lag Times Associated with Detection and Suppression,” *Fire Technology*, Vol. 26, No. 3, pp. 244–265, 1990.

(38) Newman, J. S. “Principles for Fire Detection,” *Fire Technology*, Vol. 24, No. 2, pp. 116–127, 1988.

(39) Custer, R., Meacham, B., Wood, C. “Performance Based Design Techniques for Detection and Special Suppression Applications,” Proceedings of the SFPE Engineering Seminars on Advances in Detection and Suppression Technology, 1994.

(40) SFPE *Engineering Guide to Performance Based Fire Protection*, 2nd edition, SFPE, Gaithersburg, MD, 2007.

(41) SFPE *Handbook of Fire Protection Engineering*, Fifth Edition, SFPE, Gaithersburg, MD, 2016.

(42) Drysdale, Dougal, *An Introduction to Fire Dynamics*, John Wiley & Sons, New York, NY, 1998, ISBN 0 471 90613 1, Second Edition.

(43) Nam S., Donovan L.P. and Kim S.G., Establishing Heat Detectors Thermal Sensitivity Through Bench Scale Tests; *Fire Safety Journal*, Volume 39, Number 3, 191–215; April 2004.

(44) Nam S., Thermal Response Coefficient TRC of Heat Detectors and Its Field Applications, Fire Detection and Research Applications Symposium, NFPA Research Foundation, January 2003.

(45) Nam S., Performance-Based Heat Detector Spacing, Interflam 2004, pp. 883–892.

(46) Geiman, J. A., “Evaluation of Smoke Detector Response Estimation Methods,” Master of Science Thesis, University of Maryland, College Park, MD, December 2003.

(47) Projected Beam Smoke Detectors — More Than Just a Substitute for Spot Detectors, Fire Protection Engineering, Summer 2004, SFPE.

(48) Geiman, J. A., and Gottuck, D.T., “Alarm Thresholds for Smoke Detector Modeling,” *Fire Safety Science — Proceeding of the Seventh International Symposium*, 2003, pp. 197–208.

(49) *The SFPE Code Official's Guide to Performance-based Design Review and Analysis of Buildings*, Society of Fire Protection Engineers, Bethesda, MD, 2004.

(50) NFPA *101*, *Life Safety Code*, National Fire Protection Association, Quincy, MA, 2009.

(51) NFPA 909, *Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship*, National Fire Protection Association, Quincy, MA, 2010.

(52) NFPA 914, *Code for Fire Protection of Historic Structures*, National Fire Protection Association, Quincy, MA, 2010.

(53) Performance-based Building Design Concepts, International Code Council, Washington DC, 2004.

(54) *Extreme Event Mitigation In Buildings — Analysis and Design*, Meacham, National Fire Protection Association, Quincy MA, 2006.

(55) Geiman, Gottuk, and Milke, "Evaluation of Smoke Detector Response Estimation Methods: Optical Density, Temperature Rise and Velocity at Alarm," *Journal of Fire Protection Engineering*, 2006.

(56) Su et al., "Kemano Fire Studies — Part 1: Response of Residential Smoke Alarms," Research Report 108, NRCC, April 2003.

(57) Davis, W., The Zone Model Jet, "A Model for the Prediction of Detector Activation and Gas Temperature in the Presence of a Smoke Layer," NISTIR 6324, NIST, May 1999.

(58) NFPA 72E, *Standard for Automatic Fire Detectors*, 1984 edition.

Statement of Problem and Substantiation for Public Input

Revision is needed to highlight correct edition of the SFPE Handbook.

Submitter Information Verification

Submitter Full Name: Chris Jelenewicz
Organization: SFPE
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 07:15:54 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5203-NFPA 72-2019
Statement: The reference (5) is updated to the current edition.

A new reference (59) is added from B.1.3.3 (FR-5199).

A new reference (60) is added from B.6 (FR-5215).

Public Input No. 287-NFPA 72-2019 [Section No. B.7]

B.7 Nomenclature.

The nomenclature used in Annex B is defined in Table B.7.

Table B.7 Nomenclature

	α	=
~~fire intensity coefficient~~		

Fire growth rate (kW/sec^2 or Btu/sec^3)

A = area (m^2 or ft^2)

A_0 = $g/(C_p T_a \rho)$ [$m^4/(sec^2 kJ)$ or $ft^4/(sec^2 Btu)$]

A_r = radiating area (m^2 or ft^2)

A_t = radiating area of test fire

C = specific heat of detector element (kJ/kg·°C or Btu/lbm·°F)

c = speed of light (m/sec or ft/sec)

C_p = specific heat of air [kJ/(kg K) or Btu/lbm R (1.040 kJ/kg K)]

D_m = mass optical density (m^2/g or ft^2/lb)

d = distance between fire and radiant energy–sensing detector

d' = distance between fire and detector

$d(Du)/dt$ = rate of increase of optical density outside the detector

D = $0.146 + 0.242 r/H$

Δt = change in time (seconds)

ΔT = increase above ambient in temperature of gas surrounding a detector (°C or °F)

Δt_d = increase above ambient in temperature of a detector (°C or °F)

Δt_p^* = change in reduced gas temperature

e = energy (joules or Btu)

f = functional relationship

g = gravitational constant (9.81 m/sec^2 or 32 ft/sec^2)

h = Planck's constant (6.63E-23 joule-sec)

H = ceiling height or height above fire (m or ft)

H_c = convective heat transfer coefficient (kW/m^2·°C or Btu/ft^2·sec·°F)

ΔH_c = heat of combustion (kJ/mol)

h_f = flame height (m or ft)

H_f = heat of formation (kJ/mol)

L = characteristic length for a given detector design

k = detector constant, dimensionless

m = mass (kg or lbm)

p = positive exponent

P = radiant power (watts or Btu/sec)

q = heat release rate density per unit floor area ($watts/m^2$ or $Btu/sec·ft^2$)

Q = heat release rate (kW or Btu/sec)

Q_c = convection portion of fire heat release rate (kW or Btu/sec)

Q_{cond} = heat transferred by conduction (kW or Btu/sec)

Q_{conv} = heat transferred by convection (kW or Btu/sec)

Q_d = threshold fire size at which response must occur

Q_{rad} = heat transferred by radiation (kW or Btu/sec)

Q_{total} = total heat transfer (kW or Btu/sec)

Q_{CR} = critical heat release rate (kW or Btu/sec)

Q_{DO} = design heat release rate (kW or Btu/sec)

Q_m = maximum heat release rate (kW or Btu/sec)

Q_p = predicted heat release rate (kW or Btu/sec)

Q_T = threshold heat release rate at response (kW or Btu/sec)

r = radial distance from fire plume axis (m or ft)

ρ_0 = density of ambient air [kg/m^3 or lb/ft^3 (1.1 kg/m^3)]

RTI = response time index ($m^{1/2}\,sec^{1/2}$ or $ft^{1/2}\,sec^{1/2}$)

S = spacing of detectors or sprinkler heads (m or ft)

S = radiant energy

t_{DO} = time at which the design objective heat release rate (Q_{DO}) is reached (seconds)

t_{CR} = time at which the critical heat release rate (Q_{CR}) is reached (seconds)

t = time (seconds)

t_c = critical time — time at which fire would reach a heat release rate of 1055 kW (1000 Btu/sec) (seconds)

t_d = time to detector response

t_g = fire growth time to reach 1055 kW (1000 Btu/sec) (seconds)

t_r = response time (seconds)

$t_{respond}$ = time available, or needed, for response to an alarm condition (seconds)

t_v = virtual time of origin (seconds)

t_{2f} = arrival time of heat front (for p = 2 power law fire) at a point r/H (seconds)

t^*_{2f} = reduced arrival time of heat front (for p = 2 power law fire) at a point r/H (seconds)

t^*_p = reduced time

T = temperature (°C or °F)

T_a = ambient temperature (°C or °F)

T_c = plume centerline temperature (°C or °F)

T_d = detector temperature (°C or °F)

T_g = temperature of fire gases (°C or °F)

T_s = rated operating temperature of a detector or sprinkler (°C or °F)

u_0 = instantaneous velocity of fire gases (m/sec or ft/sec)

u = velocity (m/sec or ft/sec)

u_c = critical velocity

U^*_p = reduced gas velocity

V = velocity of smoke at detector

w_f = flame width (m or ft)

Y = defined in equation B.27

z = height above top of fuel package involved (m or ft)

λ = wavelength (microns)

Z_m = maximum height of smoke rise above fire surface (m or ft)

τ = detector time constant $mc / H_c A$ (seconds)

τ_0 = detector time constant measured at reference velocity u_0 (seconds)

ε = emissivity, a material property expressed as a fraction between 0 and 1.0

Statement of Problem and Substantiation for Public Input

As pointed out by the Correlating Committee, the coefficient α is elsewhere defined and used as the fire growth rate. In multiple locations this same coefficient is referred to as the “fuel fire intensity coefficient”. It has been validated in each instance the coefficient is the same so therefore the changes are recommended to standardize terminology.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 285-NFPA 72-2019 [Section No. B.2.3.2.6.2]	Standardization of terminology
Public Input No. 286-NFPA 72-2019 [Sections B.3.2.1.1, B.3.2.1.2]	Standardization of terminology
Public Input No. 285-NFPA 72-2019 [Section No. B.2.3.2.6.2]	
Public Input No. 286-NFPA 72-2019 [Sections B.3.2.1.1, B.3.2.1.2]	

Submitter Information Verification

Submitter Full Name: Samuel Miller
Organization: BP
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 13 14:36:33 EDT 2019
Committee: SIG-IDS

Committee Statement

Resolution: FR-5205-NFPA 72-2019

Statement: The coefficient α is elsewhere defined and used as the fire growth rate. In multiple locations this same coefficient is referred to as the “fuel fire intensity coefficient”. It has been validated in each instance the coefficient is the same so therefore the changes standardize terminology.

Public Input No. 217-NFPA 72-2019 [Section No. D.2.4.9]

D.2.4.9

The use of an average intelligibility score as a part of the requirement permits a wider range of measured values within an ADS than would a simple minimum requirement. A range of permitted values is not appropriate since there is no need for an upper limit for intelligibility — ~~prefect~~ perfect intelligibility is certainly acceptable.

Statement of Problem and Substantiation for Public Input

Correcting a missed spelled word

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 03 12:35:28 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5057-NFPA 72-2019
Statement: The Technical Committee corrects a misspelled word

Public Input No. 218-NFPA 72-2019 [Section No. D.3.4]

D.3.4 Calculating Percentage of Articulation Loss of Consonants (%AL_{CONS}).

There are occasions in which a space ~~may~~ will not be available to take test measurements in prior to the design being completed. One method of calculation for the Speech Intelligibly Index is by calculating percentage of articulation loss of consonants (%AL_{CONS}). The formula is:

$$\%AL_{CONS} = 656D_2^2RT_{60}^2(N) / VQM \qquad \textbf{[D.3.4]}$$

where:

D_2 = distance from the loudspeaker to the farthest listener

RT_{60} = reverberation time (seconds)

N = power ratio of L_W causing L_D to the L_W of all devices except those causing L_D

V = volume of the room (ft^3)

Q = directivity index (ratio)

M = D_C modifier (usually 1)

As point of reference, D_C is the critical distance.

N is further defined as:

L_W = sound power level (dB)

L_D = total direct energy

$L_W = 10\log (W_a/10^{-12}W)$

W_a = acoustic watts

10^{-12} = specified reference

$L_D = L_W + 10\log (Q/4\pi r^2) + 10.5$

The conversion factor from %AL_{CONS} to STI: STI = [–0.1845 × ln(%AL_{CONS})] + 0.9482

Statement of Problem and Substantiation for Public Input

Changed "may" to "will" based on MOS to eliminate the word "may" (MOS - July 2004, 2.2.1.1)

Submitter Information Verification

Submitter Full Name: David Lowrey
Organization: City of Boulder Fire Rescue
Affiliation: Fire Marshals Association of Colorado
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 03 12:37:52 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5058-NFPA 72-2019

Statement: Articulation Loss of Consonants is an older method that has been replaced by the Speech Intelligibility Index. In 1997 ANSI S3.5 American National Standard Methods for Calculation of the Speech Intelligibility Index superseded ANSI S3.5 (last revised 1986), American National Standard Methods for the Calculation of the Articulation Index. These, and other methods that calculate intelligibility using time-energy-frequency (TEF) data or estimates, are complex calculations that require expertise in selecting the correct values for physical parameters. This annex cannot provide clear and concise instructions for users that are not well versed in physics and acoustics. Therefore, this revision deletes the old text and equation and replaces it with references to other sources.

Public Input No. 224-NFPA 72-2019 [Section No. D.3.4]

~~D.3.4~~ – Calculating Percentage of Articulation Loss of Consonants (% *AL CONS*). ~~**Estimating a Design's Speech Intelligibility.**~~ - ~~There are occasions in which a space may not be available to take test measurements in prior to the design being completed.~~

~~One method of calculation for the Speech Intelligibly Index is by calculating percentage of articulation loss of consonants (% *AL CONS*). The formula is:~~

$$\%AL_{CONS} = 656D_2^2RT_{60}^2(N)/VQM \qquad \text{~~[D.3.4]~~}$$

~~where:~~

~~D_2 = distance from the loudspeaker to the farthest listener~~

~~RT_{60} = reverberation time (seconds)~~

~~N = power ratio of L_W causing L_D to the L_W of all devices except those causing L_D~~

~~V = volume of the room (ft^3)~~

~~Q = directivity index (ratio)~~

~~M = D_C modifier (usually 1)~~

~~As point of reference, D_C is the critical distance.~~

~~N is further defined as:~~

~~L_W = sound power level (dB)~~

~~L_D = total direct energy~~

~~$L_W = 10\log(W_a/10^{-12}W)$~~

~~W_a = acoustic watts~~

~~10^{-12} = specified reference~~

~~$L_D = L_W + 10\log(Q/4\pi r^2) + 10.5$~~

~~The conversion factor from % *AL CONS* to STI: STI = [–0.1845 × ln(% *AL CONS*)] + 0.9482~~

Calculation methods for speech intelligibility are available so that a design can be assessed before actual installation. The calculations use basic physical parameters of the space and the system arrive at a speech intelligibility estimate. See references in Annex section I.1.2.19 References Associated with Annex D. The results of the calculation methods can be converted to STI using the CIS described in D.2.4.5.

Statement of Problem and Substantiation for Public Input

Articulation Loss of Consonants is an older method that has been replaced by the Speech Intelligibility Index. In 1997 ANSI S3.5 American National Standard Methods for Calculation of the Speech Intelligibility Index superseded ANSI S3.5 (last revised 1986), American National Standard Methods for the Calculation of the Articulation Index. These, and other methods that calculate intelligibility using time-energy-frequency (TEF) data or estimates, are complex calculations that require expertise in selecting the correct values for physical parameters. This annex cannot provide clear and concise instructions for users that are not well versed in physics and acoustics. Therefore, this proposal deletes the old text and equation and replaces it with references to other sources.

Submitter Information Verification

Submitter Full Name: Robert Schifiliti
Organization: R. P. Schifiliti Associates, I
Street Address:

City:
State:
Zip:
Submittal Date: Tue Jun 04 13:42:14 EDT 2019
Committee: SIG-NAS

Committee Statement

Resolution: FR-5058-NFPA 72-2019

Statement: Articulation Loss of Consonants is an older method that has been replaced by the Speech Intelligibility Index. In 1997 ANSI S3.5 American National Standard Methods for Calculation of the Speech Intelligibility Index superseded ANSI S3.5 (last revised 1986), American National Standard Methods for the Calculation of the Articulation Index. These, and other methods that calculate intelligibility using time-energy-frequency (TEF) data or estimates, are complex calculations that require expertise in selecting the correct values for physical parameters. This annex cannot provide clear and concise instructions for users that are not well versed in physics and acoustics. Therefore, this revision deletes the old text and equation and replaces it with references to other sources.

Public Input No. 367-NFPA 72-2019 [Section No. E.1]

E.1

The following sample ordinance is provided to assist a jurisdiction in the adoption of this Code and is not part of this Code.

ORDINANCE NO. _____

An ordinance of the *[jurisdiction]* adopting the 2019 edition of *NFPA 72*, *National Fire Alarm and Signaling Code*, and documents listed in Chapter 2 of that Code; prescribing regulations governing conditions hazardous to life and property from fire or explosion; providing for the issuance of permits and collection of fees; repealing Ordinance No. _____ of the *[jurisdiction]* and all other ordinances and parts of ordinances in conflict therewith; providing a penalty; providing a severability clause; and providing for publication; and providing an effective date.

BE IT ORDAINED BY THE *[governing body]* OF THE *[jurisdiction]*:

SECTION 1 That the *NFPA 72*, *National Fire Alarm and Signaling Code*, and documents adopted by Chapter 2, three (3) copies of which are on file and are open to inspection by the public in the office of the *[jurisdiction's keeper of records]* of the *[jurisdiction]*, are hereby adopted and incorporated into this ordinance as fully as if set out at length herein, and from the date on which this ordinance shall take effect, the provisions thereof shall be controlling within the limits of the *[jurisdiction]*. The same are hereby adopted as the Code of the *[jurisdiction]* for the purpose of prescribing regulations governing conditions hazardous to life and property from fire or explosion and providing for issuance of permits and collection of fees.

SECTION 2 Any person who shall violate any provision of this code or standard hereby adopted or fail to comply therewith; or who shall violate or fail to comply with any order made thereunder; or who shall build in violation of any detailed statement of specifications or plans submitted and approved thereunder; or fail to operate in accordance with any certificate or permit issued thereunder; and from which no appeal has been taken; or who shall fail to comply with such an order as affirmed or modified by a court of competent jurisdiction, within the time fixed herein, shall severally for each and every such violation and noncompliance, respectively, be guilty of a misdemeanor, punishable by a fine of not less than $ _____ nor more than $_____ or by imprisonment for not less than _____ days nor more than _____ days or by both such fine and imprisonment. The imposition of one penalty for any violation shall not excuse the violation or permit it to continue; and all such persons shall be required to correct or remedy such violations or defects within a reasonable time; and when not otherwise specified the application of the above penalty shall not be held to prevent the enforced removal of prohibited conditions. Each day that prohibited conditions are maintained shall constitute a separate offense.

SECTION 3 Additions, insertions, and changes — that the 2019 edition of *NFPA 72*, *National Fire Alarm and Signaling Code*, is amended and changed in the following respects:

List Amendments

SECTION 4 That ordinance No. _____ of *[jurisdiction]* entitled *[fill in the title of the ordinance or ordinances in effect at the present time]* and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

SECTION 5 That if any section, subsection, sentence, clause, or phrase of this ordinance is, for any reason, held to be invalid or unconstitutional, such decision shall not affect the validity or constitutionality of the remaining portions of this ordinance. The *[governing body]* hereby declares that it would have passed this ordinance, and each section, subsection, clause, or phrase hereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared unconstitutional.

SECTION 6 That the *[jurisdiction's keeper of records]* is hereby ordered and directed to cause this ordinance to be published.

[NOTE: An additional provision ~~may~~ be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting ~~may~~ also be required.]

SECTION 7 That this ordinance and the rules, regulations, provisions, requirements, orders, and matters established and adopted hereby shall take effect and be in full force and effect *[time period]* from and after the date of its final passage and adoption.

Statement of Problem and Substantiation for Public Input

The word "may" does not comply with the MOS.

Submitter Information Verification

Submitter Full Name: Kevin Green
Organization: Pyro-Comm Systems, Inc.
Affiliation: FUN Task Group
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 22 12:16:07 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5169-NFPA 72-2019
Statement: The Technical Committee updates the text per the Manual of Style.

Public Input No. 19-NFPA 72-2018 [Chapter I]

Annex I Informational References

I.1 Referenced Publications.

The documents or portions thereof listed in this annex are referenced within the informational sections of this Code and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

I.1.1 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 3, *Standard for Commissioning of Fire Protection and Life Safety Systems*, 2018 edition.

NFPA 4, *Standard for Integrated Fire Protection and Life Safety System Testing*, 2018 edition.

NFPA 10, *Standard for Portable Fire Extinguishers*, 2018 edition.

NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam*, 2016 edition.

NFPA 12, *Standard on Carbon Dioxide Extinguishing Systems*, 2018 edition.

NFPA 12A, *Standard on Halon 1301 Fire Extinguishing Systems*, 2018 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2019 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 2016 edition.

NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection*, 2017 edition.

NFPA 17, *Standard for Dry Chemical Extinguishing Systems*, 2017 edition.

NFPA 17A, *Standard for Wet Chemical Extinguishing Systems*, 2017 edition.

NFPA 70®, *National Electrical Code®*, 2017 edition.

NFPA 72E, *Standard for Automatic Fire Detectors*, 1984 edition.

NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, 2019 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 2018 edition.

NFPA 90B, *Standard for the Installation of Warm Air Heating and Air-Conditioning Systems*, 2018 edition.

NFPA 92, *Standard for Smoke Control Systems*, 2018 edition.

NFPA *101®*, *Life Safety Code®*, 2018 edition.

NFPA 105, *Standard for Smoke Door Assemblies and Other Opening Protectives*, 2019 edition.

NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, 2019 edition.

NFPA 170, *Standard for Fire Safety and Emergency Symbols*, 2018 edition.

NFPA 551, *Guide for the Evaluation of Fire Risk Assessments*, 2016 edition.

NFPA 730, *Guide for Premises Security*, 2018 edition.

NFPA 731, *Standard for the Installation of Electronic Premises Security Systems*, 2017 edition.

NFPA 750, *Standard on Water Mist Fire Protection Systems*, 2019 edition.

NFPA 909, *Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship*, 2017 edition.

NFPA 914, *Code for Fire Protection of Historic Structures*, 2015 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2019 edition.

NFPA 1600®, *Standard on Disaster/Emergency Management and Business Continuity/Continuity of Operations Programs*, 2016 edition.

NFPA 5000®, *Building Construction and Safety Code®*, 2018 edition.

Fire Protection Research Foundation, *Elevator Messaging Strategies,* 2011.

Fire Protection Research Foundation, *Optimizing Fire Alarm Notification for High Risk Groups*, 2007.

Fire Protection Research Foundation (FPRF) Report, *Development of Technical Basis for Carbon Monoxide Detector Siting*, prepared by C. Beyler and D. Gottuk, 2007.

I.1.2 Other Publications.

I.1.2.1 ANSI Publications.

American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI**ASA** S3.2, *Method for Measuring the Intelligibility of Speech Over Communications Systems*, ~~1989, revised 2009~~ **2009**, **reaffirmed** 20**14**.

ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation ~~(E2) and Evacuation Signals with Relocation Instructions (ESRI)~~* , ~~1990, reaffirmed~~ *Signal* **, 2015**.

I.1.2.2 ASME Publications.

American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ANSI/ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, 2016.

ASME ~~A~~ A17 .~~17.~~ 2, *Guide for Inspection of Elevators, Escalators and Moving Walks*, ~~2014~~ 201**7**.

I.1.2.3 FEMA Publications.

Federal Emergency Management Agency, U.S. Department of Homeland Security, 500 C Street, SW, Washington, DC 20024.

FEMA Publication CPG-17, *Outdoor Warning Systems Guide*, March 1980.

I.1.2.4 FM Publications.

FM Global, 270 Central Avenue, P.O. Box 7500, Johnston, RI 02919.

FM 3210, *Heat Detectors for Automatic Fire Alarm Signaling*, 2007.

ANSI/FM 3260, *American National Standard for Energy-Sensing Fire Detectors for Automatic Fire Alarm Signaling,* 2014.

I.1.2.5 IEC Publications.

International Electrotechnical Commission, 3 rue de Varembé, P.O. Box 131, CH-1211 Geneva 20, Switzerland. IEC documents are available through ANSI.

IEC 60268**-16** , *Sound system equipment — Part 16: Objective rating of speech intelligibility by speech transmission index,* 2nd edition, 2011.

I.1.2.6 IEEE Standards Association Publications.

Institute of Electrical and Electronics Engineers, 3 Park Avenue, New York, NY 10016-5997.

IEEE ~~Std TM~~ 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, 2010.

IEEE ~~Std TM~~ 485, *Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications*, 2010.

IEEE ~~Std TM~~ 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, ~~2005~~ 20**1**5.

IEEE ~~Std TM~~ 1188, *Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications*, ~~2005~~ 20**10, amendment 1, 2014**.

IEEE 802.3, ***Ehternet*, 2018**. **(802.3af**, ~~*Standard for Information Technology — Telecommunications and Information Exchange Between Systems — Local and Metropolitan Area Networks — Specific Requirements — Part 3*~~ , ~~2003.~~ **superseded and incorporated into 802.3)**

I.1.2.7 IES Publications.

Illuminating Engineering Society of North America, 120 Wall Street, 17th floor, New York, NY 10005.

IES Lighting Hanbook- 10T, *Lighting Handbook* **-** *Reference and Application*, ~~2008~~ 20**11, errata, 2015**.

I.1.2.8 ISO Publications.

International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

ISO/TR 4870, *Acoustics — The Construction and Calibration of Speech Intelligibility Tests*, 1991. **(Withdrawn)**

ISO 7240-19, *Fire Detection and Alarm Systems — Part 19: Design, Installation, Commissioning, and Service of Sound Systems for Emergency Purposes*, 2007.

ISO 8201, *Audible Emergency Evacuation Signal*, ~~2015~~ 201 **7** .

ISO/IEC 14763-2, *Information technology — Implementation and operation of customer premises cabling — Part 2: Planning and installation*, 2012**, amendment 1, 2015** .

ISO/IEC 14763-3, *Informational technology — implementation and operation of customer premises cabling — Part 3: Testing of optical fibre cabling*, 2014**, amendment 1, 2018** .

I.1.2.9 NEMA Publications.

National Electrical Manufacturers Association, 1300 North 17th Street, Suite 900, Arlington, VA 22209.

ANSI/NEMA SB-40, *Communications Systems for Life Safety in Schools*, 2015.

NEMA SB-50, *Emergency Communications Audio Intelligibility Applications Guide*, 2014.

I.1.2.10 NIST Publications.

National Institute of Standards and Technology, 100 Bureau Drive, Gaithersburg, MD 20899-1070.

NIST 6055, *Electromagnetic Signal Attenuation in Construction Materials*, 1997.

NIST Technical Note 1779, *General Guidance on Emergency Communications Strategies for Buildings*, February 2013.

I.1.2.11 OASIS Publications.

Organization for the Advancement of Structured Information Standards (OASIS), 25 Corporate Drive, Suite 103, Burlington, MA 01803.

OASIS Standard CAP-V1.2, *OASIS Common Alerting Protocol*, Version 1.2.

I.1.2.12 SFPE Publications.

Society of Fire Protection Engineers, 9711 Washingtonian Blvd., Suite 380, Gaithersburg, MD 20878.

SFPE Engineering Guide: Evaluation of the Computer Fire Model DETACT QS, 2002.

SFPE Engineering Guide to Human Behavior in Fire, 2003.

SFPE Engineering Guide to Performance-Based Fire Protection, 2nd edition, 2007.

SFPE Handbook of Fire Protection Engineering, 5th edition, 2016.

Keating, John P. and Loftus, Elizabeth F., “People Care in Fire Emergencies — Psychological Aspects, 1975,” SFPE, 1975.

I.1.2.13 TIA Publications.

Telecommunications Industry Association, 1320 North Courthouse Road, Suite 200, Arlington, VA 22201.

ANSI/TIA-569-D, *Telecommunications Pathways and Spaces*, April 2015**, addendum 1, 2016, addendum 2, 2018** .

TIA-526, *Standard Test Procedures for Fiber Optic Systems*, September 1992.

I.1.2.14 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 268, *Standard for Smoke Detectors for Fire Alarm Systems,* ~~6th~~ **7** th edition, ~~2009~~ 20 **16, revised 2016** .

ANSI/UL 268A, *Standard for Smoke Detectors for Duct Application*, 4th edition, 2008, revised 2016.

ANSI/UL 827, *Standard for Central-Station Alarm Services*, 2014**, revised 2018** .

ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, ~~9th~~ **10** th edition, ~~2003~~ 20 **14** , revised ~~2012~~ 201 **8** .

ANSI/UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*, 5th edition, 2016**, revised 2017** .

ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired,* 3rd edition, 2002, revised ~~2013~~ 201 **8** .

ANSI/UL 2075, *Standard for Safety Gas and Vapor Detectors and Sensors*, 2013**, revised 2017** .

ANSI/UL 2572, *Mass Notification Systems*, 2nd edition, 2016.

I.1.2.15 U.S. Government Publications.

U.S. Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001.

ADA-ABA-AG, *Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines,* 2010.

NIST Technical Note 1455–1, *Performance of Home Smoke Alarms, Analysis of the Response of Several Available Technologies in Residential Fire Settings,* February 2008.

Title 29, Code of Federal Regulations, Part 1910.5.

Title 47, Code of Federal Regulations, Part 15.

I.1.2.16 References Associated with Annex A.

I.1.2.16.1 Reference to A.18.4.7.2.

http://www.aip.org/pt/nov99/locsound.html.

I.1.2.16.2 Reference to A.18.5.5.5.1.

“Recommended Light Levels,” National Optical Astronomy Observatory, www.noao.edu.

I.1.2.16.3 References to A.24.3.12.

(1) *CARVER — Target Analysis and Vulnerability Assessment Methodology*, Washington, DC: U.S. Department of Defense (see Field Manual 34-36, Special Operation Forces Intelligence and Electronics Warfare Operation, Sept. 30, 1991), www.defense.gov

(2) *General Security Risk Assessment Guidelines*. Alexandria, VA: American Society for Industrial Security International, www.asisonline.org

(3) *NFPA 1600*, *Standard on Disaster/Emergency Management and Business Continuity/Continuity of Operations Programs*, Quincy, MA: National Fire Protection Association, www.nfpa.org

(4) NFPA 730, *Guide for Premises Security*, Quincy, MA: National Fire Protection Association, www.nfpa.org

(5) *Responsible Care Code*, Washington, DC: American Chemistry Council, www.americanchemistry.com

(6) *Risk and Resilience Management of Water & Wastewater Systems*, Denver, CO: American Water Works Association, www.awwa.org

(7) *VAMCAP® Vulnerability Assessment Methodology for Critical Asset Protection*, Wilmington, DE: SafePlace Corporation, www.safeplace.com

(8) *Vulnerability Assessment Methodologies*, Albuquerque, NM: Sandia National Laboratories, www.sandia.gov

I.1.2.16.4 References to A.24.4.8.

(1) Schifiliti, R.P., "To Leave or Not to Leave — That is the Question!", National Fire Protection Association, World Fire Safety Congress & Exposition, May 16, 2000, Denver, CO.

(2) Ramachandran, G., "Informative Fire Warning Systems," *Fire Technology,* Volume 47, Number 1, February 1991, National Fire Protection Association, 66–81.

(3) J. Bryan, "Psychological Variables That May Affect Fire Alarm Design," *Fire Protection Engineering,* Society of Fire Protection Engineers, Issue No. 11, Fall 2001.

(4) Proulx, G., "Cool Under Fire," *Fire Protection Engineering,* Society of Fire Protection Engineers, Issue No. 16, Fall 2002.

(5) General Services Administration, Proceedings of the Reconvened International Conference on Fire Safety in High Rise Buildings, Washington, D.C., October 1971.

(6) Proulx, G., "Strategies for Ensuring Appropriate Occupant Response to Fire Alarm Signals," National Research Council of Canada, Ottawa, Ontario, *Construction Technology Update,* No. 43, 1–6, December 2000.

I.1.2.16.5 References to A.29.2.

"A Few Facts at the Household Level," NFPA Fire Analysis Division, *Fire Journal*, July 2009.

Ahrens, M., "Home Structure Fires," NFPA Fire Analysis and Research Division, September 2016.

Haynes, Hylton J.G., "Fire Loss in the United States during 2015," NFPA Fire Analysis and Research Division, September 2016.

Injury Facts, National Safety Council, Itasca, IL, 2011.

I.1.2.16.6 References to A.29.5.8.

Bruck, D. and Thomas, I., "Smoke alarms for sleeping adults who are hard-of-hearing: comparison of auditory, visual, and tactile signals," *Ear and Hearing*, 30(1), February 2009, pp. 73–80.

Bruck, D., Thomas, I., and Ball, M., "Optimizing Fire Alarm Notification for High Risk Groups Research Project — Waking effectiveness of alarms (auditory, visual and tactile) for the alcohol impaired," Report to the Fire Protection Research Foundation, June 2007.

Roby, R., "Smoke Detector Alert for the Deaf," Phase II SBIR, Final Report, NIH Grant No. 2R44 DC004254-2, May 27, 2005.

I.1.2.16.7 References to A.29.8.1.

NBS GCR 75-51, *Detector Sensitivity and Siting Requirements for Dwellings*, 1975.

NBS GCR 77-82, *Detector Sensitivity and Siting Requirements for Dwellings Phase 2*, 1977.

NIST Technical Note 1455-1, *Performance of Home Smoke Detectors Analysis of the Response of Several Available Technologies in a Residential Setting,* 2007.

I.1.2.16.8 References to A.29.8.2.1.1.

Green, M. A. and Andres, C., "2004–2005 National Sample Survey of Unreported Residential Fires," CPSC, 2009.

Ahrens, M., "Factors in Smoke Alarm Performance," National Fire Protection Association, December 2009.

Thomas, I. and Bruck, D., "Smoke Alarms in Dwellings: Timely Activation and Effective Notification," Victoria University, June 2010.

I.1.2.16.9 References to A.29.10.8.2.1.

Stone, W., "Electromagnetic Attenuation in Construction Materials," National Institute of Standards and Technology, NISTIR 6055, 1997.

I.1.2.16.10 References to A.29.11.3.

Kemano Fire Studies Part 1 of Residential Smoke Alarms, National Research Council Canada, April 2003.

Spacing Requirements for Complex Beamed and Sloped Ceilings Report, The Fire Protection Research Foundation, NFPA, April 2008.

I.1.2.16.11 References to A.29.11.3.4(9).

Gottuk, E.D. and Gottuk, D.T., "The Effect of Ceiling Fans on Smoke Alarm Performance," NFPA Research Foundation SUPDET Symposium presentation, 2015.

I.1.2.17 Other Publications — Related to Carbon Monoxide Provisions.

Ashley, E., DuBois, J., "Waking Effectiveness of Audible, Visual, and Vibratory Emergency Alarms Across All Hearing Levels," Fire Suppression and Detection Research Symposium, Orlando, FL 2005.

Coburn, R. F., Forster, R. E., and Kane, P. G., "Considerations for the physiological variables that determine the blood carboxyhemoglobin concentration in man," Journal of Clinical Investigation, 1965, November; 44(11):1899–1910.

Fire Protection Research Foundation (FPRF) Report, Development of Technical Basis for Carbon Monoxide Detector Siting, prepared by C. Beyler and D. Gottuk, 2007.

Report of research on emergency signaling devices for use by the hearing impaired (Subject 1971), Underwriters Laboratories, 1991.

Steinberg, S., and Nielson, G. D., "A proposal for evaluating human exposure to carbon monoxide contamination in military vehicles," AMCMS Code 672716.H700011, March 1977.

Stone, W. Electromagnetic Attenuation in Construction Materials, National Institute of Standards and Technology, NISTIR 6055, 1997.

Title 47, Code of Federal Regulations, Part 15.

I.1.2.18 References Associated with Annex B.

(1) Alpert, R. “Ceiling Jets,” *Fire Technology*, August 1972.

(2) “Evaluating Unsprinklered Fire Hazards,” *SFPE Technology Report* 83-2.

(3) Babrauskas, V., Lawson, J. R., Walton, W. D., and Twilley, W. H. “Upholstered Furniture Heat Release Rates Measured with a Furniture Calorimeter,” (NBSIR 82-2604) (Dec. 1982). National Institute of Standards and Technology (formerly National Bureau of Standards), Center for Fire Research, Gaithersburg, MD 20889.

(4) Beyler, C. “A Design Method for Flaming Fire Detection,” *Fire Technology*, Vol. 20, No. 4, November 1984.

(5) Hurley, M. J., ed.,Chapter 40, *SFPE Handbook of Fire Protection Engineering*, by R. Schifiliti, R. Custer, and B. Meacham, 2016.

(6) Evans, D. D. and Stroup, D. W. “Methods to Calculate Response Time of Heat and Smoke Detectors Installed Below Large Unobstructed Ceilings,” (NBSIR 85-3167) (Feb. 1985, issued Jul. 1986). National Institute of Standards and Technology (formerly National Bureau of Standards), Center for Fire Research, Gaithersburg, MD 20889.

(7) Heskestad, G. “Characterization of Smoke Entry and Response for Products-of-Combustion Detectors” Proceedings, 7th International Conference on Problems of Automatic Fire Detection, Rheinish-Westfalischen Technischen Hochschule Aachen (March 1975).

(8) Heskestad, G. “Investigation of a New Sprinkler Sensitivity Approval Test: The Plunge Test,” FMRC Tech. Report 22485, Factory Mutual Research Corporation, 1151 Providence Turnpike, Norwood, MA 02062.

(9) Heskestad, G. and Delichatsios, M. A. “The Initial Convective Flow in Fire: Seventeenth Symposium on Combustion,” The Combustion Institute, Pittsburgh, PA (1979).

(10) Heskestad, G. and Delichatsios, M. A. “Environments of Fire Detectors — Phase 1: Effect of Fire Size, Ceiling Height and Material,” Measurements Vol. I (NBS-GCR-77-86), Analysis Vol. II (NBS-GCR-77-95). National Technical Information Service (NTIS), Springfield, VA 22151.

(11) Heskestad, G. and Delichatsios, M. A. “Update: The Initial Convective Flow in Fire,” *Fire Safety Journal*, Vol. 15, No. 5, 1989.

(12) International Organization for Standardization, *Audible Emergency Evacuation Signal*, ISO 8201, 1987.

(13) Klote, J. and Milke, J. “Principles of Smoke Management,” American Society of Heating, Refrigerating and Air Conditioning Engineers, Atlanta, GA, 2002.

(14) Lawson, J. R., Walton, W. D., and Twilley, W. H. “Fire Performance of Furnishings as Measured in the NBS Furniture Calorimeter, Part 1,” (NBSIR 83-2787) (Aug. 1983). National Institute of Standards and Technology (formerly National Bureau of Standards), Center for Fire Research, Gaithersburg, MD 20889.

(15) Morton, B. R., Taylor, Sir Geoffrey, and Turner, J. S. “Turbulent Gravitational Convection from Maintained and Instantaneous Sources,” Proc. Royal Society A, 234, 1–23, 1956.

(16) Schifiliti, R. “Use of Fire Plume Theory in the Design and Analysis of Fire Detector and Sprinkler Response,” Master’s Thesis, Worcester Polytechnic Institute, Center for Firesafety Studies, Worcester, MA, 1986.

(17) Title 47, Code of Federal Regulations, Communications Act of 1934 Amended.

(18) Schifiliti, R. and Pucci, W. “Fire Detection Modelling, State of the Art,” 6 May, 1996 sponsored by the Fire Detection Institute, Bloomfield, CT.

(19) Forney, G., Bukowski, R., Davis, W. “Field Modelling: Effects of Flat Beamed Ceilings on Detector and Sprinkler Response,” Technical Report, Year 1. International Fire Detection Research Project, National Fire Protection Research Foundation, Quincy, MA. October, 1993.

(20) Davis, W., Forney, G., Bukowski, R. “Field Modelling: Simulating the Effect of Sloped Beamed Ceilings on Detector and Sprinkler Response,” Year 1. International Fire Detection Research Project Technical Report, National Fire Protection Research Foundation, Quincy, MA. October, 1994.

(21) Brozovski, E. “A Preliminary Approach to Siting Smoke Detectors Based on Design Fire Size and Detector Aerosol Entry Lag Time,” Master’s Thesis, Worcester Polytechnic, Worcester, MA, 1989.

(22) Cote, A. *NFPA Fire Protection Handbook*, 20th edition, National Fire Protection Association, Quincy, MA, 2008.

(23) Tewarson, A., “Generation of Heat and Chemical Compounds in Fires,” *SFPE Handbook of Fire Protection Engineering*, Second Edition, NFPA and SFPE, 1995.

(24) Hollman, J. P. *Heat Transfer*, McGraw-Hill, New York, 1976.

(25) Custer, R. L. P., and Meacham, B. “Introduction to Performance Based Fire Safety,” SFPE, 1997.

(26) Schifiliti, R. P., Meacham B., Custer, R. L. P. “Design of Detection Systems,” *SFPE Handbook of Fire Protection Engineering*.

(27) Marrion, C. “Correction Factors for the Heat of Combustion in NFPA 72,” Appendix B, Fire Protection Engineering, SFPE, 1998.

(28) Marrion, C. “Designing and Analyzing the Response of Detection Systems: An Update to Previous Correlations,” 1988.

(29) Custer, R. and Bright, R. “Fire Detection: The State-of-the-Art,” NBS Tech. Note 839, National Bureau of Standards, Washington, 1974.

(30) Meacham, Brian J. “Characterization of Smoke from Burning Materials for the Evaluation of Light Scattering-Type Smoke Detector Response,” MS Thesis, WPI Center for Firesafety Studies, Worcester, MA, 1991.

(31) Delichatsios, M. A. “Categorization of Cable Flammability, Detection of Smoldering, and Flaming Cable Fires,” Interim Report, Factory Mutual Research Corporation, Norwood, MA, NP-1630, November 1980.

(32) Heskestad, G. FMRC Serial Number 21017, Factory Mutual Research Corp., Norwood, MA, 1974.

(33) Marrion, C. E. “Lag Time Modeling and Effects of Ceiling Jet Velocity on the Placement of Optical Smoke Detectors,” MS Thesis, WPI Center for Firesafety Studies, Worcester, MA, 1989.

(34) Kokkala, M. et al. “Measurements of the Characteristic Lengths of Smoke Detectors,” *Fire Technology*, Vol. 28, No. 2, National Fire Protection Association, Quincy, MA, 1992.

(34a) Yamauchi et al. “A Calculation Method for Predicting Heat and Smoke Detector’s Response.”

(34b) Cleary et al. “Particulate Entry Lag in Spot Type Smoke Detectors,” IAFSS Proceedings, Boston, MA 2000.

(34c) Keski-Rahkonen, “Revisiting Modeling of Fluid Penetration into Smoke Detectors,” AUBE 2001.

(34d) Bjoerkman et al. “Determination of Dynamic Model Parameters of Smoke Detectors,” *Fire Safety Journal*, No 37, pp. 395–407, 2002.

(34e) Keski-Rahkonen, “A New Model for Time Lag of Smoke Detectors,” International Collaborative Project to Evaluate Fire Models for Nuclear Power Plant Application, Gaithersburg, MD May 2002.

(35) UL 268, *Standard for Smoke Detectors for Fire Alarm Systems*, Underwriters Laboratories, Inc., Northbrook, IL, 2009.

(36) Deal, Scott.“Technical Reference Guide for FPEtool Version 3.2,” NISTIR 5486, National Institute for Standards and Technology, U.S. Department of Commerce, Gaithersburg, MD, Aug. 1994.

(37) Mowrer, F. W. “Lag Times Associated with Detection and Suppression,” *Fire Technology*, Vol. 26, No. 3, pp. 244–265, 1990.

(38) Newman, J. S. “Principles for Fire Detection,” *Fire Technology*, Vol. 24, No. 2, pp. 116–127, 1988.

(39) Custer, R., Meacham, B., Wood, C. “Performance Based Design Techniques for Detection and Special Suppression Applications,” Proceedings of the SFPE Engineering Seminars on Advances in Detection and Suppression Technology, 1994.

(40) SFPE *Engineering Guide to Performance Based Fire Protection*, 2nd edition, 2007, SFPE, Gaithersburg, MD.

(41) SFPE *Handbook of Fire Protection Engineering*, ~~5thedition~~ 5th edition , SFPE, Gaithersburg, MD, 2016.

(42) Drysdale, Dougal, *An Introduction to Fire Dynamics*, John Wiley & Sons, New York, NY, 1998, ISBN 0 471 90613 1, 2nd edition.

(43) Nam S., Donovan L.P. and Kim S.G., Establishing Heat Detectors Thermal Sensitivity Through Bench Scale Tests, *Fire Safety Journal*, Volume 39, Number 3, 191–215, April 2004.

(44) Nam S., Thermal Response Coefficient TRC of Heat Detectors and Its Field Applications, Fire Detection and Research Applications Symposium, NFP Research Foundation, January 2003.

(45) Nam S., Performance-Based Heat Detector Spacing, Interflam 2004, pp 883–892.

(46) Geiman, J. A., “Evaluation of Smoke Detector Response Estimation Methods,” Master of Science Thesis, University of Maryland, College Park, MD, December 2003.

(47) Projected Beam Smoke Detectors — More Than Just a Substitute for Spot Detectors; Fire Protection Engineering, Summer 2004, SFPE.

(48) Geiman, J.A., and Gottuck, D.T., “Alarm Thresholds for Smoke Detector Modeling,” *Fire Safety Science — Proceeding of the Seventh International Symposium*, 2003, pp. 197–208.

(49) *The SFPE Code Official's Guide to Performance-based Design Review and Analysis of Buildings*, Society of Fire Protection Engineers, Bethesda, MD, 2004.

(50) NFPA *101*, *Life Safety Code*, National Fire Protection Association, Quincy, MA, 2009.

(51) NFPA 909, *Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship*, National Fire Protection Association, Quincy, MA, 2010.

(52) NFPA 914, *Code for Fire Protection of Historic Structures*, National Fire Protection Association, Quincy, MA, 2010.

(53) Performance-based Building Design Concepts, International Code Council, Washington DC, 2004.

(54) *Extreme Event Mitigation In Buildings — Analysis and Design*, Meacham, National Fire Protection Association, Quincy, MA, 2006.

(55) Geiman, Gottuk, and Milke, “Evaluation of Smoke Detector Response Estimation Methods: Optical Density, Temperature Rise and Velocity at Alarm,” *Journal of Fire Protection Engineering*, 2006.

(56) Su et al., “Kemano Fire Studies — Part 1: Response of Residential Smoke Alarms,” Research Report 108, NRCC, April 2003.

(57) Davis, W., The Zone Model Jet, “A Model for the Prediction of Detector Activation and Gas Temperature in the Presence of a Smoke Layer,” NISTIR 6324, NIST, May 1999.

(58) *SFPE Engineering Guide to Human Behavior in Fire*.

I.1.2.19 References Associated with Annex D.

(1) Jacob, K. & Tyson, T., “Computer-Based Prediction of Speech Intelligibility for Mass Notification Systems,” SUPDET 2008, Fire Protection Research Foundation, March 2008.

(2) IEC 60268-16, “Sound system equipment — Part 16: Objective rating of speech intelligibility by speech transmission index,” 2003.

(3) ANSI/ASA S3.5, “American National Standard Methods for Calculation of the Speech Intelligibility Index,” 1997.

(4) Barnett, P.W. and Knight, A.D., “The Common Intelligibility Scale,” Proceedings of the Institute of Acoustics, Vol. 17, Part 7, 1995.

(5) IEC 60849, Annex B, Sound Systems for Emergency Purposes, February 1998.

(6) Sander J. van Wijngaarden and Jan A. Verhave, Past Present and Future of the Speech Transmission Index, Chapter 9, Measurement and Prediction of Speech Intelligibility in Traffic Tunnels Using the STI, p113, TNO Human Factors, The Netherlands, 2002.

(7) Mapp, P., “Systematic & Common Errors in Sound System STI and Intelligibility Measurements,” Convention Paper 6271, Audio Engineering Society, 117th Convention, San Fran, CA, 28–31 October 2004.

(8) Peter Mapp, Past Present and Future of the Speech Transmission Index, Chapter 8, Practical Application of STI to Assessing Public Address and Emergency Sound Systems, TNO Human Factors, The Netherlands, 2002.

I.1.2.20 References Associated with Annex G.

Kuligowski, Erica D., NIST Technical Note 1779: “General Guidance on Emergency Communication Strategies for Buildings,” February 2013.

I.1.2.21 References Associated with Annex H.

U.S. Consumer Product Safety Commission, *Responding to Residential Carbon Monoxide Incidents: Guidelines for Fire and Other Emergency Response Personnel*, Washington, DC, July 2002, http://www.cpsc.gov/s3fs-public/coguide.pdf.

I.2 Informational References.

The following documents or portions thereof are listed here as informational resources only. They are not a part of the requirements of this document.

I.2.1 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM E2292, *Standard Guide for Field Investigation of Carbon Monoxide Poisoning Incidents*, 2014.

I.2.2 EPRI Publications.

Electric Power Research Institute, 3420 Hillview Avenue, Palo Alto, CA 94304.

Technical Report 1002925, *Stationary Battery Monitoring by Internal Ohmic Measurement*, 2002.

Technical Report TR-10067577, *Stationary Battery Guide; Design, Application, and Maintenance*, 2002.

I.2.3 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1192, *Standard on Recreational Vehicles*, 2018 edition.

I.2.4 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 1973, *Standard for Batteries for Use in Light Electric Rail (LER) Applications and Stationary Applications*, 1st edition, 2013, revised 2016.

ANSI/UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms,* ~~2008~~ 20 **17** , revised ~~2009~~ 20 **18** .

UL 2054, *Standard for Household and Commercial Batteries*, 2nd edition, 2004, revised 2011.

ANSI/UL 2075, *Gas and Vapor Detectors and Sensors*, ~~2004~~ 20 **13, revised 2017** .

UL 9540, *Outline of Investigation for Energy Storage Systems and Equipment*, 1st edition, 2016.

I.3 References for Extracts in Informational Sections.

NFPA 70®, *National Electrical Code®*, 2017 edition.

NFPA 92, *Standard for Smoke Control Systems*, 2018 edition.

NFPA 92B, *Smoke Management Systems in Malls, Atria, and Large Spaces*, 1995 edition.

NFPA *101®*, *Life Safety Code®*, 2018 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2016 edition.

Statement of Problem and Substantiation for Public Input

Referenced current national consensus standard editions.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 18-NFPA 72-2018 [Section No. 2.3]	Referenced current national consensus standard editions.

Submitter Information Verification

Submitter Full Name: Aaron Adamczyk
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Oct 30 14:34:49 EDT 2018
Committee: SIG-FUN

Committee Statement

Resolution: FR-5136-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA

documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style.

Public Input No. 292-NFPA 72-2019 [Section No. I.1.2.12]

I.1.2.12 SFPE Publications.

Society of Fire Protection Engineers, 9711 Washingtonian Blvd., Suite 380, Gaithersburg, MD 20878.

SFPE Engineering Guide: Evaluation of the Computer Fire Model DETACT QS, 2002.

SFPE Engineering Guide to Human Behavior in Fire, ~~2003~~ 2019 .

SFPE Engineering Guide to Performance-Based Fire Protection, 2nd edition, 2007.

SFPE Handbook of Fire Protection Engineering, 5th edition, 2016.

Keating, John P. and Loftus, Elizabeth F., "People Care in Fire Emergencies — Psychological Aspects, 1975," SFPE, 1975.

Statement of Problem and Substantiation for Public Input

Revision needed to highlight new edition of the SFPE Guide to Human Behavior.

Submitter Information Verification

Submitter Full Name: Chris Jelenewicz
Organization: SFPE
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 16 07:23:15 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5136-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term "Standard for". We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style.

Public Input No. 267-NFPA 72-2019 [Section No. I.1.2.14]

I.1.2.14 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 268, *Standard for Smoke Detectors for Fire Alarm Systems,* ~~6th edition, 2009~~ 2016 .

ANSI/UL 268A, *Standard for Smoke Detectors for Duct Application*,~~4th edition~~ 2008 , ~~2008,~~ revised 2016.

ANSI/UL 827, *Standard for Central-Station Alarm Services*, 2014, revised 2019 .

ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*,~~9th edition~~ 2014 , ~~2003,~~ revised ~~2012.~~ 2018

ANSI/UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*,~~5th edition, 2016~~ 2016 .

ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired,*~~3rd edition~~ 2002 , ~~2002,~~ revised ~~2013~~ 2018 .

ANSI/UL 2075, *Standard for Safety Gas and Vapor Detectors and Sensors*, 2013, revised 2017 .

ANSI/UL 2572, *Mass Notification Systems*,~~2nd edition, 2016~~ 2018 .

Statement of Problem and Substantiation for Public Input

Update the publishing dates for each of the UL standards listed to reflect the most up to date edition.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 264-NFPA 72-2019 [Section No. 2.3.8]	
Public Input No. 268-NFPA 72-2019 [Section No. I.2.4]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 17:25:26 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5136-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style.

Public Input No. 313-NFPA 72-2019 [Section No. I.1.2.16.9]

~~**I.1.2.16.9** – References to A.29.10.8.2.1.~~

~~Stone, W., "Electromagnetic Attenuation in Construction Materials," National Institute of Standards and Technology, NISTIR 6055, 1997.~~

Statement of Problem and Substantiation for Public Input

Public Input was submitted to revise 29.10.8.2. In conjunction with that change, the formula would be removed and the reference information would not be needed in Annex I 1.2.16.9.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 311-NFPA 72-2019 [Section No. 29.10.8.2.1]	Chapter 29 Section
Public Input No. 312-NFPA 72-2019 [Section No. A.29.10.8.2.1]	Annex A Section

Submitter Information Verification

Submitter Full Name: Greg Hansen
Organization: Vivint Inc.
Affiliation: SIG-HOU Task Group 2 input
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 19 19:59:20 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5136-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: References are updated in accordance with the Manual of Style.

Public Input No. 268-NFPA 72-2019 [Section No. I.2.4]

I.2.4 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 1973, *Standard for Batteries for Use in Light Electric Rail (LER) Applications and Stationary Applications*, ~~1st edition, 2013, revised 2016~~ 2018 .

ANSI/UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms*, ~~2008~~ 2017 , revised ~~2009~~ 2018 .

UL 2054, *Standard for Household and Commercial Batteries*, ~~2nd edition~~ 2004 , ~~2004,~~ revised 2011.

ANSI/UL 2075, *Gas and Vapor Detectors and Sensors*, ~~2004~~ 2013, revised 2017 .

UL 9540, *Outline of Investigation for Energy Storage Systems and Equipment*, ~~1st edition, 2016~~ 2016 .

Statement of Problem and Substantiation for Public Input

Update the publishing dates for each of the UL standards listed to reflect the most up to date edition.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 264-NFPA 72-2019 [Section No. 2.3.8]	
Public Input No. 267-NFPA 72-2019 [Section No. I.1.2.14]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 12 17:29:42 EDT 2019
Committee: SIG-FUN

Committee Statement

Resolution: FR-5137-NFPA 72-2019 By direction of our Manager, Dwayne Sloan, working with our Standards Division we are removing the ANSI designation for the reasons stipulated in the substantiation of the PI. Secondly, we are changing our standards to reflect their short title. Therefore you will see we are removing the repetitive term “Standard for”. We are submitting these changes through all the NFPA documents UL are referenced in cycle by cycle. We are about 3 cycles into the process. Best Regards Kelly Nicolello UL LLC

Statement: Reference updates per the Manual of Style.