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. 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. 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. 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. 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. 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. 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:

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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:
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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
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Affiliation: Electronic Security Association
Street Address:
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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~~ <u>and is</u> 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:
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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:

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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:

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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:

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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:
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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. 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

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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
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Street Address:
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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. 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
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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:

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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
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City:	
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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:
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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:
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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

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Affiliation: Rebellion Photonics

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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. 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:
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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:

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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. 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:	
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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:	
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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:	
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State:	
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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
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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
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Affiliation: Electronic Security Association
Street Address:
City:
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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
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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. 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. 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. 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. <u>Spot type smoke detectors shall not be installed on ceilings above 30 feet in height.</u>

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.

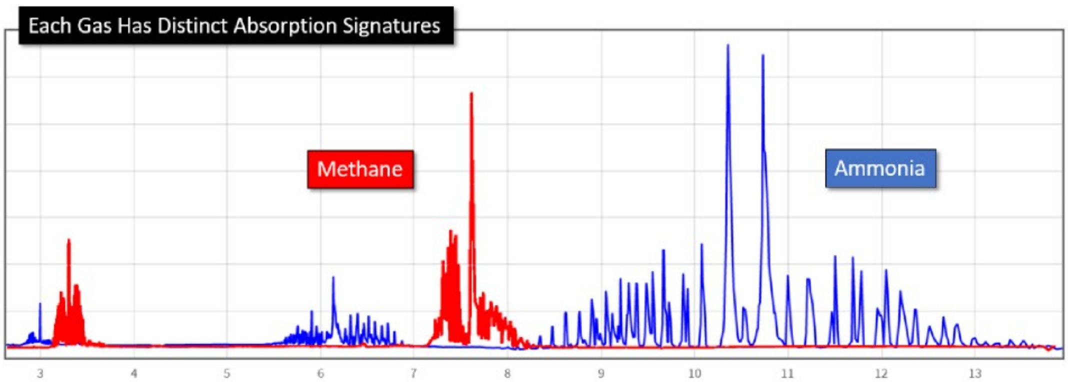

FIGURE A.17.9.1.1. Gas Absorption Signatures

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. 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. 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. 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:
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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
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Street Address:
City:
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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. 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.
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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:
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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
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Street Address:	
City:	
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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
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Street Address:	
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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
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Affiliation: Electronic Security Association
Street Address:
City:
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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
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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.
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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. 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
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Affiliation: Electronic Security Association
Street Address:
City:
State:
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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. 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. 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.

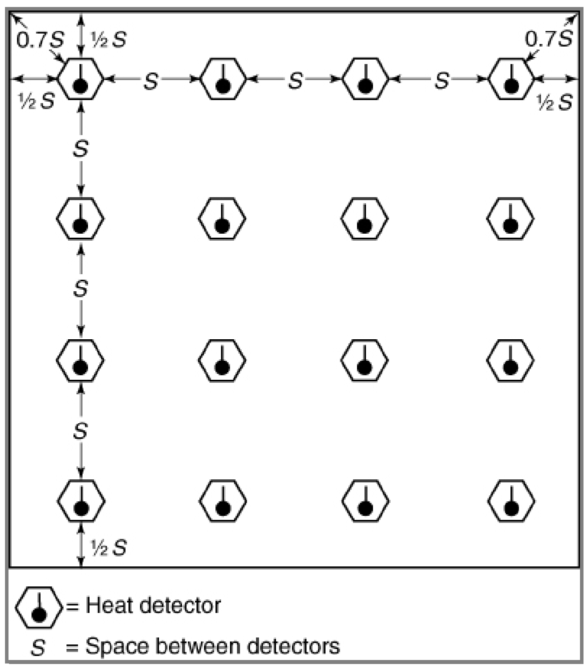


Figure A.17.6.3.1.1(b) Line-Type Detectors — Spacing Layouts, Smooth Ceiling.

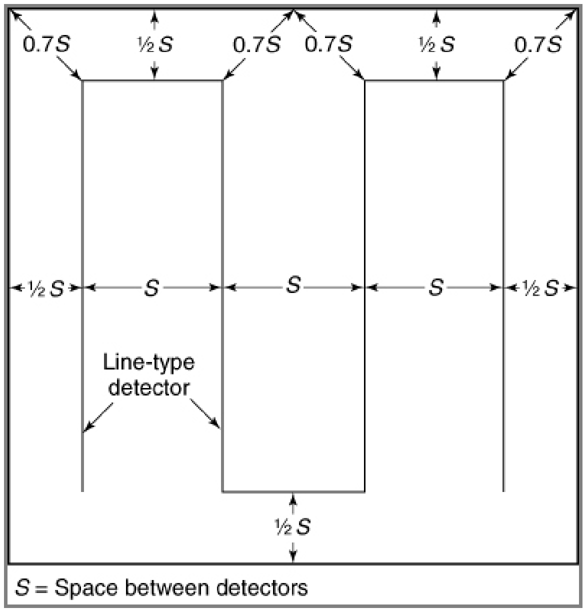


Figure A.17.6.3.1.1(c) Fire Test Layout.

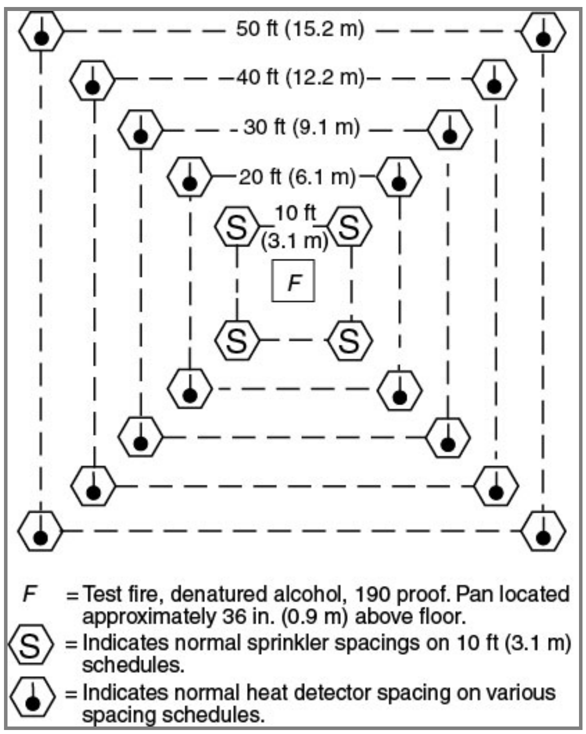


Figure A.17.6.3.1.1(d) Detector Covering any Square Laid Out in Confines of Circle in Which Radius Is 0.7 Times Listed Spacing.

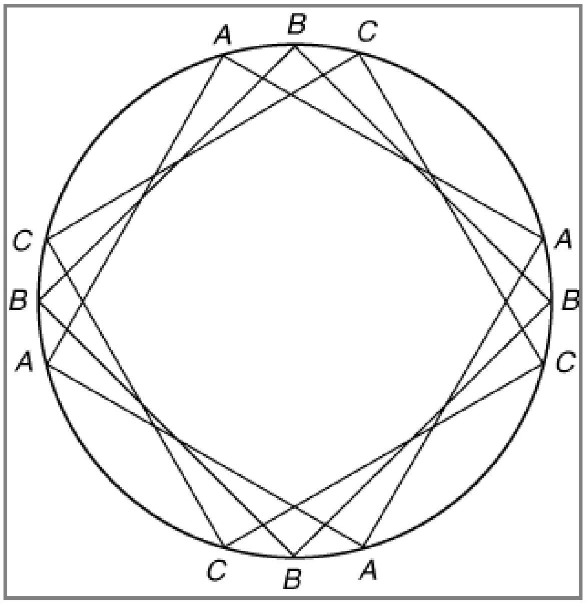


Figure A.17.6.3.1.1(e) Typical Rectangles for Detector Curves of 15 ft to 50 ft.

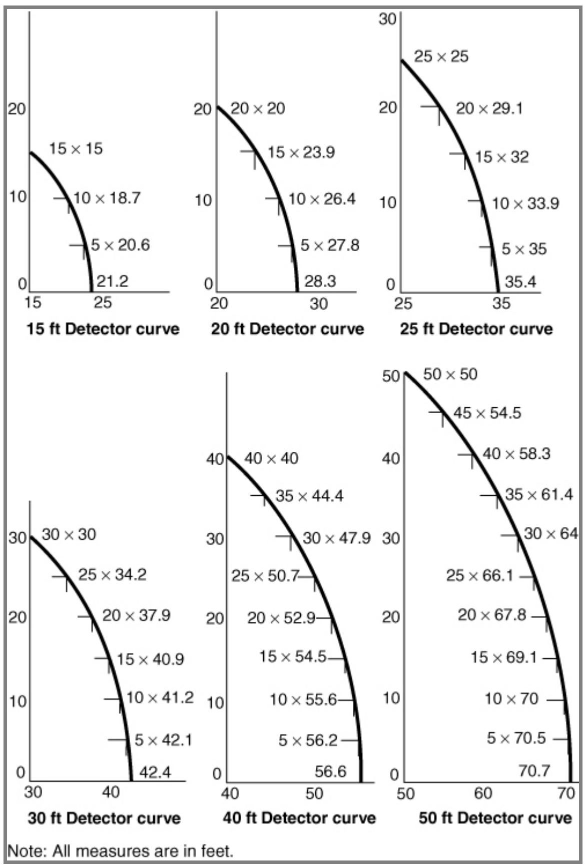


Figure A.17.6.3.1.1(f) Typical Rectangles for Detector Curves of 4.6 m to 15.2 m.

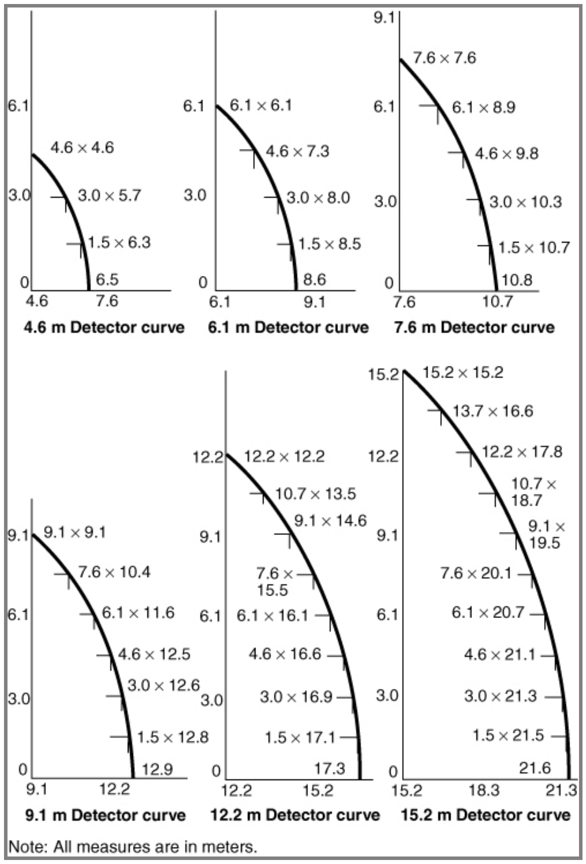


Figure A.17.6.3.1.1(g) Detector Spacing, Rectangular Areas.

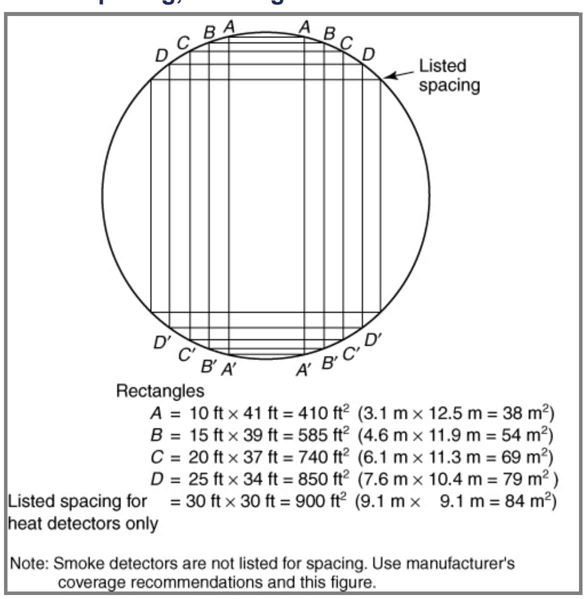
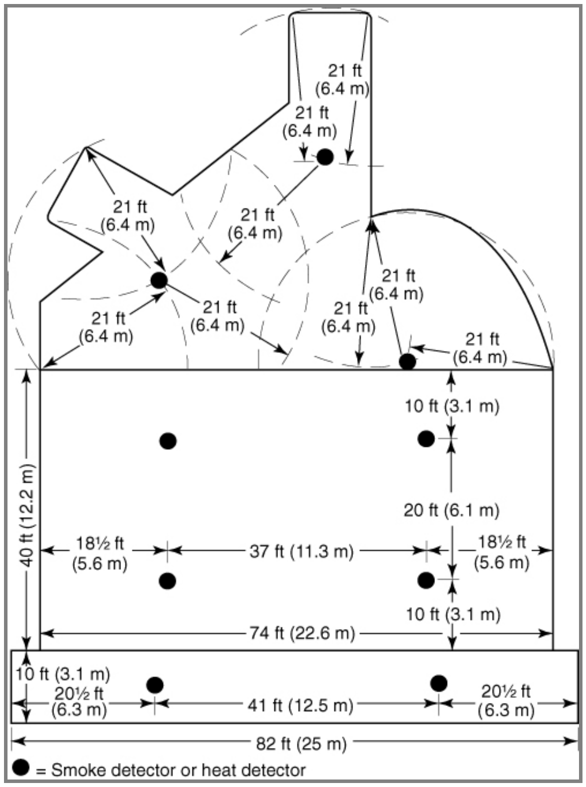


Figure A.17.6.3.1.1(h) Smoke or Heat Detector Spacing Layout in Irregular Areas.



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.

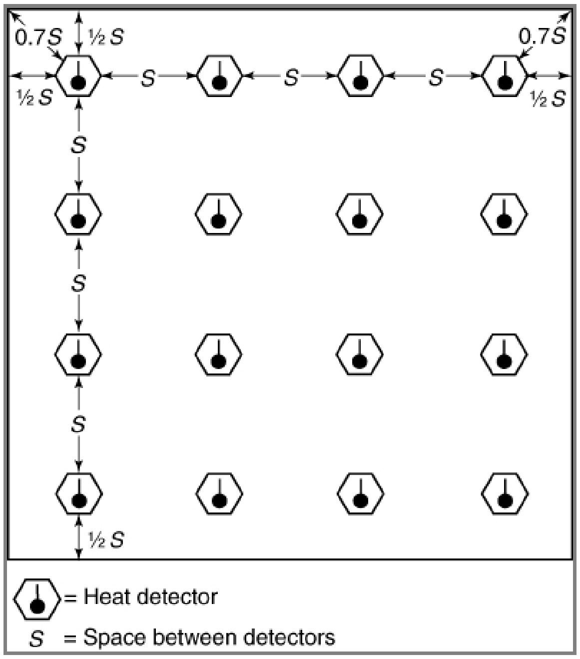


Figure A.17.6.3.1.1(b) Line-Type Detectors — Spacing Layouts, Smooth Ceiling.

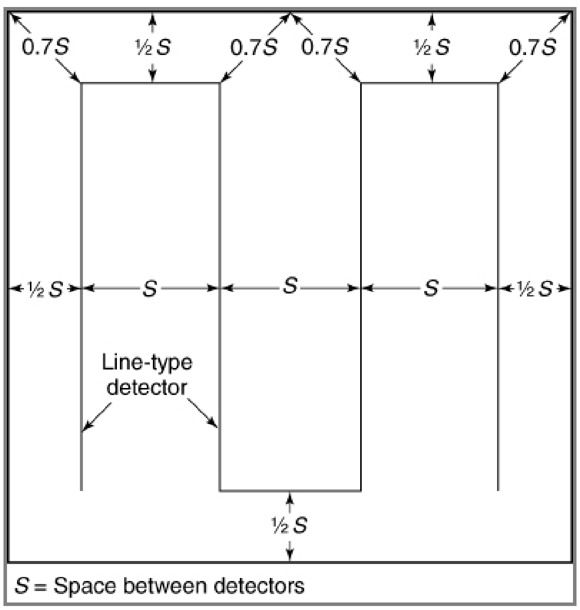


Figure A.17.6.3.1.1(c) Fire Test Layout.

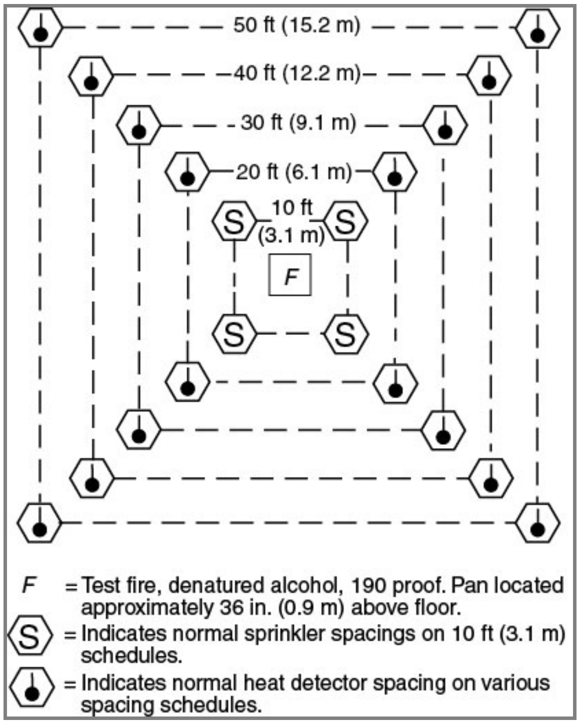


Figure A.17.6.3.1.1(d) Detector Covering any Square Laid Out in Confines of Circle in Which Radius Is 0.7 Times Listed Spacing.

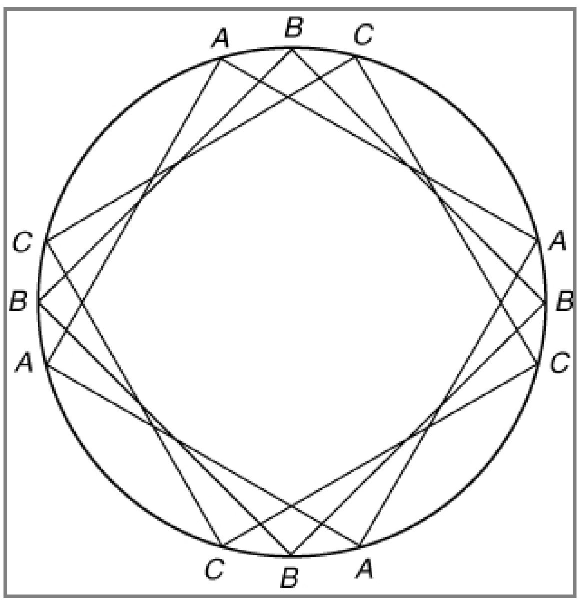


Figure A.17.6.3.1.1(e) Typical Rectangles for Detector Curves of 15 ft to 50 ft.

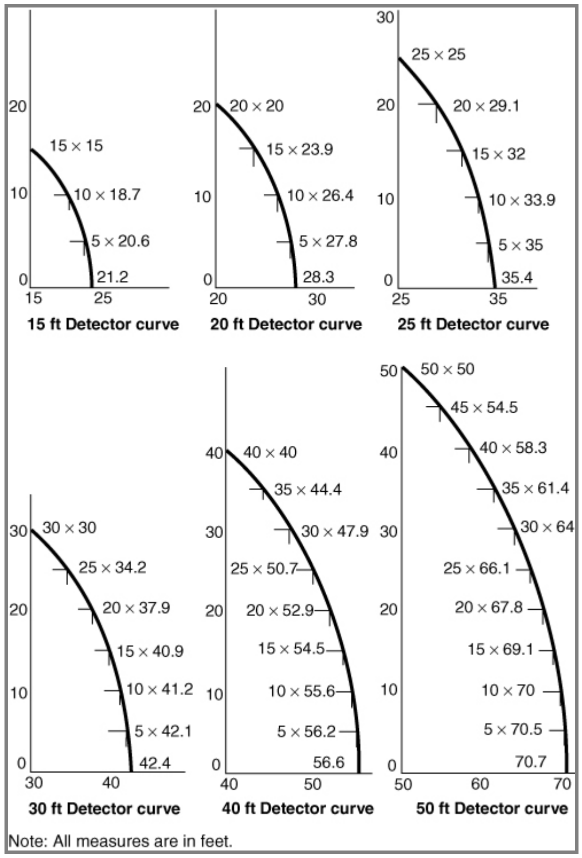


Figure A.17.6.3.1.1(f) Typical Rectangles for Detector Curves of 4.6 m to 15.2 m.

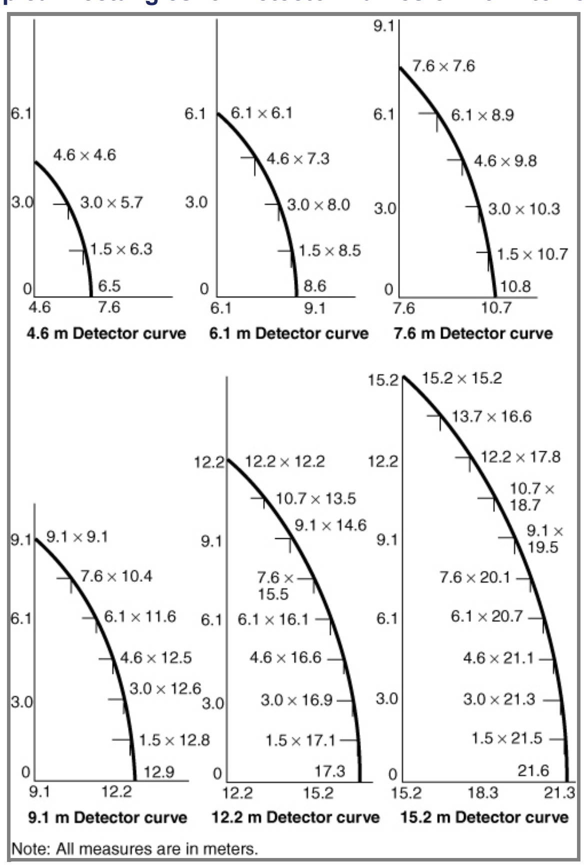


Figure A.17.6.3.1.1(g) Detector Spacing, Rectangular Areas.

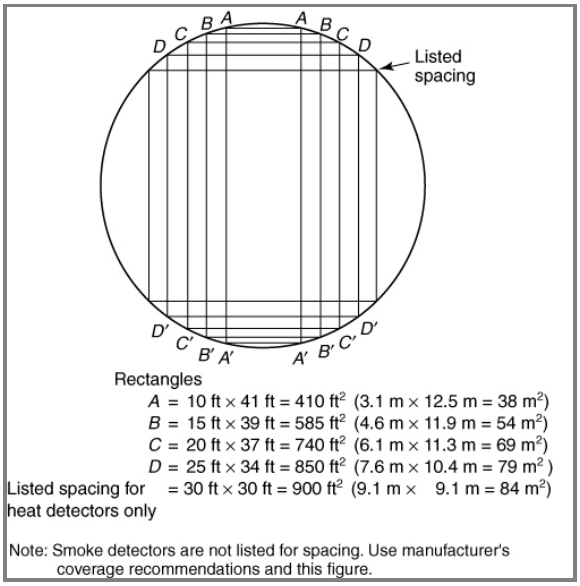
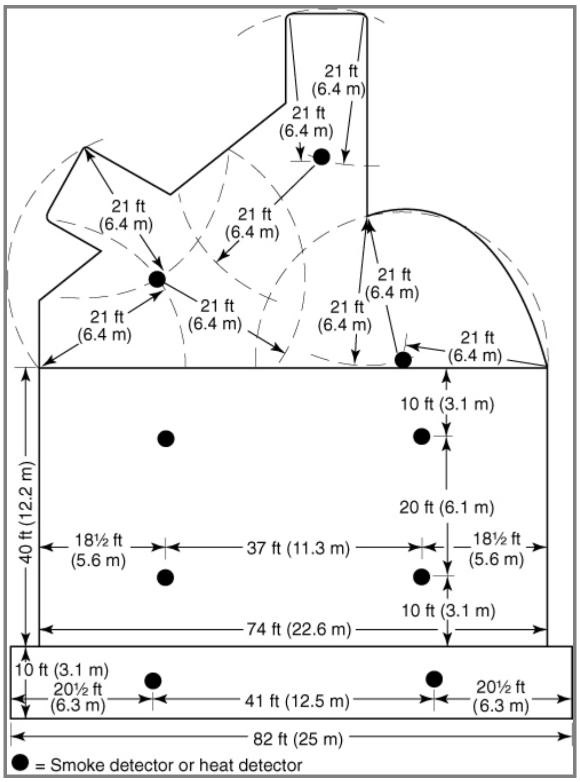


Figure A.17.6.3.1.1(h) Smoke or Heat Detector Spacing Layout in Irregular Areas.



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
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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.

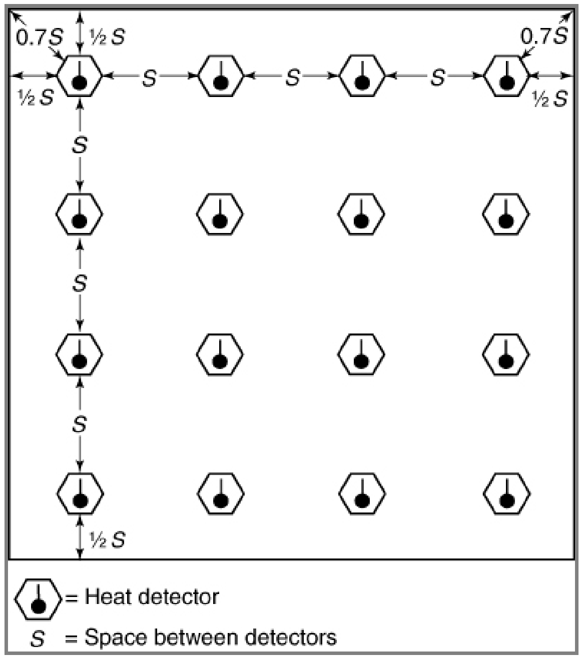


Figure A.17.6.3.1.1(b) Line-Type Detectors — Spacing Layouts, Smooth Ceiling.

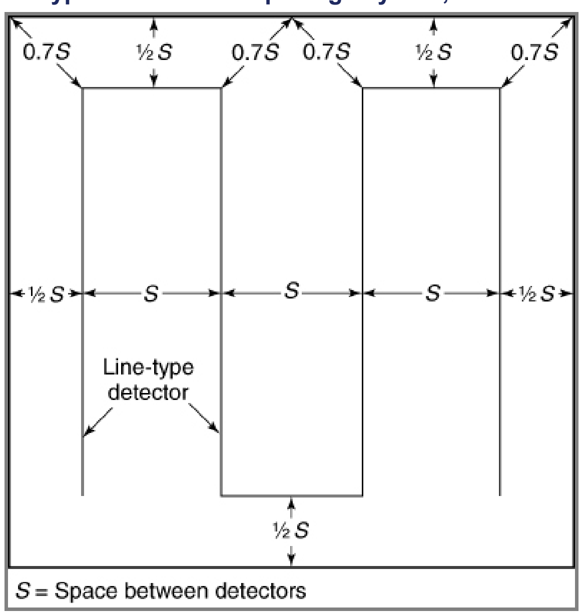


Figure A.17.6.3.1.1(c) Fire Test Layout.

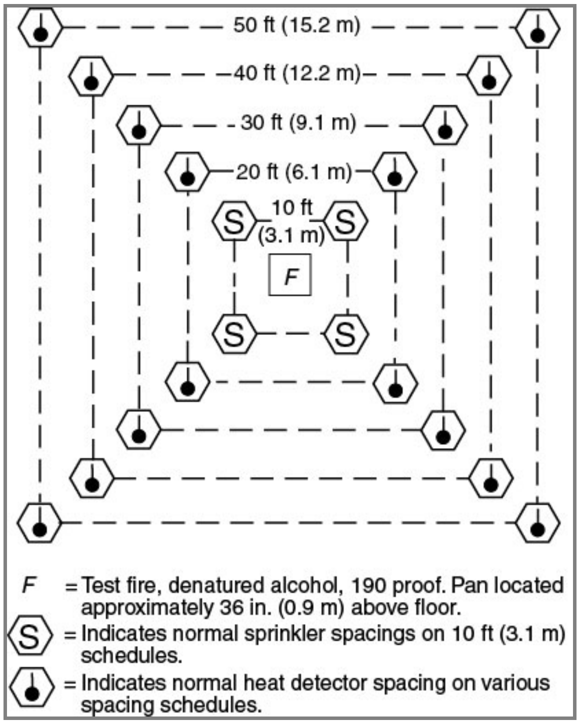


Figure A.17.6.3.1.1(d) Detector Covering any Square Laid Out in Confines of Circle in Which Radius Is 0.7 Times Listed Spacing.

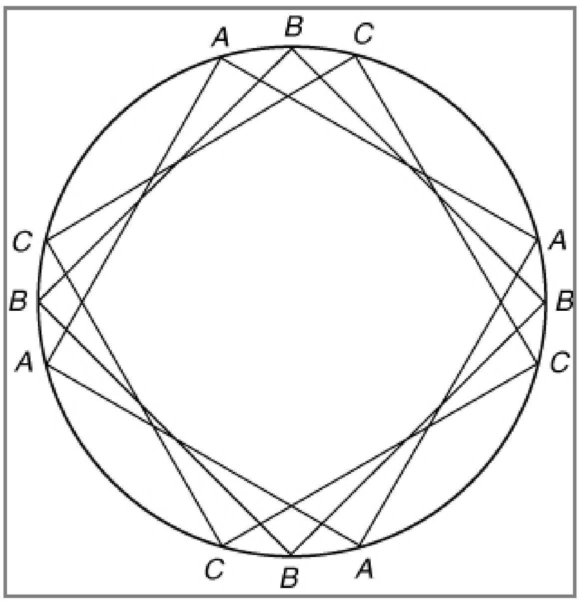


Figure A.17.6.3.1.1(e) Typical Rectangles for Detector Curves of 15 ft to 50 ft.

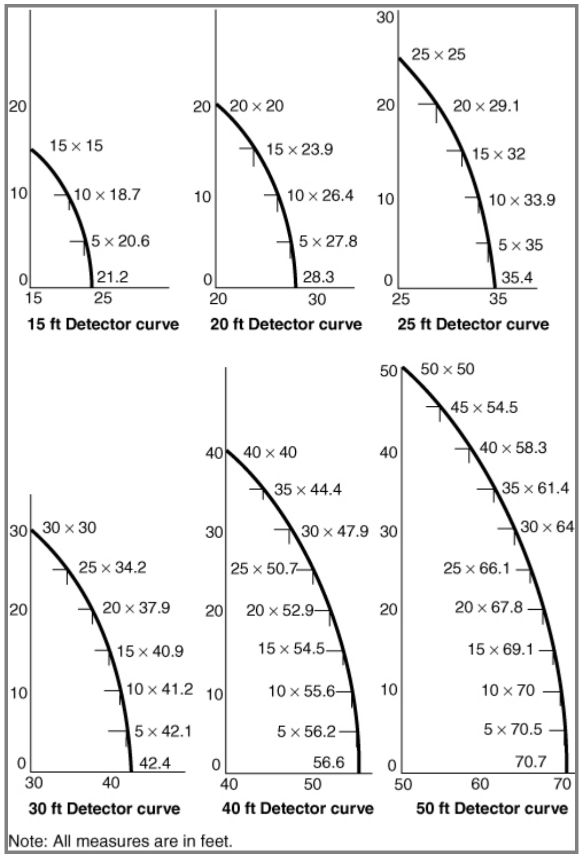


Figure A.17.6.3.1.1(f) Typical Rectangles for Detector Curves of 4.6 m to 15.2 m.

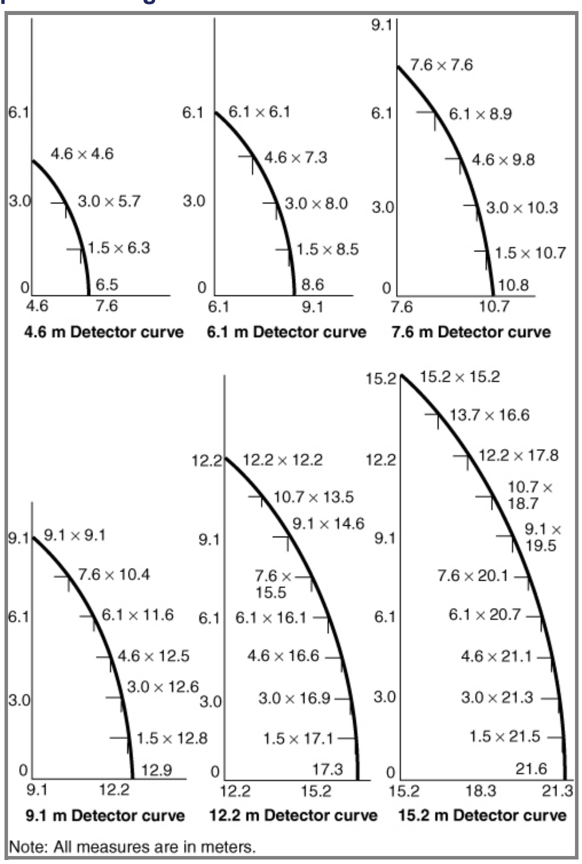


Figure A.17.6.3.1.1(g) Detector Spacing, Rectangular Areas.

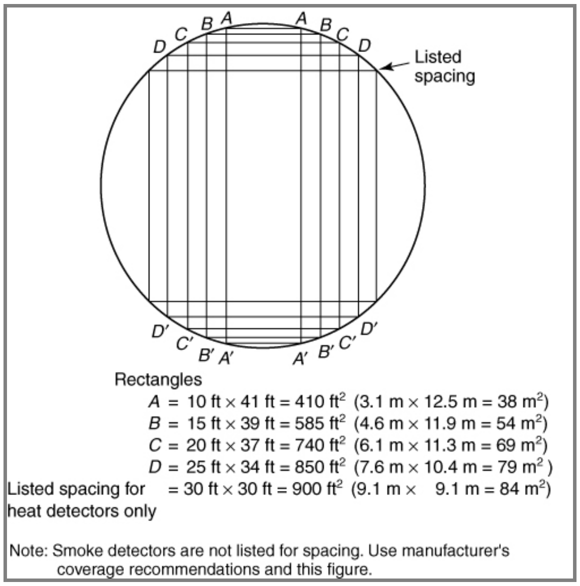
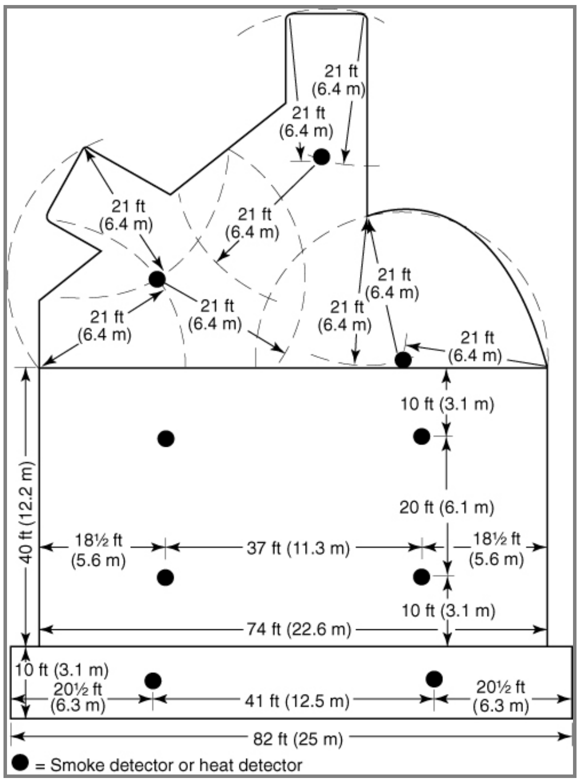


Figure A.17.6.3.1.1(h) Smoke or Heat Detector Spacing Layout in Irregular Areas.



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 NFPA 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.

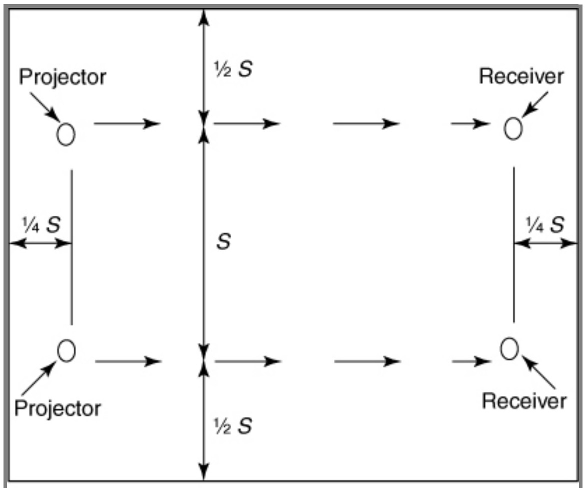
Public Input No. 108-NFPA 72-2019 [Section No. A.17.7.3.7]

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)*.



S = Selected detector spacing

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
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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

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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

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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. 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

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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

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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/m²	Btu/sec·ft²	
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/m²	Heat Release Density (q) Btu/sec·ft²	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	Approximate Values 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	Heat Release Rate Btu/sec
Flammable liquid pool	3291/m²	290/ft² 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/m²	63/ft² 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/m²	120/ft² 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						

	—	—	
-			
Match, wooden, laid on solid surface		4 80	0.35 0.076
-			
	20–30		
-			
	30	1.18	
-			
	14	0.092	
-			
Wood cribs, BS 5852 Part 2		18–20	1.59–1.76
- - - - - - - - - - - - -			
No. 4 crib, 8.5 g (0.3 oz)		1,000	0.95
-			
	190		
-			
	—	—	
-			
	—	—	
-			
No. 5 crib, 17 g (0.6 oz)		15 [d] 1,900	1.32 1.80
-			
	200		
-			
	—	—	
-			
	—	—	
-			
No. 6 crib, 60 g (2.1 oz)		17 [d] 2,600	1.50 2.46
-			
	190		
-			
	—	—	
-			
	—	—	
-			
No. 7 crib, 126 g (4.4 oz)		20 [d] 6,400	1.76 6.07
-			
	350		
-			
	—	—	
-			

	—		—		
-					
Crumpled brown lunch bag, 6 g (0.21 oz)				25 [d] 1,200	2.20 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	
-		
Plastic trash bags, filled with cellulosic trash [1.2–14 kg (42.3–493 oz)] [e]	35 [c] 120,000–350,000	3.08 113.81–331.96
-		
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
39	1/2 in. plywood wardrobe with fabrics, 68.5 kg (151.0 lb)	3000	2845	35	*	0.8612	0.8168	20
40	1/2 in. plywood wardrobe with fabrics, 68.32 kg (150.6 lb)	3250	3083	35	*	0.8612	0.8168	40
41	1/8 in. plywood wardrobe with fabrics, 36.0 kg (79.4 lb)	3500	3320	40	*	0.6594	0.6254	40
42	1/8 in. plywood wardrobe with fire-retardant interior finish (initial growth)	6000	5691	70	fast	0.2153	0.2042	50
42	1/8 in. plywood wardrobe with fire-retardant interior finish (later growth)	2000	1897	30	*	1.1722	1.1118	100
43	Repeat of 1/2 in. plywood wardrobe, 67.62 kg (149.08 lb)	5000	4742	30	*	1.1722	1.1118	50
44	1/8 in. plywood wardrobe with fire-retardant latex paint, 37.26 kg (82.14 lb)	3000	2845	90	fast	0.1302	0.1235	30
45	Chair F21, 28.34 kg (62.48 lb)	2900	2751	100	*	0.1055	0.1001	120
46	Chair F21, 28.34 kg (62.48 lb)	2100	1992	45	*	0.5210	0.4941	

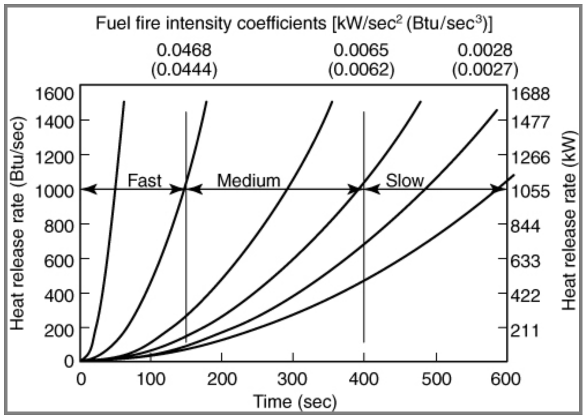
	130				
-					
	2600	2466			
47	Chair, adj. back metal frame, foam cushions, 20.82 kg (45.90 lb)	170	medium	0.0365	0.0346
-					
	30				
-					
	250	237			
48	Easy chair CO7, 11.52 kg (25.40 lb)	175	medium	0.0344	0.0326
-					
	90				
-					
	950	901			
49	Easy chair F34, 15.68 kg (34.57 lb)	200	medium	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]	

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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).

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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]	

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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]	

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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]	

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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.

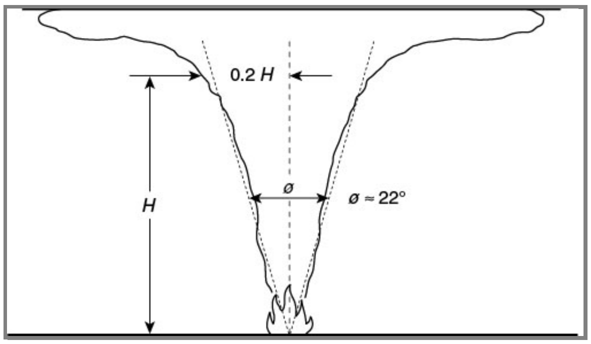
Public Input No. 109-NFPA 72-2019 [Section No. B.4.9.1]

~~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

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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

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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.

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(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.

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(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.

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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

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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.