



NATIONAL FIRE PROTECTION ASSOCIATION

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

AGENDA

NFPA Technical Committee on Inspection, Testing, and Maintenance of Water-Based Systems (INM-AAA) NFPA 25 Second Draft Meeting (A2025)

September 25 – 26, 2024
8:00 a.m. – 5:00 p.m. (ET)

Indianapolis, IN

To join the meeting, please contact scaldwell@nfpa.org

1. **Call to order.** Chairman Brad Cronin.
2. **Introductions.** See committee roster attachment #5.
3. **Chair report.** Chairman Brad Cronin.
4. **Staff liaison report.** Chad Duffy.
5. **Previous meeting minutes.** October 2023, Mesa, AZ. See attachment #1.
6. **NFPA 25 Second Draft.**
 - a. **Public Comments.** See attachment #2.
 - b. **Task group report(s).**
 - i. **Task Group 1.** Matt Osburn. – See Attachment #3
 - ii. **Task Group 2.** Jeff Van Ryan. – See Attachment #3
 - iii. **Task Group 3.** Jeff Habenstreit. – See Attachment #3
 - iv. **Task Group 4.** Brandon Frakes. – Report Pending
 - v. **Task Group 5.** Milosh Puchovsky. – No Report
 - vi. **Task Group 6.** Vincent Powers. – Report Pending
 - vii. **Task Group 7.** Kevin Hall. Report Pending
 - viii. **Task Group 7.** Jason Webb. Report Pending

Task Group 1 – Chp. 1, 2, 3, 4, and Annex A as applicable, B, F, and I	Task Group 2 – Chp. 5, 16, and Annex A as applicable, E, G, and H	Task Group 3 – Chp. 6, 7, 8 (except PI 33 and 190), 9, 10, 11, and Annex A as applicable, and C	Task Group 4 – Chp. 13, 14, 15 and Annex A as applicable, and D	Task Group 5 – Chp. 12, 8 (PIs 33 and 190) and Annex A as applicable

Matt Osburn - Chair	Jeff Van Ryan - Chair	Jeff Hebenstreit - Chair	Brandon Frakes - Chair	Milosh Puchovsky - Chair
Terry Victor	Kerry Bell	Kerry Bell	Vincent Powers	Terry Victor
Top Myers	Terry Victor	Terry Victor	Bruce Campbell	Kerry Bell
Bob Caputo	Manny Silva	Bob Caputo	Scott Futrell	Gerard Back
David Baron	David Raborn	Matt Osburn	Bob Caputo	Brad Stilwell
Scott Bailey	Bob Caputo	John Campbell	Corey Certain	Chase Browning
Charles Ketner	Brandon Frakes	Brian Olsen	Shane Clary	Don Hopkins
Pete Larrimer	Jeff Hebenstreit	John Donner	Scott Bailey	Stephanie Thomas
Howard Clay	Matt Osburn	Pete Larrimer	Don Hopkins	Robert Kasiski
Kevin Hall	Piya Sawangpanich	Josh McDonald	Pete Larrimer	Jonathan Ingram
Josh McDonald	John Campbell	Kevin Hall		Dennis Sullivan
Kevin Kelly	David Baron	Vince Powers		Rick Jackson
Scott Futrell	Brian Matthews	Corey Certain		Natalie Whalen
Vincent Powers	Shane Clary	Damon Pietraz		
	Henrick Abrahamsen	Bruce Clark		
	Scott Bailey	Natalie Whalen		
	Pete Larrimer	Ryan Fick		
	Howard Clay			
	Josh McDonald			
	Kevin Hall			

Task Group 6 - Tables	Task Group 7 – C-values	Task Group 8 – Frozen Systems
Vincent Powers - Chair	Kevin Hall - Chair	Jason Webb - Chair
Josh McDonald	Dave Fuller	Scott Futrell
Brian Olsen	Don Hopkins	Kevin Hall

Tammy Mayo	Chris Champion	Josh McDonald
Steve Rustenburg	Jason Webb	Bob Caputo
Larry Keeping	Josh McDonald	Brandon Frakes
Jeff Van Rhyn	Bob Caputo	Tammy Mayo
Michael Newell	Brandon Frakes	Terry Victor
	Tammy Mayo	
	Terry Victor	

c. Presentation(s).

- i. Mike Joanis – 10 minute presentation on replacing dwelling sprinklers. See attachment #4

7. Other Business.

8. Future meetings.

9. Adjournment.

Attachment #1: Previous Meeting Minutes



NATIONAL FIRE PROTECTION ASSOCIATION

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DRAFT MINUTES

NFPA Technical Committee on Inspection, Testing, and Maintenance of Water-Based Systems (INM-AAA) NFPA 25 First Draft Meeting (A2025)

October 3-5, 2023
8:00 am – 5:00 pm (MST)

Hybrid Meeting

1. **Call to order.** Brad Cronin, chair, called the meeting to order at 8:00 am on 10/3/23.
2. **Introductions.** Attendees introduced themselves and identified their affiliation. NFPA staff took attendance.
3. **Chair report.** Brad Cronin welcomed attendees and provided an overview of the meeting.
4. **Staff liaison report.** Chad Duffy provided an overview of the standards development process and the revision cycle schedule.
5. **Previous meeting minutes.** The minutes from September, 2021 were approved without revision.
6. **NFPA 25 First Draft.**
 - a. **Review of Public Inputs.** The Technical Committee began to review the Public Inputs and developed First Revisions and Committee Inputs as necessary. These will be available in the First Draft Report at www.nfpa.org/25.
 - b. **Task group report(s).** The following task groups provided their reports and recommendations.
 - i. **Task Group 1.** TG Chair: Matt Osburn. Members: See table. The task group provided a report, and revisions were made. The task group was reconstituted to continue work for the second draft. See attached report.
 - ii. **Task Group 2.** TG Chair: Jeff Van Ryan. Members: See table. The task group provided a report, and revisions were made. The task group was reconstituted to continue work for the second draft. See attached report.
 - iii. **Task Group 3.** TG Chair: Jeff Hebenstreit. Members: See table. The task group provided a report, and revisions were made. The task group was reconstituted to continue work for the second draft. See attached report.
 - iv. **Task Group 4.** TG Chair: Brandon Frakes. Members: See table. The task group provided a report, and revisions were made. The task group was reconstituted to continue work for the second draft. See attached report.

- v. **Task Group 5.** TG Chair: Milosh Puchovsky. The task group provided a report, and revisions were made. The task group was reconstituted to continue work for the second draft. See attached report.

Task Group 1 – Chp. 1, 2, 3, 4, and Annex A as applicable, B, F, and I	Task Group 2 – Chp. 5, 16, and Annex A as applicable, E, G, and H	Task Group 3 – Chp. 6, 7, 8 (except PI 33 and 190), 9, 10, 11, and Annex A as applicable, and C	Task Group 4 – Chp. 13, 14, 15 and Annex A as applicable, and D	Task Group 5 – Chp. 12, 8 (PIs 33 and 190) and Annex A as applicable
Matt Osburn - Chair	Jeff Van Ryan - Chair	Jeff Hebenstreit - Chair	Brandon Frakes - Chair	Milosh Puchovsky - Chair
Terry Victor	Kerry Bell	Kerry Bell	Vincent Powers	Terry Victor
Top Myers	Terry Victor	Terry Victor	Bruce Campbell	Kerry Bell
Bob Caputo	Manny Silva	Bob Caputo	Scott Futrell	Gerard Back
David Baron	David Raborn	Matt Osburn	Bob Caputo	Brad Stilwell
Scott Bailey	Bob Caputo	John Campbell	Corey Certain	Chase Browning
Charles Ketner	Brandon Frakes	Brian Olsen	Shane Clary	Don Hopkins
Pete Larrimer	Jeff Hebenstreit	John Donner	Scott Bailey	Stephanie Thomas
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Scott Futrell	Brian Matthews	Corey Certain		Natalie Whalen
Vincent Powers	Shane Clary	Damon Pietraz		
	Henrick Abrahamsen	Bruce Clark		
	Scott Bailey	Natalie Whalen		
	Pete Larrimer	Ryan Fick		
	Howard Clay			
	Josh McDonald			

	Kevin Hall			
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c. **Presentation(s).** The committee heard presentations from the following individuals.

i. **Vapor Corrosion Inhibitor.** Mark Hopkins. Presentation attached.

d. **New task groups.** The following task groups were appointed to work subsequent to the meeting:

i. **Task Group 6.** TG Chair: Vincent Powers. Members: See table. Review all tables to ensure cross references and tasks align with the requirements for each chapter and annex.

ii. **Task Group 7.** TG Chair: Kevin Hall. Members: See table . Review and coordinate C-value requirements between NFPA 13 and NFPA 25.

iii. **Task Group 8.** TG Chair: Jason Webb. Members: See table. Review and recommend ITM requirements for frozen systems.

Task Group 6 - Tables	Task Group 7 – C-values	Task Group 8 – Frozen Systems
Vincent Powers - Chair	Kevin Hall - Chair	Jason Webb - Chair
Josh McDonald	Dave Fuller	Scott Futrell
Brian Olsen	Don Hopkins	Kevin Hall
Tammy Mayo	Chris Champion	Josh McDonald
Steve Rustenburg	Jason Webb	Bob Caputo
Larry Keeping	Josh McDonald	Brandon Frakes
Jeff Van Rhyn	Bob Caputo	Tammy Mayo
Michael Newell	Brandon Frakes	Terry Victor
	Tammy Mayo	
	Terry Victor	

7. Meeting Recessed. 10/3/23 at 6:00 pm.

Day 2:

8. Call to order. Brad Cronin, chair, called the meeting to order at 8:00 am on 10/4/23

9. Attendance. NFPA staff took attendance.

10. Review of Public Inputs. The Technical Committee continued to review the Public Inputs and developed First Revisions and Committee Inputs as necessary.

11. Meeting Recessed. 10/4/23 at 6:00 pm.

Day 3:

12. Call to order. Brad Cronin, chair, called the meeting to order at 8:00 am on 10/5/23

13. Attendance. NFPA staff took attendance.

14. Review of Public Inputs. The Technical Committee completed their review of the Public Inputs and developed First Revisions and Committee Inputs as necessary.

15. Other Business. No other business was brought up.

16. Future meetings. A meeting notification will be posted at www.nfpa.org/25next when the next meeting is scheduled.

17. Adjournment. The meeting was adjourned at 1:50 pm on 10/5/23.

Attendees

Committee Members:

X	Cronin, Bradford	Chair	Rhode Island Association of Fire Marshals
	Abrahamsen, Niels	Principal	International Water Mist Association
X	Bell, Kerry	Principal	UL Solutions
X	Bellamy, Tracey	Principal	The Home Depot
O	Browning, Chase	Principal	Medford Fire Department
X	Campbell, John	Principal	NFPA Industrial Fire Protection Section
X	Certain, Corey	Principal	Siemens
X	Clarke, Bruce	Principal	American International Group, Inc. (AIG)
X	Clary, Shane	Principal	Automatic Fire Alarm Association, Inc.
	Dagenais, David	Principal	NFPA Health Care Section
O	Dawe, Nicholas	Principal	International Fire Marshals Association
	Day, Richard	Principal	Michigan State Fire Marshal's Office
O	Fick, Ryan	Principal	Intel Corporation
	Frable, David	Principal	US General Services Administration
O	Frakes, Brandon	Principal	AXA XL/Global Asset Protection Services,
	Francis, Christina	Principal	Tesla
X	Futrell, Scott	Principal	KFI Engineers
	Garber, Greg	Principal	Pittsburg Tank & Tower Group
X	Hopkins, Donald	Principal	JENSEN HUGHES

X	Keeping, Larry	Principal	PLC Fire Safety Engineering
O	Kelly, Kevin	Principal	Fire Suppression Systems Association
	Ketner, Charles	Principal	United Assn. of Journeymen & Apprentices
	Koffel, William	Principal	Koffel Associates, Inc.
X	Larrimer, Peter	Principal	US Department of Veterans Affairs
O	Matthews, Bryan	Principal	Liberty Mutual Group
X	McDonald, Joshua	Principal	American Fire Sprinkler Association
	Munno, John	Principal	Edison Electric Institute
X	Myers, Top	Principal	Myers Risk Services, Inc.
O	Newman, Scott	Principal	Walgreens
X	Olsen, Brian	Principal	American Petroleum Institute
X	Olsen, Erik	Principal	Chubb Limited
X	Osburn, Matthew	Principal	Canadian Automatic Sprinkler Association
O	Raborn, Charles	Principal	Cape Coral Fire Department
	Ray, Richard	Principal	Illinois Fire Prevention Association
X	Rustenburg, Steve	Principal	National Association of Fire Equipment
O	Saidi, John	Principal	USDOE Stanford Site Office
O	Sawangpanich, Piya	Principal	P.S Grand Group Co., Ltd.
O	Scott, Leslie	Principal	Tank Industry Consultants
X	Stanley, George	Principal	National Fire Sprinkler Association
O	Sullivan, Dennis	Principal	Carrier/UTC
	Thomas, Stephanie	Principal	FM Global
	Webber, Cary	Principal	National Fire Sprinkler Association
X	Whalen, Natalie	Principal	Swiss Re America Holding Corporation
O	Whitney, John	Principal	Clarke Fire Protection Products, Inc.
O	Pietraz, Damon	Voting Alternate	Underwood Fire Equipment, Inc.
O	Silva, Manuel	Voting Alternate	Johnson Controls
	Arroyo, Gabriel	Alternate	American International Group, Inc (AIG)
X	Bailey, Scott	Alternate	Fire Suppression Systems Association
X	Baron, David	Alternate	Illinois Fire Prevention Association
	Brown, Patrick	Alternate	Tank Industry Consultants

	Campbell, Bruce	Alternate	Jensen Hughes
X	Campion, Christopher	Alternate	Automatic Fire Alarm Association, Inc.
	DiGirolomo, John	Alternate	NFPA Health Care Section
X	Donner, John	Alternate	Edison Electric Institute
X	Dufault, Robert	Alternate	Rhode Island Association of Fire Marshals
	Engelke, Faye	Alternate	Tesla
O	Fleming, Russell	Alternate	Northeast Fire Suppression Associates,
O	Flynn, Joseph	Alternate	Town of North Attleboro Fire Department
O	Fuller, David	Alternate	FM Global
X	Hall, Kevin	Alternate	American Fire Sprinkler Association
O	Hamilton, Lee	Alternate	Siemens Building Technologies
	Hampton, Tom	Alternate	Swiss Re America Holding Corporation
X	Hebenstreit, Jeff	Alternate	UL Solutions
X	Hornyak, Kevin	Alternate	Chubb Insurance Group
X	Marburger, Wilton	Alternate	Risk Suppression Partners
X	Mayo, Tammy	Alternate	The Home Depot
	Nygard, Jussi	Alternate	Carrier/UTC
X	Powers, Vincent	Alternate	National Fire Sprinkler Association
	Roeder, Todd	Alternate	US General Services Administration
	Schmidle, Timothy	Alternate	Liberty Mutual Group Prop
O	Slocum, Drew	Alternate	National Association of Fire Equipment
X	Telford, Brandon	Alternate	National Fire Sprinkler Association
	True, Franklin	Alternate	US Department of Veterans Affairs
X	Van Rhyn, Jeffrey	Alternate	United Assn. of Journeymen & Apprentices
	Whitney, John	Alternate	Clarke Fire Protection Products, Inc.
X	Bilbo, Cecil	Nonvoting Member	Academy of Fire Sprinkler Technology,
X	Caputo, Robert	Nonvoting Member	TC on Sprinkler System Installation
	Khanna, Rohit	Nonvoting Member	US Consumer Product Safety Commission
	Norton, Thomas	Nonvoting Member	Norel Service Company, Inc.
X	Duffy, Chad	Staff Liaison	National Fire Protection Association

Guests:

X Jack	Coffelt	ServiceTrade/Asurio
X Joe	Scibetta	BuildingReports
O Michael	Newell	Belvedere LLC
O Peter	Schwab	Wayne Automatic Fire Sprinkler
X Travis	Montembeault	Peerless Pump
X Timothy	Hennessey	Tesla
O Michael	Spaziani	FM Global
X Terry	Victor	Self
O Jason	Webb	Potter Electric Signal Company
O Tom	Harris	NFPA
O Patrick	Bakaj	NFPA
O Tom	Goss	NFPA
O Steve	Kaitharath	NFPA
X Russ	Leavitt	Telgen
X Chris	Caputo	Metro Fire
		TERPconsulting – Rep General
O Mark	Hopkins	air
X Kip	LoMotte	IFMA
O Grant	Lobdell	Dyne Fire Protection Labs
X Johnathan	Carl	Victaulic

“O” Participated by teleconference

Total number in attendance: 74

Section	PI	PAGE	DISPOSITION
1.1.2.1	182		MOTION TO RESOLVE
Proposed Text (PI)	1.1.2.1 The types of systems addressed by this standard include, but are not limited to, sprinkler, standpipe and hose, fixed water spray, private fire hydrants, water mist, and ~~foam-agent~~ water.		
Committee Text (FR)			
Statement	NFPA 18 and 18A are not water-based system installation standards. Within 18 it references NFPA 13, NFPA 14, and NFPA 15 as acceptable system to utilize wetting agents. NFPA 11 is not referenced, and it is inappropriate to replace "agent" for "foam" one for one. NFPA 18 requires "wetting agents" to be tested annually. NFPA 25 does not need to address this. NFPA 18 already covers everything within its scope: 10.2 Inspection of Wetting Agent Concentrate. Annually, samples of wetting agent concentrate shall be sent to the manufacturer or qualified laboratory for quality condition testing.		

Section	PI	PAGE	DISPOSITION
1.1.3.1	117		MOTION TO CREATE A 1 ST REVISION BASED ON..
Proposed Text (PI)	1.1.3.1* This standard does not require the inspector to verify the adequacy of the design ~~or installation~~ of the system.		
Committee Text (FR)	1.1.3.1* Unless specifically stated in this standard, the inspector is not required to verify the adequacy or accuracy of the design or installation		

	of the system based on the approved working plans and or as-built drawings.
Statement	Clarifies the roles and responsibilities of the inspector.

Section	PI	PAGE	DISPOSITION
New Definitions, 3.3.9, 3.3.15, 3.3.33, 3.3.34.1, 3.3.34.4, 3.3.34.5, 3.4, 3.4.1, 3.4.2	198		MOTION TO RESOLVE
Proposed Text (PI)	<u>3.3.xx Agent Concentrate</u> <u>A fire suppression concentrate as received from either Wetting Agent manufacturer, Water Additive manufacture, or Foam manufacture.</u> <u>3.3.yy Wetting Agent Concentrate</u> <u>A concentrated liquid received from a manufacturer that conforms to NFPA 18 - Wetting Agent [18,2022]</u> <u>3.3.zz Water Additive concentrate</u> <u>A concentrated received from a manufacturer that conforms to NFPA 18A - Water Additives for Fire Control and Vapor Mitigation [18A, 2022]</u> 3.3.9 Discharge Device. A device designed to discharge water or ~~foam~~<u>agent</u>-water solution in a predetermined, fixed, or adjustable pattern. Examples include, but are not limited to, sprinklers, spray nozzles, and hose nozzles. [11,2021] 3.3.15* Foam Concentrate.		

A concentrated liquid ~~foaming agent~~ as received from the manufacturer that conforms to NFPA 11 – Low, Medium, and High Expansion Foam. [11, 2021]

3.3.33* Pressure Vacuum Vent.

A venting device mounted on atmospheric ~~foam agent~~ concentrate storage vessels to allow for concentrate expansion and contraction and for tank breathing during concentrate discharge or filling.

3.3.34.1* Bladder Tank Proportioner.

A system that is similar to a standard pressure proportioner, except the ~~foam agent~~ concentrate is contained inside a diaphragm bag that is contained inside a pressure vessel.

3.3.34.4* Standard Balanced Pressure Proportioner.

A system that utilizes an ~~foam agent~~ concentrate pump where ~~foam agent~~ concentrate is drawn from an atmospheric storage tank, is pressurized by the pump, and passes back through a diaphragm balancing valve to the storage tank.

3.3.34.5* Standard Pressure Proportioner.

A system that uses a pressure vessel containing ~~foam agent~~ concentrate where water is supplied to the proportioner, which directs an amount of the supply downward onto the contained concentrate, thereby pressurizing the tank.

3.4 Deluge ~~FoamAgent~~-Water Sprinkler and ~~FoamAgent~~-Water Spray Systems Definitions.

3.4.1 ~~FoamAgent~~-Water Spray System.

An ~~foam agent~~-water sprinkler system designed to use nozzles rather than sprinklers. [11, 2021] [18,2022][18A,2022]

3.4.2 ~~FoamAgent~~-Water Sprinkler System.

A piping network employing automatic sprinklers, nozzles or other discharge devices, connected to a source of ~~foam agent~~ concentrate and to a water supply. [11,2021] [18,2022][18A,2022]

Committee Text (FR)	
Statement	Wrong extract from NFPA 11. NFPA 18 and 18A are not water-based system installation standards. Within 18 it references NFPA 13, NFPA 14, and NFPA 15 as acceptable system to utilize wetting agents. NFPA 11 is not referenced, and it is inappropriate to replace "agent" for "foam" one for one. NFPA 18 requires "wetting agents" to be tested annually. NFPA 25 does not need to address this. NFPA 18 already covers everything within its scope: 10.2 Inspection of Wetting Agent Concentrate. Annually, samples of wetting agent concentrate shall be sent to the manufacturer or qualified laboratory for quality condition testing.

Section	PI	PAGE	DISPOSITION
3.3.9	101		Motion -Create 1 st Revision
Proposed Text (PI)	3.3.9* Discharge Device. A device designed to discharge water or foam-water solution in a predetermined, fixed, or adjustable pattern. <u>A.3.3.9</u> Examples include, but are not limited to, sprinklers, spray nozzles, and hose nozzles. ~~[11,2021]~~		
Committee Text (FR)	3.3.9* Discharge Device. <u>Devices</u> designed to discharge water or foam-water solution in a predetermined, fixed, or adjustable pattern. <u>A.3.3.9</u> Examples include, but are not limited to, sprinklers, spray nozzles, and hose nozzles. [11,2021]		

Statement	Update to proper NFPA extract and move examples to proper Annex note.
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Section	PI	PAGE	DISPOSITION
3.3.10	40		MOTION -Create 1 st Revision
Proposed Text (PI)	~~3.3.10 Double Check Valve Assembly (DCVA).~~ ~~This assembly consists of two internally loaded check valves, either spring-loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shutoff valves as an assembly, and fittings with properly located resilient-seated test cocks.~~		
Committee Text (FR)			
Statement	Double Check Valve Assembly is not used in the body of the standard, and therefore removal of the definition is warranted.		

Section	PI	PAGE	DISPOSITION
3.3.16	102		Motion -Create 1 st Revision
Proposed Text (PI)	3.3.16* [Foam] Discharge Device. A device designed to discharge water or foam-water solution in a predetermined, fixed, or adjustable pattern. <u>A.3.3.16</u> Examples include, but are not limited to, sprinklers, spray nozzles, and hose nozzles. [11, 2021]		
Committee Text (FR)	~~3.3.16* [Foam] Discharge Device.~~ ~~A device designed to discharge water or foam-water solution in a predetermined, fixed, or adjustable pattern.~~ <u>A.3.3.16</u>		

	Examples include, but are not limited to, sprinklers, spray nozzles, and hose nozzles. ~~[11, 2021]~~
Statement	The definition of 3.3.16 (Foam) Discharge Device is a duplicate definition similar to existing 3.3.9 Discharge Device. Committee recommends the deletion of definition 3.3.16 (Foam) Discharge Device

Section	PI	PAGE	DISPOSITION
3.3.23.2	103		MOTION TO RESOLVE
Proposed Text (PI)	3.3.23.2* Preplanned Impairment. A condition where a water-based fire protection system or a portion thereof is out of service due to work planned in advance, ~~such as~~ <u>A.3.3.23.2</u> <u>Examples could include</u> revisions to the water supply or sprinkler system piping.		
Committee Text (FR)			
Statement	Existing language is needed to offer proper guidance to end user and service provider on the proper definition of Preplanned Impairment.		

Section	PI	PAGE	DISPOSITION
3.3.25	2		MOTION -Create 1 st Revision
Proposed Text (PI)	3.3.25 Inspection. A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage. ~~[820, 2020]~~ <u>Add annex section A.3.3.25 The definition of Inspection does not preclude the need to have system components (i.e.: internal conditions of check valves) disassembled to perform the required inspection and should not be considered maintenance work.</u>		

Committee Text (FR)	
Statement	Added Annex language adds clarity and guidance where tools or equipment are needed to perform an inspection or checks.

Section	PI	PAGE	DISPOSITION
3.3.47	41		MOTION -Create 1 st Revision
Proposed Text (PI)	~~3.3.37 Reduced Pressure Principle Backflow Prevention Assembly (RPBA).~~ ~~Two independently acting check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves, along with two resilient seated shutoff valves, all as an assembly, and equipped with properly located test cocks.~~		
Committee Text (FR)			
Statement	Reduced Pressure Principle Backflow Preventer Assembly is not used in the body of the standard, and therefore removal of the definition is warranted.		

Section	PI	PAGE	DISPOSITION
3.3.41	153		MOTION -CREATE 1 ST Revision
Proposed Text (PI)	~~3.3.41 Sprinkler.~~ ~~3.3.41.1* Control Mode Specific Application (CMSA) Sprinkler.~~ ~~A type of spray sprinkler that is capable of producing characteristic large water droplets and that is listed for its capability to provide fire control of specific high-challenge fire hazards. [13, 2022]~~ ~~3.3.41.2 Corrosion-Resistant Sprinkler.~~		

~~A sprinkler fabricated with corrosion-resistant material, or with special coatings or platings, to be used in an atmosphere that would normally corrode sprinklers. [13, 2022]~~

~~3.3.41.3 Dry Sprinkler.~~

~~A sprinkler secured in an extension nipple that has a seal at the inlet end to prevent water from entering the nipple until the sprinkler operates. [13, 2022]~~

~~3.3.41.4 Early Suppression Fast-Response (ESFR) Sprinkler.~~

~~A type of fast-response sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and is listed for its capability to provide fire suppression of specific high-challenge fire hazards. [13, 2022]~~

~~3.3.41.5 Electrically Operated Sprinklers.~~

~~A sprinkler that is equipped with an integral means of activation using electricity.~~

~~3.3.41.6 Extended Coverage Sprinkler.~~

~~A type of spray sprinkler with maximum coverage areas as specified in Sections 11.2 and 11.3 of NFPA 13. [13, 2022]~~

~~3.3.41.7 Installation Orientation.~~

~~The following sprinklers are defined according to orientation.~~

~~3.3.41.7.1 Concealed Sprinkler.~~

~~A recessed sprinkler with cover plate. [13, 2022]~~

~~3.3.41.7.2 Flush Sprinkler.~~

~~A sprinkler in which all or part of the body, including the shank thread, is mounted above the lower plane of the ceiling. [13, 2022]~~

~~3.3.41.7.3 Pendent Sprinkler.~~

~~A sprinkler designed to be installed in such a way that the water stream is directed downward against the deflector. [13, 2022]~~

~~3.3.41.7.4 Recessed Sprinkler.~~

~~A sprinkler in which all or part of the body, other than the shank thread, is mounted within a recessed housing. [13, 2022]~~

~~3.3.41.7.5 Sidewall Sprinkler.~~

~~A sprinkler having special deflectors that are designed to discharge most of the water away from the nearby wall in a pattern resembling one-quarter of a sphere, with a small portion of the discharge directed at the wall behind the sprinkler. [13, 2022]~~

~~3.3.41.7.6 Upright Sprinkler.~~

~~A sprinkler designed to be installed in such a way that the water spray is directed upwards against the deflector. [13, 2022]~~

~~3.3.41.8 Nozzle.~~

~~A device for use in applications requiring special water discharge patterns, directional spray, or other unusual discharge characteristics. [13, 2022]~~

~~3.3.41.9 Old Style/Conventional Sprinkler.~~

~~A sprinkler that directs from 40 percent to 60 percent of the total water initially in a downward direction and that is designed to be installed with the deflector either upright or pendent. [13, 2022]~~

~~3.3.41.10 Open Sprinkler.~~

~~A sprinkler that does not have actuators or heat-responsive elements. [13, 2022]~~

~~3.3.41.11 Ornamental/Decorative Sprinkler.~~

~~A sprinkler that has been painted or plated by the manufacturer. [13, 2022]~~

~~3.3.41.12 Quick Response Early Suppression (QRES) Sprinkler.~~

~~A type of quick response sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and is listed for its capability to provide fire suppression of specific fire hazards. [13, 2022]~~

~~3.3.41.13 Quick Response Extended Coverage Sprinkler.~~

~~A type of quick-response sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and complies with the extended protection areas defined in Chapter 11 of NFPA 13. [13, 2022]~~

~~3.3.41.14 Quick-Response (QR) Sprinkler.~~

~~A type of spray sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and is listed as a quick-response sprinkler for its intended use. [13, 2022]~~

~~3.3.41.15 Residential Sprinkler.~~

~~A type of fast-response sprinkler having a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less that has been specifically investigated for its ability to enhance survivability in the room of fire origin and that is listed for use in the protection of dwelling units. [13, 2022]~~

~~3.3.41.16 Special Sprinkler.~~

~~A sprinkler that has been tested and listed as prescribed in Section 15.2 of NFPA 13. [13, 2022]~~

~~3.3.41.17 Spray Sprinkler.~~

~~A type of sprinkler listed for its capability to provide fire control for a wide range of fire hazards. [13, 2022]~~

~~3.3.41.18 Standard Spray Sprinkler.~~

~~A spray sprinkler with maximum coverage areas as specified in Sections 10.2 and 10.3 of NFPA 13. [13, 2022]~~

3.3.41 Sprinkler Definitions. [13, 2022]

3.3.41.1 Automatic Sprinkler.

A fire suppression or control device that operates automatically when its heat-activated element is heated to its thermal rating or above, allowing water to discharge over a specified area. [13, 2022]

3.3.41.2 General Sprinkler Characteristics.

The following are characteristics of a sprinkler that define its ability to control or extinguish a fire. (1) Thermal sensitivity. A measure of the rapidity with which the thermal element operates as installed in a

specific sprinkler or sprinkler assembly. One measure of thermal sensitivity is the response time index (RTI) as measured under standardized test conditions. (a) Sprinklers defined as fast response have a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less. (b) Sprinklers defined as standard response have a thermal element with an RTI of 80 (meters-seconds)^{1/2} or more. (2) Temperature rating. (3) K-factor (see Chapter 7). (4) Installation orientation (see 3.3.41.3). (5) Water distribution characteristics (i.e., application rate, wall wetting). (6) Special service conditions. [13, 2022]

3.3.41.3 Installation Orientation.

The following sprinklers are defined according to orientation. [13, 2022]

3.3.41.3.1 Concealed Sprinkler.

A recessed sprinkler with cover plate. [13, 2022]

3.3.41.3.2 Flush Sprinkler.

A sprinkler in which all or part of the body, including the shank thread, is mounted above the lower plane of the ceiling. [13, 2022]

3.3.41.3.3 Pendent Sprinkler.

A sprinkler designed to be installed in such a way that the water stream is directed downward against the deflector. [13, 2022]

3.3.41.3.4 Recessed Sprinkler.

A sprinkler in which all or part of the body, other than the shank thread, is mounted within a recessed housing. [13, 2022]

3.3.41.3.5 Sidewall Sprinkler.

A sprinkler having special deflectors that are designed to discharge most of the water away from the nearby wall in a pattern resembling one-quarter of a sphere, with a small portion of the discharge directed at the wall behind the sprinkler. [13, 2022]

3.3.41.3.6 Upright Sprinkler.

A sprinkler designed to be installed in such a way that the water spray is directed upwards against the deflector. [13, 2022]

3.3.41.4 Sprinkler Types.

The following sprinklers are defined according to design and/or performance characteristics. [13, 2022]

3.3.41.4.1* Control Mode Density/Area (CMDA) Sprinkler.

A type of spray sprinkler intended to provide fire control in storage applications using the design density/area criteria described in this standard. [13, 2022]

3.3.41.4.2* Control Mode Specific Application (CMSA) Sprinkler.

A type of spray sprinkler that is capable of producing characteristic large water droplets and that is listed for its capability to provide fire control of specific high-challenge fire hazards. [13, 2022]

3.3.41.4.3 Corrosion-Resistant Sprinkler.

A sprinkler fabricated with corrosion-resistant material, or with special coatings or platings, to be used in an atmosphere that would normally corrode sprinklers. [13, 2022]

3.3.41.4.4* Dry Sprinkler.

A sprinkler secured in an extension nipple that has a seal at the inlet end to prevent water from entering the nipple until the sprinkler operates. [13, 2022]

3.3.41.4.5* Early Suppression Fast-Response (ESFR) Sprinkler.

A type of fast-response sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and is listed for its capability to provide fire suppression of specific high-challenge fire hazards. [13, 2022]

3.3.41.4.6 Electrically Operated Sprinkler.

A sprinkler equipped with an integral means of activation using electricity. [13, 2022]

3.3.41.4.7 Extended Coverage Sprinkler.

A type of spray sprinkler with maximum coverage areas as specified in Sections 11.2 and 11.3. [13, 2022]

3.3.41.4.8 Institutional Sprinkler.

A sprinkler specially designed for resistance to load-bearing purposes and with components not readily converted for use as weapons. [13, 2022]

3.3.41.4.9 Intermediate-Level Sprinkler/Rack Storage Sprinkler.

A sprinkler equipped with integral shields to protect its operating elements from the discharge of sprinklers installed at higher elevations. [13, 2022]

3.3.41.4.10 Nozzle.

A device for use in applications requiring special water discharge patterns, directional spray, or other unusual discharge characteristics. [13, 2022]

3.3.41.4.11 Old-Style/Conventional Sprinkler.

A sprinkler that directs from 40 percent to 60 percent of the total water initially in a downward direction and that is designed to be installed with the deflector either upright or pendent. [13, 2022]

3.3.41.4.12 Open Sprinkler.

A sprinkler that does not have actuators or heat-responsive elements. [13, 2022]

3.3.41.4.13 Ornamental/Decorative Sprinkler.

A sprinkler that has been painted or plated by the manufacturer. [13, 2022]

3.3.41.4.14 Pilot Line Detector.

A standard spray sprinkler or thermostatic fixed-temperature release device used as a detector to pneumatically or hydraulically release the main valve, controlling the flow of water into a fire protection system.[13, 2022]

3.3.41.4.15 Quick-Response Extended Coverage Sprinkler.

	<u>A type of quick-response sprinkler that has a thermal element with an RTI of 50 (meter-seconds)^{1/2} or less and complies with the extended protection areas defined in Chapter 11. [13, 2022]</u> <u>3.3.41.4.16* Quick-Response (QR) Sprinkler.</u> <u>A type of spray sprinkler that has a thermal element with an RTI of 50 (meter-seconds)^{1/2} or less and is listed as a quick-response sprinkler for its intended use. [13, 2022]</u> <u>3.3.41.4.17 Residential Sprinkler.</u> <u>A type of fast-response sprinkler having a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less that has been specifically investigated for its ability to enhance survivability in the room of fire origin and that is listed for use in the protection of dwelling units. [13, 2022]</u> <u>3.3.41.4.18 Special Sprinkler.</u> <u>A sprinkler that has been tested and listed as prescribed in Section 15.2. [13, 2022]</u> <u>3.3.41.4.19 Spray Sprinkler.</u> <u>A type of sprinkler listed for its capability to provide fire control for a wide range of fire hazards. [13, 2022]</u> <u>3.3.41.4.20 Standard Spray Sprinkler.</u> <u>A spray sprinkler with maximum coverage areas as specified in Sections 10.2 and 10.3. [13, 2022]</u>
Committee Text (FR)	~~3.3.41 Sprinkler.~~ ~~3.3.41.1* Control Mode Specific Application (CMSA) Sprinkler.~~ ~~A type of spray sprinkler that is capable of producing characteristic large water droplets and that is listed for its capability to provide fire control of specific high-challenge fire hazards. [13, 2022]~~ ~~3.3.41.2 Corrosion-Resistant Sprinkler.~~

~~A sprinkler fabricated with corrosion-resistant material, or with special coatings or platings, to be used in an atmosphere that would normally corrode sprinklers. [13, 2022]~~

~~3.3.41.3 Dry Sprinkler.~~

~~A sprinkler secured in an extension nipple that has a seal at the inlet end to prevent water from entering the nipple until the sprinkler operates. [13, 2022]~~

~~3.3.41.4 Early Suppression Fast-Response (ESFR) Sprinkler.~~

~~A type of fast-response sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and is listed for its capability to provide fire suppression of specific high-challenge fire hazards. [13, 2022]~~

~~3.3.41.5 Electrically Operated Sprinklers.~~

~~A sprinkler that is equipped with an integral means of activation using electricity.~~

~~3.3.41.6 Extended Coverage Sprinkler.~~

~~A type of spray sprinkler with maximum coverage areas as specified in Sections 11.2 and 11.3 of NFPA 13. [13, 2022]~~

~~3.3.41.7 Installation Orientation.~~

~~The following sprinklers are defined according to orientation.~~

~~3.3.41.7.1 Concealed Sprinkler.~~

~~A recessed sprinkler with cover plate. [13, 2022]~~

~~3.3.41.7.2 Flush Sprinkler.~~

~~A sprinkler in which all or part of the body, including the shank thread, is mounted above the lower plane of the ceiling. [13, 2022]~~

~~3.3.41.7.3 Pendent Sprinkler.~~

~~A sprinkler designed to be installed in such a way that the water stream is directed downward against the deflector. [13, 2022]~~

~~3.3.41.7.4 Recessed Sprinkler.~~

~~A sprinkler in which all or part of the body, other than the shank thread, is mounted within a recessed housing. [13, 2022]~~

~~3.3.41.7.5 Sidewall Sprinkler.~~

~~A sprinkler having special deflectors that are designed to discharge most of the water away from the nearby wall in a pattern resembling one-quarter of a sphere, with a small portion of the discharge directed at the wall behind the sprinkler. [13, 2022]~~

~~3.3.41.7.6 Upright Sprinkler.~~

~~A sprinkler designed to be installed in such a way that the water spray is directed upwards against the deflector. [13, 2022]~~

~~3.3.41.8 Nozzle.~~

~~A device for use in applications requiring special water discharge patterns, directional spray, or other unusual discharge characteristics. [13, 2022]~~

~~3.3.41.9 Old Style/Conventional Sprinkler.~~

~~A sprinkler that directs from 40 percent to 60 percent of the total water initially in a downward direction and that is designed to be installed with the deflector either upright or pendent. [13, 2022]~~

~~3.3.41.10 Open Sprinkler.~~

~~A sprinkler that does not have actuators or heat-responsive elements. [13, 2022]~~

~~3.3.41.11 Ornamental/Decorative Sprinkler.~~

~~A sprinkler that has been painted or plated by the manufacturer. [13, 2022]~~

~~3.3.41.12 Quick Response Early Suppression (QRES) Sprinkler.~~

~~A type of quick response sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and is listed for its capability to provide fire suppression of specific fire hazards. [13, 2022]~~

~~3.3.41.13 Quick Response Extended Coverage Sprinkler.~~

~~A type of quick-response sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and complies with the extended protection areas defined in Chapter 11 of NFPA 13. [13, 2022]~~

~~3.3.41.14 Quick-Response (QR) Sprinkler.~~

~~A type of spray sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and is listed as a quick-response sprinkler for its intended use. [13, 2022]~~

~~3.3.41.15 Residential Sprinkler.~~

~~A type of fast-response sprinkler having a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less that has been specifically investigated for its ability to enhance survivability in the room of fire origin and that is listed for use in the protection of dwelling units. [13, 2022]~~

~~3.3.41.16 Special Sprinkler.~~

~~A sprinkler that has been tested and listed as prescribed in Section 15.2 of NFPA 13. [13, 2022]~~

~~3.3.41.17 Spray Sprinkler.~~

~~A type of sprinkler listed for its capability to provide fire control for a wide range of fire hazards. [13, 2022]~~

~~3.3.41.18 Standard Spray Sprinkler.~~

~~A spray sprinkler with maximum coverage areas as specified in Sections 10.2 and 10.3 of NFPA 13. [13, 2022]~~

3.3.41 Sprinkler Definitions. [13, 2022]

3.3.41.1 Automatic Sprinkler.

A fire suppression or control device that operates automatically when its heat-activated element is heated to its thermal rating or above, allowing water to discharge over a specified area. [13, 2022]

3.3.41.2 General Sprinkler Characteristics.

The following are characteristics of a sprinkler that define its ability to control or extinguish a fire. (1) Thermal sensitivity. A measure of the rapidity with which the thermal element operates as installed in a

specific sprinkler or sprinkler assembly. One measure of thermal sensitivity is the response time index (RTI) as measured under standardized test conditions. (a) Sprinklers defined as fast response have a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less. (b) Sprinklers defined as standard response have a thermal element with an RTI of 80 (meters-seconds)^{1/2} or more. (2) Temperature rating. (3) K-factor (see Chapter 7). (4) Installation orientation (see 3.3.41.3). (5) Water distribution characteristics (i.e., application rate, wall wetting). (6) Special service conditions. [13, 2022]

3.3.41.3 Installation Orientation.

The following sprinklers are defined according to orientation. [13, 2022]

3.3.41.3.1 Concealed Sprinkler.

A recessed sprinkler with cover plate. [13, 2022]

3.3.41.3.2 Flush Sprinkler.

A sprinkler in which all or part of the body, including the shank thread, is mounted above the lower plane of the ceiling. [13, 2022]

3.3.41.3.3 Pendent Sprinkler.

A sprinkler designed to be installed in such a way that the water stream is directed downward against the deflector. [13, 2022]

3.3.41.3.4 Recessed Sprinkler.

A sprinkler in which all or part of the body, other than the shank thread, is mounted within a recessed housing. [13, 2022]

3.3.41.3.5 Sidewall Sprinkler.

A sprinkler having special deflectors that are designed to discharge most of the water away from the nearby wall in a pattern resembling one-quarter of a sphere, with a small portion of the discharge directed at the wall behind the sprinkler. [13, 2022]

3.3.41.3.6 Upright Sprinkler.

A sprinkler designed to be installed in such a way that the water spray is directed upwards against the deflector. [13, 2022]

3.3.41.4 Sprinkler Types.

The following sprinklers are defined according to design and/or performance characteristics. [13, 2022]

3.3.41.4.1* Control Mode Density/Area (CMDA) Sprinkler.

A type of spray sprinkler intended to provide fire control in storage applications using the design density/area criteria described in this standard. [13, 2022]

3.3.41.4.2* Control Mode Specific Application (CMSA) Sprinkler.

A type of spray sprinkler that is capable of producing characteristic large water droplets and that is listed for its capability to provide fire control of specific high-challenge fire hazards. [13, 2022]

3.3.41.4.3 Corrosion-Resistant Sprinkler.

A sprinkler fabricated with corrosion-resistant material, or with special coatings or platings, to be used in an atmosphere that would normally corrode sprinklers. [13, 2022]

3.3.41.4.4* Dry Sprinkler.

A sprinkler secured in an extension nipple that has a seal at the inlet end to prevent water from entering the nipple until the sprinkler operates. [13, 2022]

3.3.41.4.5* Early Suppression Fast-Response (ESFR) Sprinkler.

A type of fast-response sprinkler that has a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less and is listed for its capability to provide fire suppression of specific high-challenge fire hazards. [13, 2022]

3.3.41.4.6 Electrically Operated Sprinkler.

A sprinkler equipped with an integral means of activation using electricity. [13, 2022]

3.3.41.4.7 Extended Coverage Sprinkler.

A type of spray sprinkler with maximum coverage areas as specified in Sections 11.2 and 11.3. [13, 2022]

3.3.41.4.8 Institutional Sprinkler.

A sprinkler specially designed for resistance to load-bearing purposes and with components not readily converted for use as weapons. [13, 2022]

3.3.41.4.9 Intermediate-Level Sprinkler/Rack Storage Sprinkler.

A sprinkler equipped with integral shields to protect its operating elements from the discharge of sprinklers installed at higher elevations. [13, 2022]

3.3.41.4.10 Nozzle.

A device for use in applications requiring special water discharge patterns, directional spray, or other unusual discharge characteristics. [13, 2022]

3.3.41.4.11 Old-Style/Conventional Sprinkler.

A sprinkler that directs from 40 percent to 60 percent of the total water initially in a downward direction and that is designed to be installed with the deflector either upright or pendent. [13, 2022]

3.3.41.4.12 Open Sprinkler.

A sprinkler that does not have actuators or heat-responsive elements. [13, 2022]

~~3.3.41.4.13 Ornamental/Decorative Sprinkler.~~

~~A sprinkler that has been painted or plated by the manufacturer. [13, 2022]~~

3.3.41.4.14 Pilot Line Detector.

A standard spray sprinkler or thermostatic fixed-temperature release device used as a detector to pneumatically or hydraulically release the main valve, controlling the flow of water into a fire protection system.[13, 2022]

3.3.41.4.15 Quick-Response Extended Coverage Sprinkler.

	<u>A type of quick-response sprinkler that has a thermal element with an RTI of 50 (meter-seconds)^{1/2} or less and complies with the extended protection areas defined in Chapter 11. [13, 2022]</u> <u>3.3.41.4.16* Quick-Response (QR) Sprinkler.</u> <u>A type of spray sprinkler that has a thermal element with an RTI of 50 (meter-seconds)^{1/2} or less and is listed as a quick-response sprinkler for its intended use. [13, 2022]</u> <u>3.3.41.4.17 Residential Sprinkler.</u> <u>A type of fast-response sprinkler having a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less that has been specifically investigated for its ability to enhance survivability in the room of fire origin and that is listed for use in the protection of dwelling units. [13, 2022]</u> <u>3.3.41.4.18 Special Sprinkler.</u> <u>A sprinkler that has been tested and listed as prescribed in Section 15.2. [13, 2022]</u> <u>3.3.41.4.19 Spray Sprinkler.</u> <u>A type of sprinkler listed for its capability to provide fire control for a wide range of fire hazards. [13, 2022]</u> <u>3.3.41.4.20 Standard Spray Sprinkler.</u> <u>A spray sprinkler with maximum coverage areas as specified in Sections 10.2 and 10.3. [13, 2022]</u>
Statement	The current definitions of sprinklers were not a complete list. The new definitions include the full list of sprinkler definitions that are used in NFPA 13 and NFPA 25. Definition of Ornamental and Decorative Sprinklers are not used in the body of the standard and therefore removed.

Section	PI	PAGE	DISPOSITION
3.3.41.11	42		Motion -Create 1 st Revision

Proposed Text (PI)	~~3.3.41.11 Ornamental/Decorative Sprinkler.~~ ~~A sprinkler that has been painted or plated by the manufacturer. [13, 2022]~~
Committee Text (FR)	
Statement	Definition of Ornamental and Decorative Sprinklers are not used in the body of the standard and therefore removed. See action on PI #153

Section	PI	PAGE	DISPOSITION
3.3.48	93, 107		MOTION TO RESOLVE
Proposed Text (PI)	3.3.48* Valve Status Test. Flowing water to verify that valves for a portion of the system are not closed <u>and confirming similar pressures to that prior to closing the control valve.</u> <u>A.3.3.48 Valve Status Test.</u> <u>The purpose of these tests is to provide a reasonable degree of certainty that the valve that was manipulated is in the fully open position. The pressures from a device upstream of the control valve should be completely opened, and the pressures should be compared to those expected. Examples include but are not limited to main drains, hydrants, valve status connections, fire pump tests, and waterflow tests.</u>		
Committee Text (FR)			
Statement	The intent of the Valve Status Test is to verify the valve is not closed and that water is flowing. In addition, there a pressure gauges that are not located at each valve.		

Section	PI	PAGE	DISPOSITION
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New Definitions	166		MOTION -Create a 1 st Revision
Proposed Text (PI)	<u>3.3.xx*</u> <u>Vapor Phase Corrosion Inhibitor (VCI) - a chemical compound (substance) that emits rust-inhibiting vapor to protect ferrous and non-ferrous metals against corrosion in an air-filled dry pipe or preaction sprinkler system. The inhibitor forms a thin protective layer through adsorption separating the pipe from the air or water and provides protection against corrosion.</u> <u>A.3.3.xxx</u> <u>VCIs are also referred to as vapor phase corrosion inhibitors, volatile corrosion inhibitors, and vapor phase inhibitors (VPI). All of these terms relate to a specific class of corrosion inhibitors. Other classifications include passivating (anodic), cathodic, organic, and precipitation inhibitors. VCIs are appropriate for atmospheric or gaseous corrosion. This is corrosion happening in the air-filled portion of the sprinkler system containing water vapor. Corrosion will occur when the relative humidity is greater than 60%. VCIs can also provide protection in partially aqueous environments (partially water-filled pipes) and aqueous environments (water-filled pipes). VCIs can inhibit anodic reactors, cathodic reactions, or both. VCIs protecting against both anodic and cathodic reactions provide the best level of protection for applications in sprinkler systems.</u>		
Committee Text (FR)	<u>3.3.X* Vapor Corrosion Inhibitor (VCI)</u> <u>A chemical compound (substance) that emits rust-inhibiting vapor to protect ferrous and non-ferrous metals against corrosion in an air-filled dry pipe or preaction sprinkler systems.</u> <u>A.3.3.X</u> <u>VCIs are also referred to as vapor phase corrosion inhibitors, volatile corrosion inhibitors, and vapor phase inhibitors (VPI). All of these terms relate to a specific class of corrosion inhibitors. The inhibitor forms a thin protective layer through adsorption separating the pipe from the air or water and provides protection against corrosion. Other classifications include passivating (anodic), cathodic, organic, and precipitation inhibitors. VCIs are appropriate for atmospheric or gaseous corrosion. This is corrosion happening in the air-filled portion of the sprinkler system containing water vapor. Corrosion will occur when the relative humidity is greater than 60%. VCIs can also provide protection in partially aqueous environments (partially water-filled pipes) and aqueous environments (water-filled pipes). VCIs can inhibit anodic reactors, cathodic reactions, or both. VCIs protecting against both anodic and cathodic reactions provide the best level of protection for applications in sprinkler systems.</u>		

Statement	Extract definition from NFPA 13 Second Draft Revision #1065

Section	PI	PAGE	DISPOSITION
New Definition	152		MOTION -Create a 1 st Revision
Proposed Text (PI)	<u>3.3.12 Dwelling Unit</u> <u>One or more rooms arranged for the use of one or more individuals living together, as in a single housekeeping unit normally having cooking, living, sanitary, and sleeping facilities that include, but are not limited to, hotel rooms, dormitory rooms, apartments, condominiums, sleeping rooms in nursing homes, and similar living units.</u>		
Committee Text (FR)	<u>3.3.65 Dwelling Unit (for sprinkler system installations)</u> <u>One or more rooms arranged for the use of one or more individuals living together, as in a single housekeeping unit normally having cooking, living, sanitary, and sleeping facilities that include, but are not limited to, hotel rooms, dormitory rooms, apartments, condominiums, sleeping rooms in nursing homes, and similar living units.</u>		
Statement	Extract definition from NFPA 13 -3.3.65		

Section	PI	PAGE	DISPOSITION
3.5.5.1	110		MOTION -CREATE 1ST REVISION BASED ON PI 110
Proposed Text (PI)	3.5.5.1* Master Pressure- ~~Reducing-Regulating~~ Valve. A pressure-reducing valve installed to regulate pressures in an entire fire protection system and/or standpipe system zone.		
Committee Text (FR)	3.5.6 Pressure-Regulating Device. A device designed for the purpose of reducing, regulating, controlling, or restricting water pressure. [14, 2024] <u>3.5.6.1 Pressure-Reducing Valve.</u>		

	A valve designed for the purpose of reducing the downstream water pressure under both flowing (residual) and nonflowing (static) conditions. [14, 2024] 3.5.6.1.1* Master Pressure-Reducing Valve. A pilot-operated pressure-reducing valve installed to regulate pressures in an entire water-based fire protection system, multiple fire protection systems, or multiple zones. A.3.5.6.1.1 Master Pressure-Reducing Valve. Master pressure-reducing valves are typically found downstream of a fire pump's discharge supplying multiple zones or an entire fire protection system. A pressure-reducing valve supplying multiple devices on a single floor should not be considered a master pressure-reducing valve. 3.5.6.2 Pressure-Restricting Device. A valve or device designed for the purpose of reducing the downstream water pressure under flowing (residual) conditions only. [14, 2024] 3.5.X Main Pressure Relief Valve. A valve designed to relieve excess pressure that serves an entire fire protection system.
Statement	

Section	PI	PAGE	DISPOSITION
New Definition	137		MOTION -Create a 1 st Revision
Proposed Text (PI)	<u>System riser</u> <u>The aboveground horizontal or vertical pipe between the water supply and the mains (cross or feed) that contains a control valve (either directly or within its supply pipe), a pressure gauge, a drain, and a waterflow alarm device. [13,2022]</u> <u>A.3.x.x.x Each system is to have signage required by the installation standard and NFPA 25.</u>		
Committee Text (FR)	<u>System riser</u> <u>The aboveground horizontal or vertical pipe between the water supply and the mains (cross or feed) that contains a control valve (either</u>		

	<u>directly or within its supply pipe), a pressure gauge, a drain, and a waterflow alarm device. [13,2022]</u> <u>~~A.3.x.x.x Each system is to have signage required by the installation standard and NFPA 25.~~</u>
Statement	Extract definition from NFPA 13 -3.3.225. This term is used in NFPA 25 and appropriate to add a definition. Adds clarity to the requirements for NFPA 25.

Section	PI	PAGE	DISPOSITION
4.1.2	43		MOTION -Create a 1 st Revision
Proposed Text (PI)	4.1.2 The property owner or designated representative shall ensure that water-filled piping <u>that</u> is <u>subject to freezing is</u> maintained at a minimum temperature of 40°F (4°C) unless an antifreeze solution complying with Chapter 5 is utilized.		
Committee Text (FR)			
Statement	Freeze Protection is only needed when the area is subject to freezing and areas can not be maintained at or above 40F (4C).		

Section	PI	PAGE	DISPOSITION
4.1.2.1	44		MOTION -Create 1 st Revision
Proposed Text (PI)	4.1.2.1* All areas of the building containing water-filled piping that <u>is subject to freezing and</u> does not have another means of freeze protection shall be maintained at a minimum temperature of 40°F (4°C).		
Committee Text (FR)			

Statement	Freeze Protection is only needed when the area is subject to freezing and areas can not be maintained at or above 40F (4C).
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Section	PI	PAGE	DISPOSITION
New 4.1.2.6 and A.4.1.2.6	172, 173		MOTION TO CREATE A 1 ST REVISION
Proposed Text (PI)	<u>4.1.2.6* Frozen Systems</u> <u>When adequate freeze protection has not been provided and a water-based fire protection system is found to be frozen, the following steps shall be taken to restore the system to service:</u> <u>(1) Impairment procedures required by Chapter 15 shall be implemented.</u> <u>(2) The system shall be completely thawed out.</u> <u>(3) A visual examination of all accessible pipe, fittings, and components shall be performed to determine if there is any breakage or deformities.</u> <u>(4) A visual examination of all accessible sprinklers shall be performed to determine if the operating element is still intact or if there is any evidence of stress at the seat.</u> <u>(4) Broken and deformed pipe, fittings, components, and sprinklers shall be replaced.</u> <u>(5) To ensure the entire system is intact perform a pressure test for metallic piping systems at 40 psi (3.2 bar) for 2 hours. For nonmetallic piping systems perform a pressure test at 10 psi (0.8 bar) for 2 hours. The system shall be permitted to lose up to 3 psi (0.2 bar) during the duration of the test. The source of air leaks shall be identified and repaired if the system loses more than 3 psi (0.2 bar) during this test.</u>		

(6) Perform a hydrostatic test of not less than 200 psi (13.8 bar) pressure for 2 hours, or at 50 psi (3.4 bar) in excess of the maximum pressure, where maximum pressure is in excess of 150 psi (10.3 bar).

(7) Complete 15.7 Restoring Systems to Service procedures in Chapter 15.

A.4.1.2.6

Frozen water-based fire protection systems are a frequent occurrence during freezing weather conditions, especially in those regions that are not considered cold climates. Once a frozen system or a partially frozen system is discovered, the system is considered impaired and impairment procedures need to be implemented immediately.

Thawing out the system can involve either totally heating the building, including all blind and concealed spaces with water filled piping, or disassembling the pipes, taking them into a heated area, and using a heat source to thaw the pipes. It's necessary to make sure no potential ice plugs remain in the system.

Depending on the length and severity of the freezing event, damage to the system can be extensive. Once the system is thawed out completely, checking for damage is the next step. Typical damage to a sprinkler system can include cracked or broken valves and fittings, split piping, damaged sprinklers, and damage to any other system component subjected to system water pressure. Access to as much of the system as possible for this examination is recommended, even if cutting open drywall ceilings and walls is necessary.

Replace all damaged system parts and then perform an air test. The purpose of the air test is to help identify system parts that may not have appeared visibly damaged and replace them before performing a hydrostatic test. An odorant such as peppermint extract can be used to help find the general area of the air leak, and spraying fittings and joints with a soapy solution can help find the exact source of the air leak. Other methods of leak detection can also be used.

Once the system is fully repaired and passes the air test, a hydrostatic test of the entire system is needed before restoring the system to service.

Committee Text (FR)	4.1.2.6* Frozen Systems When a water-based fire protection system is found to be frozen, the following steps shall be taken to restore the system to service: (1) Impairment procedures required by Chapter 15 shall be implemented. (2) The system shall be completely thawed out. (3) A visual examination of all accessible pipe, fittings, and components shall be performed to determine if there is any breakage or deformities. (4) A visual examination of all accessible sprinklers shall be performed to determine if the operating element is still intact or if there is any evidence of stress at the seat. (5) Broken and deformed pipe, fittings, components, and sprinklers shall be replaced. (6) To ensure the entire system is intact perform an air pressure test for metallic piping systems at 40 psi (3.2 bar) for 2 hours. The system shall be permitted to lose up to 3 psi (0.2 bar) during the duration of the test. The source of air leaks shall be identified and repaired if the system loses more than 3 psi (0.2 bar) during this test. (7) For nonmetallic piping systems perform an air pressure test in accordance with the manufacturer's instructions. (8) When appropriate whether conditions permit, perform a hydrostatic test of not less than 200 psi (13.8 bar) pressure for 2 hours, or at 50 psi (3.4 bar) in excess of the maximum pressure, where maximum pressure is in excess of 150 psi (10.3 bar). (9) Complete 15.7 Restoring Systems to Service procedures in Chapter 15. A.4.1.2.6 Frozen water-based fire protection systems are a frequent occurrence during freezing weather conditions, especially in those regions that are not considered cold climates. Once a frozen system or a partially
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	frozen system is discovered, the system is considered impaired and impairment procedures need to be implemented immediately. Thawing out the system can involve either totally heating the building, including all blind and concealed spaces with water filled piping, or disassembling the pipes, taking them into a heated area, and using a heat source to thaw the pipes. It's necessary to make sure no potential ice plugs remain in the system. Depending on the length and severity of the freezing event, damage to the system can be extensive. Once the system is thawed out completely, checking for damage is the next step. Typical damage to a sprinkler system can include cracked or broken valves and fittings, split piping, damaged sprinklers, and damage to any other system component subjected to system water pressure. Access to as much of the system as possible for this examination is recommended, even if cutting open drywall ceilings and walls is necessary. Replace all damaged system parts and then perform an air test. The purpose of the air test is to help identify system parts that may not have appeared visibly damaged and replace them before performing a hydrostatic test. An odorant such as peppermint extract can be used to help find the general area of the air leak, and spraying fittings and joints with a soapy solution can help find the exact source of the air leak. Other methods of leak detection can also be used. Once the system is fully repaired and passes the air test, a hydrostatic test of the entire system is needed before restoring the system to service.
Statement	A procedure to put frozen systems back in service was added into the standard.

Section	PI	PAGE	DISPOSITION
4.1.4.3	15		MOTION -Create a 1 st Revision
Proposed Text (PI)	4.1.4.3*		

	Where a nitrogen supply is used as part of the dry pipe or preaction system design in accordance with NFPA 13 <u>to increase the C Value</u> , it shall be maintained, repaired, or replaced with a nitrogen supply capable of maintaining design concentrations.
Committee Text (FR)	
Statement	Due to the increased C-value it's imperative to maintain the system as designed and installed.

Section	PI	PAGE	DISPOSITION
4.1.4.3	118		MOTION -Create a 1 st Revision
Proposed Text (PI)	4.1.4.3* Where a nitrogen supply is used as part of the dry pipe or preaction system design <u>to use a higher C-value</u> in accordance with NFPA 13, it shall be maintained, repaired, or replaced with a nitrogen supply capable of maintaining design concentrations.		
Committee Text (FR)			
Statement	Due to the increased C-value it's imperative to maintain the system as designed and installed. See action on PI #15		

Section	PI	PAGE	DISPOSITION
New Section	165		MOTION -Create a 1 st Revision
Proposed Text (PI)	<u>4.1.4.3 *</u> <u>Where a vapor phase corrosion inhibitor is used as part of the dry pipe or preaction system design in accordance with NFPA 13, it shall be maintained, repaired, or replaced.</u>		
Committee Text (FR)	4.1.4.4		

	Where a vapor ~~phase~~ corrosion inhibitor is used as part of the dry pipe or preaction system design <u>to use a higher C-value</u> in accordance with NFPA 13, it shall be maintained, repaired, or replaced.
Statement	Due to the increased C-value it's imperative to maintain the system as designed and installed. Removal of "phase" to correlate with action from NFPA 13 Second Draft #1065. Staff to renumber as appropriate (4.1.4.4)

Section	PI	PAGE	DISPOSITION
4.1.5.1.1	81		MOTION TO RESOLVE
Proposed Text (PI)	4.1.5.1.1* Upon discovery of any <u>deficiency or any</u> component and equipment under recall or replacement programs by the owner's maintenance personnel, designated representative, or contractor, the owner shall be notified in writing.		
Committee Text (FR)			
Statement	Existing language in 4.3 addresses the concerns raised by the proponent.		

Section	PI	PAGE	DISPOSITION
New	16		MOTION TO HOLD FOR COMMITTEE DISCUSSION
Proposed Text (PI)	<u>4.1.5.1*</u> <u>Whenever impairments, critical deficiencies, or non-critical deficiencies are identified in water-based fire protection systems maintained in accordance with NFPA 25, both of the following shall apply:</u> <u>(1) Impairments or deficiencies shall be corrected or repaired in a timeframe approved by the AHJ.</u>		

	<u>(2) Until impairments or deficiencies are corrected or repaired, an approved impairment or deficiency program shall be implemented in accordance with 15.5 or 15.6.</u> <u>[1, 13.1.9]</u> <u>A.4.1.5.1</u> <u>A generally accepted practice is for critical deficiencies to be corrected or repaired within 30 days, noncritical deficiencies should be corrected or repaired within 90 days, and impairments should be corrected as soon as practical. [1, A.13.1.9]</u> <u>[Renumber remaining sections]</u>
Committee Text (FR)	
Statement	Task Group was split on how to reconcile this public input. Recommendation is to hold this Public Input for the Main Committee decision.

Section	PI	PAGE	DISPOSITION
New 4.1.8	121		MOTION TO CREATE A 1 ST REVISION
Proposed Text (PI)	<u>4.1.8 Storage.</u> <u>4.1.8.1 The minimum clearance to storage as described in 4.1.8.1.1 through 4.1.8.1.6 shall be maintained below all sprinkler deflectors.</u> <u>4.1.8.1.1 Unless greater distance are required by 4.1.8.1.2, 4.1.8.1.3, or 4.1.8.1.4, or lesser distances are permitted by 4.1.8.1.2.6, clearance between the deflector and the top of storage shall be 18 in. (457 mm) or greater.</u> <u>4.1.8.1.2 Clearance between the deflector and the top of storage shall be 36 in. (914 mm) or greater for ESFR or CMSA sprinklers.</u> <u>4.1.8.1.3 Where standards other than NFPA 13 specify greater distances to storage minimums they shall be followed.</u>		

	<u>4.1.8.1.4 Clearance from the top of storage to sprinkler deflectors shall be 36 in. (914 mm) or greater where rubber tires are stored.</u> <u>4.1.8.1.5 In-rack sprinklers shall not be required to meet the obstruction criteria and clearance from storage requirements.</u> <u>4.1.8.1.6 Clearance between the deflector and the top of storage shall be permitted to be less than 18 in. (457 mm) where shown to be permitted by the clearance rules of the installation standard.</u> <u>4.1.8.2 Storage closer to the deflector than permitted by the clearance rules of the installation standard described in 4.1.8.1.1 through 4.1.8.1.4 shall be corrected.</u> <u>4.1.8.3 Flue spaces in single, double, and multiple-row storage racks shall be maintained per NFPA 13.</u>
Committee Text (FR)	
Statement	It's the owner's responsibility to ensure adequate clearance from sprinkler deflector and top of storage. PI 122 Would require an annual inspection from the floor and defer to these requirements in Chapter Four.

Section	PI	PAGE	DISPOSITION
4.1.8	127		MOTION TO CREATE A 1 ST REVISION
Proposed Text (PI)	~~4.1.8 Control Valve Location.~~ ~~The location of control valves shall be identified at the system riser or other approved location(s).~~		
Committee Text (FR)	4.1.8 Control (Shutoff) Valve Location. The location of control (shutoff) valves shall be identified at an approved location. ~~the system riser or other approved location(s).~~ A.4.1.8 The location of control valves should be identified on the approved shop drawings and be available upon request.		

Statement	New proposed language clarifies the requirement of this section, permitting the location of the control valves to be identified at a single location.
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Section	PI	PAGE	DISPOSITION
4.1.9.1	119		MOTION TO RESOLVE
Proposed Text (PI)	4.1.9.1 A permanently marked metal or rigid plastic information sign shall be placed at ~~each system riser~~ <u>the first control valve after the private service main enters the facility.</u>		
Committee Text (FR)			
Statement	Conflicts with current requirements found in NFPA 13. Proposed Language would only apply to a system supplied by a private service main.		

Section	PI	PAGE	DISPOSITION
4.1.10	26		MOTION TO CREATE A 1 ST REVISION
Proposed Text (PI)	4.1.10* Antifreeze Information Sign. An antifreeze information sign shall be placed on the antifreeze system control valve indicating the manufacture type and brand of the antifreeze solution, ~~the concentration by volume of the antifreeze solution used~~ <u>minimum use temperature, the specific gravity and refractive index if available</u> , and the volume of the antifreeze solution used in the system.		
Committee Text (FR)	4.1.10* Antifreeze Information Sign. A placard shall be placed on the antifreeze system main valve that indicates the manufacture type and brand of the antifreeze solution, the minimum use temperature of the antifreeze solution used, and the volume of the antifreeze solution used in the system.		

Statement	Adding minimum use temperature language aligns with language found in NFPA 13. Extract language from 8.6.1.5 NFPA 13.
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Section	PI	PAGE	DISPOSITION
4.3	164		MOTION TO RESOLVE
Proposed Text (PI)	4.3 ~~Reports~~/Records. 4.3.1* ~~Records-Reports~~ shall be made for all inspections, tests, and maintenance of the system and its components. 4.3.~~1.13~~* Records shall be maintained by the property owner. 4.3.~~13.21~~* Records shall be <u>on a medium that will survive the required retention period and</u> permitted to be stored and accessed electronically. 4.3.2 Records shall indicate the following: 1. The procedure/activity performed (e.g., inspection, test, or maintenance) 2. The organization that performed the activity 3. The required frequency of the activity 4. The results and date of the activity 5. The name and contact information of the qualified contractor or owner, including the qualified personnel performing the activity 4.3.3.~~2~~* Records shall be made available to the authority having jurisdiction upon request. 4.3.4		

	As-built system installation drawings, hydraulic calculations, original acceptance test records, and device manufacturer's data sheets shall be retained for the life of the system. 4.3.5 Inspection, testing, and maintenance records shall be retained for a minimum period of 1 year after the next inspection, test, or maintenance of that type required by the standard.
Committee Text (FR)	
Statement	Definition of Report could include written or verbal, where definition of Record requires to be written or documented.

Section	PI	PAGE	DISPOSITION
New 4.3.6	136		MOTION TO CREATE 1 ST REVISION
Proposed Text (PI)	<u>4.3.6</u> <u>The documentation cabinet required by NFPA 13 shall contain system(s) records.</u> <u>A.4.3.6</u> <u>The 2025 NFPA 13 requires a documentation cabinet</u>		
Committee Text (FR)	4.3.6 <u>The records shall be maintained in the documentation cabinet, where required.</u> <u>A.4.3.6</u> <u>The 2025 NFPA 13 requires a documentation cabinet</u>		

Statement	Provides a location to store required systems record(s) in a single location, as per the requirements of NFPA 13.

Section	PI	PAGE	DISPOSITION
New 4.4	112		MOTION TO CREATE 1 ST REVISION BASED ON PI 136
Proposed Text (PI)	<u>4.4 Documentation Cabinet</u> <u>The documentation cabinet shall be maintained for the lifetime of the system.</u>		
Committee Text (FR)			
Statement	Provides a location to store required systems record(s) in a single location, as per the requirements of NFPA 13. See action on PI #136		

Section	PI	PAGE	DISPOSITION
New 4.6.6.3.1 and 4.6.6.3.2	171		MOTION TO RESOLVE
Proposed Text (PI)	<u>4.6.6.3.1</u> <u>Automated testing arrangements that provide equivalent means of testing components and systems shall be permitted to be used to comply with the requirements of this standard.</u> <u>4.6.6.3.2</u> <u>Automated testing arrangements used in accordance with 4.6.6.3.1 shall be performed at at least the same frequency as required in this standard unless otherwise specified.</u>		

Committee Text (FR)	
Statement	Existing language in 4.6.6.1 and 4.6.6.3 already addresses concern of automated inspection and testing. Equivalent methods is already covered in 4.1.3.1.

Section	PI	PAGE	DISPOSITION
	199		MOTION TO CREATE A 1 ST REVISION BASED ON...
Proposed Text (PI)	Create new 4.7 Remote Inspection and Automated Testing (move subsequent sections down) Move all current 4.6.6 content to new 4.7		
Committee Text (FR)	4.7* Automated Inspection and Testing. 4.7.1 Automated inspection and testing procedures performed in accordance with the requirements in this standard shall be permitted to be used. 4.7.2* Automated inspection equipment that meets the intent of a required visual inspection shall be permitted to replace the visual inspection. 4.7.3 Automated testing equipment shall produce the same action required by this standard to test a device. 4.7.4 The testing shall discharge water where required in this standard. 4.7.4.1 Automated testing equipment that does not discharge water for a test shall be permitted except as required in 4.6.6.4.2.		

4.7.4.2*

The discharge shall be visually observed at a minimum frequency of once every 3 years.

4.7.5

Where required in this standard, personnel shall observe the testing and intervene in the testing procedures when necessary to prevent injury or property damage.

4.7.6

Automated test devices and equipment shall be listed for the purpose of the test being conducted.

4.7.7*

Devices and equipment utilized to perform automated inspection and testing procedures that are not subjected to system pressure or are not integral to the operation of the system during a fire event shall not be required to be listed.

4.7.8

Failure of the testing equipment shall not impair the operation of the system unless indicated by a supervisory signal in accordance with NFPA 72.

4.7.9

Failure of a component or system to pass an automated test shall result in an audible and visual supervisory signal in accordance with NFPA 72 or other approved fire alarm code.

4.7.10

Failure of automated inspection and testing equipment shall result in a trouble signal in accordance with NFPA 72.

4.7.11

Failure of a component or system that impairs the system shall require that impairment procedures be followed.

4.7.12

	The testing frequencies of this standard shall be maintained regardless of the functionality of the automated testing equipment. 4.7.13 A record of all inspections and testing shall be maintained in accordance with 4.3.2. 4.7.14 The results of automated inspections and testing shall be analyzed by qualified personnel. 4.8 Remote Inspections and Tests. Remote inspections and tests shall be permitted to be performed in accordance with NFPA 915. [Renumber remaining sections]
Statement	4.6.6 was renumbered to new 4.7. A new section was added to address remote inspection and tests in accordance with NFPA 915.

Section	PI	PAGE	DISPOSITION
New 4.10	125		MOTION TO CREATE A 1 ST REVISION
Proposed Text (PI)	<u>4.10 Test Equipment</u> <u>4.10.1</u> <u>Gauges, transducers, and devices other than flow meters that are used for measurement during the test shall be calibrated at least annually to an accuracy level of ±1 percent.</u> <u>4.10.2</u> <u>Gauges, transducers, flow meters, and other test measurement devices shall be calibrated by an approved calibration facility.</u>		

Committee Text (FR)	4.7 Test Equipment. 4.7.1* Calibrated test equipment shall be provided to determine flow test pressures, rates of flow, and reference gauge calibration. A.4.7.1 The accuracy of flow test pressures and rates of flow are essential for the comparison to the original design parameters to determine any degradation in the system capacity or water supply. 4.7.1.1 Calibrated gauges shall not be required when conducting hydrostatic testing. 4.7.2 Calibration equipment shall be calibrated within the last 12 months by an approved calibration facility. 4.7.3 Calibrated test equipment shall bear a label with the name of the approved calibration facility and the date of calibration. 4.7.4 Gauges, transducers, and devices other than flow meters that are used for measurement during the test shall be calibrated at least annually to an accuracy level of ± 1 percent. 4.7.5 Flow meters shall be calibrated annually to an accuracy level of ± 3 percent. [Renumber remaining sections] Chapter 6 – Standpipe and Hose Systems 6.3.1.1.2 Pressure gauges ~~maintained-calibrated~~ in accordance with ~~8.3.3.5.2~~ <u>4.7</u> shall be provided for the test. Chapter 8 – Fire Pumps
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	8.3.3.5 Test Equipment. Calibrated test equipment shall be provided to determine net pump pressures, rate of flow through the pump, and speed in accordance with 4.7. A.8.3.3.5 When using a flow meter piped back to suction, the requirement for annual calibration applies to the sensing devices on the flow meter. When the test discharges water downstream of the flow meter, the flow discharge should be measured and used to calibrate the flow meter. 8.3.3.5.1 Gauges, transducers, and other devices used for measurement during the test shall bear a label with the latest date of calibration. 8.3.3.5.2 Gauges, transducers, and devices other than flow meters that are used for measurement during the test shall be calibrated at least annually to an accuracy level of ± 1 percent. 8.3.3.5.3* Flow meters shall be calibrated annually to an accuracy level of ± 3 percent. A.8.3.3.5.3 When using a flow meter piped back to suction, the requirement for annual calibration applies to the sensing devices on the flow meter. When the test discharges water downstream of the flow meter, the flow discharge should be measured and used to calibrate the flow meter. Chapter 13 – Common Components and Valves 13.2.4.2* Gauges shall be replaced every 5 years or tested every 5 years by comparison with a calibrated gauge in accordance with 4.7.
Statement	

Section	PI	PAGE	DISPOSITION
A.1.1.3.1	64		MOTION TO CREATE A 1 ST REVISION
Proposed Text (PI)	A.1.1.3.1 <u>While this standard does not require an inspector to evaluate the adequacy of a system, it does not prohibit the inspector or inspection organization from making recommendations to the owner of a system, related to the need for evaluations or modifications in the interest of fire and life safety.</u> The requirement to evaluate the adequacy or accuracy of the design or installation of the system or the capability of the fire protection system to protect the building or its contents is not a part of the periodic inspection, testing, and maintenance requirements of this standard. Examples of items not covered by this standard include the evaluation of unsprinklered areas and the spacing of sprinklers. However, such evaluation is the responsibility of the property owner or designated representative as indicated in 4.1.6 and 4.1.7. An example of a hazard evaluation form can be found in Annex E.		
Committee Text (FR)	A.1.1.3.1 The requirement to evaluate the adequacy or accuracy of the design or installation of the system or the capability of the fire protection system to protect the building or its contents is not a part of the periodic inspection, testing, and maintenance requirements of this standard. <u>While this standard does not require an inspector to evaluate the adequacy or accuracy of a system, it does not prohibit the inspector or inspection organization from making recommendations or observations to the owner of a system, related to the need for evaluations or modifications in the interest of fire and life safety.</u> Recommendations and observations should not be a part of the inspection report. Examples of items not covered by this standard include the evaluation of unsprinklered areas and the spacing of sprinklers. However, such evaluation is the responsibility of the property owner or designated representative as indicated in 4.1.6 and 4.1.7. An example of a hazard evaluation form can be found in Annex E.		

Statement	Added language to further clarify recommended practice.

Section	PI	PAGE	DISPOSITION
A.3.3.8	63 and 80		MOTION TO CREATE 1 ST REVISION BASED ON PI 63 MOTION TO RESOLVE PI 80
Proposed Text (PI)	[See Word Document 25-2023 A 3 3 8 PI 63 80 TG1]		
Committee Text (FR)	<u>See Word Document 25-2023 A 3 3 8 PI 63 80 TG1 -Committee Input</u>		
Statement	PI #63 Deficiency examples for wet barrel and dry barrel hydrants were separated so that examples aligned with the correct referenced sections. PI #80 Slowly leaking pipe would not have an immediate material effect on the water-based fire protection system to provide adequate flow and pressure. This example aligns more with the definition of a non-critical deficiency.		

Section	PI	PAGE	DISPOSITION
A.3.3.34.4	17		MOTION TO CREATE A 1 ST REVISION
Proposed Text (PI)	[See Jpeg Document 25 A 3 3 34 4 PI 17 TG1]		
Committee Text (FR)			
Statement	The manual bypass valve should normally be closed.		

Section	PI	PAGE	DISPOSITION
A.4.6.6	149		MOTION TO RESOLVE
Proposed Text (PI)	A.4.6.6 Some devices, such as waterflow alarm devices, can be tested automatically. Some things to consider include the following: 1. Not all tests required by NFPA 25 are suitable for automatic testing. <u>2.</u> Periodic visual inspection, including the use of video, should be performed. <u>2.3.</u> <u>Reference NFPA 915 for remote Inspection, Testing, and maintenance protocols</u>		
Committee Text (FR)			
Statement	SEE ACTION ON PI 199		

Section	PI	PAGE	DISPOSITION
Annex A	194		MOTION TO RESOLVE
Proposed Text (PI)	Several sections impacted changing foam to agent. Some diagrams would be impacted as well.		
Committee Text (FR)			
Statement	SEE ACTION ON PI 182 AND PI 187		

Section	PI	PAGE	DISPOSITION
New part to B.1	28		MOTION TO RESOLVE

Proposed Text (PI)	<u>01. Inspection of each individual system also inspection tag:</u> <u>Need to add common point for all fire system even in NFPA 101 or NFPA 25 and 72 for their respective system, you can add.</u> <u>Inspection shall be done as per system predefined frequency also inspection tag must be updated accordingly.</u> <u>As facing this issue while doing audit and inspecting the system and asking about inspection tag for each individual system, the ITM performer is saying show us NFPA reference for each system, for example Fire hose cabinet shall be inspected and ITM card must be updated, there is no clause found either in NFPA 14 nor NFPA 25.</u> <u>So this is an example only, while by your usual support it will be more safe and healthy for future.</u> <u>02. Fire System Obstructed:</u> <u>Need to add one common point that any fire system shall not be obstructed so it can be use easily and it can be accessible.</u>
Committee Text (FR)	
Statement	Current Annex G already offers information on a Tagging System.

Section	PI	PAGE	DISPOSITION
Annex B	195		MOTION TO RESOLVE
Proposed Text (PI)	Several sections impacted changing foam to agent.		
Committee Text (FR)			
Statement	SEE ACTION ON PI 182 AND PI 187		

Section	PI	PAGE	DISPOSITION
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Annex F	196		MOTION TO RESOLVE
Proposed Text (PI)	Several sections impacted changing foam to agent.		
Committee Text (FR)			
Statement	SEE ACTION ON PI 182 AND PI 187		

Section	PI	PAGE	DISPOSITION
2.2	131		MOTION TO RESOLVE
Proposed Text (PI)	Add NFPA 18 and NFPA 18A to list of referenced NFPA publications.		
Committee Text (FR)			
Statement	SEE ACTION ON PI 182 AND PI 187		

Section	PI	PAGE	DISPOSITION
A.4.1.2.6	173		MOTION TO CREATE 1 ST REVISION
Proposed Text (PI)	<u>A.4.1.2.6 Frozen water-based fire protection systems are a frequent occurrence during freezing weather conditions, especially in those regions that are not considered cold climates. Once a frozen system or a partially frozen system is discovered, the system is considered impaired and impairment procedures need to be implemented immediately.</u> <u>Thawing out the system can involve either totally heating the building, including all blind and concealed spaces with water filled piping, or disassembling the pipes, taking them into a heated area, and using a heat source to thaw the pipes. It's necessary to make sure no potential ice plugs remain in the system.</u> <u>Depending on the length and severity of the freezing event, damage to the system can be extensive. Once the system is</u>		

	<u>thawed out completely, checking for damage is the next step. Typical damage to a sprinkler system can include cracked or broken valves and fittings, split piping, damaged sprinklers, and damage to any other system component subjected to system water pressure. Access to as much of the system as possible for this examination is recommended, even if cutting open drywall ceilings and walls is necessary.</u> <u>Replace all damaged system parts and then perform an air test. The purpose of the air test is to help identify system parts that may not have appeared visibly damaged and replace them before performing a hydrostatic test. An odorant such as peppermint extract can be used to help find the general area of the air leak, and spraying fittings and joints with a soapy solution can help find the exact source of the air leak. Other methods of leak detection can also be used.</u> <u>Once the system is fully repaired and passes the air test, a hydrostatic test of the entire system is needed before restoring the system to service.</u>
Committee Text (FR)	
Statement	SEE ACTION ON PI 172

Section	PI	PAGE	DISPOSITION
13.5			MOTION CREATE A 1 ST REVISION (COMMITTEE INPUT)
Proposed Text (PI)	13.5* Pressure-Regulating Devices and Relief Valves. A.13.5 It is important to test pressure-regulating devices at the maximum and minimum anticipated flow rates. Minimum flow can be from a sprinkler for		

combined systems or flow from a 1½ in. (40 mm) hose connection on standpipe systems that do not supply sprinklers. This can require a sustained flow to demonstrate the continued performance of the pressure-regulating device at the minimum flow rate.

13.5.1 Inspection and Testing of Pressure-Reducing Valves.

Pressure-reducing valves shall be inspected and tested as described in 13.5.1.1 and 13.5.1.2.

13.5.1.1

All valves shall be inspected quarterly to verify that the valves are in the following condition:

- (1) In the open position
- (2) Not leaking
- (3) Maintaining downstream pressures in accordance with the design criteria
- (4) Handwheels installed and unbroken

13.5.1.2

Each control valve that is part of a pressure-reducing valve assembly shall be operated annually through its full range and returned to its normal position.

13.5.1.3

A partial flow test adequate to move the valve from its seat shall be conducted annually.

13.5.1.4

A full flow test shall be conducted on each valve at 5-year intervals and shall be compared to previous test results.

13.5.1.4.1

Adjustments to the valve shall be made in accordance with the manufacturer's instructions.

13.5.2 Pressure-Reducing Hose Valves.

13.5.2.1

Pressure-reducing hose valves shall be inspected annually to verify the following:

- (1) The handwheel is not broken or missing.
- (2) The outlet hose threads are not damaged.
- (3) No leaks are present.
- (4) The hose adapter and the cap are not missing.

13.5.2.2*

Each pressure-reducing hose valve shall be operated annually through its full range and returned to its normal position.

A.13.5.2.2

A test cap should be used when exercising the pressure-reducing hose valve and have a pressure rating greater than or equal to the maximum anticipated pressure at the hose valve. This section does not require a full flow test.

13.5.2.3*

A flow test at maximum design flow rates shall be conducted on each device at 5-year intervals.

A.13.5.2.3

A bench test is an acceptable method to test pressure-reducing hose valves that cannot be tested on the system. To test in place, a gauge is connected on both the inlet side and the outlet side of the device, and flow readings are taken using a pitot tube or a

	flowmeter. Water is discharged through a roof manifold, if available, or through hose to the exterior of the building. Another acceptable method for systems having at least two risers is to take one standpipe out of service and use it as a drain by removing pressure-regulating devices and attaching hoses at the outlets near the ground floor level. When testing in this manner, a flowmeter should be used and a hose line utilized to connect the riser being tested and the drain riser. Readings are to be compared to the system's hydraulic demands at the test location. Field-adjustable valves are to be reset in accordance with manufacturer's instructions. Nonadjustable valves should be replaced. Extreme caution is necessary because of the high pressure involved when testing. 13.5.2.3.1 The results of the flow test shall be compared to previous test results. 13.5.2.3.2 Adjustments to the pressure-reducing hose valve shall be made in accordance with the manufacturer's instructions. 13.5.2.3.3 A tag shall be attached to the valve indicating the date of the test, the flow in gpm (lpm), the static and residual inlet pressures, and the residual outlet pressure recorded during the test. 13.5.3 Pressure-Reducing Hose Valve with Hose Rack Assembly . 13.5.3.1 The hose rack assembly shall be inspected and tested in accordance with NFPA 1962. 13.5.3.2
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	The pressure-reducing hose valve shall be inspected and tested in accordance with 13.5.1 and 13.5.2 13.5.4 Master Pressure-Reducing Valves. 13.5.4.1 Master pressure-reducing valves shall be inspected weekly to verify that the valves are in the following condition: (1) *Normal downstream pressures are maintained. (2) Normal supply pressure is maintained. (3) Devices and associated trim components are free of physical damage and are not leaking. A.13.5.4.1(1) Pressures downstream of the master pressure-reducing valve should not exceed the maximum pressure rating of the system components. 13.5.4.2* A partial flow test adequate to move the valve from its seat shall be conducted quarterly. A.13.5.4.2 The partial flow test of the master pressure-reducing valve can be performed during the quarterly main drain test. (See 13.2.2.2) 13.5.4.3* A flow test shall be conducted annually at maximum and minimum anticipated flow rates on each valve. 13.5.4.3.1 Where pressure-reducing valves are arranged in series, the downstream pressure-reducing valve shall be tested at both the discharge pressure from the upstream pressure-reducing valve and with the upstream pressure-reducing valve bypass open. [14, 12.6.5.1.1] 13.5.4.3.2
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	The results of the flow test shall be compared to previous test results. 13.5.4.4 When valve adjustments are necessary, they shall be made in accordance with the manufacturer's instructions. . 13.5.5 Relief Valves. MOVE EXISTING LANGUAGE 13.5.6.1 to 8.2.3 and modify tables 13.1.1.2 and table 8.1.1.1.2 accordingly. 13.5.6.1 Circulation Relief Valves. 13.5.6.1.1 Where installed, circulation relief valves shall be inspected on the same frequency as the no-flow (churn) test. 13.5.6.1.2 The inspection shall verify that water flows through the valve when the fire pump is operating at shutoff pressure (i.e., churn) to prevent the pump from overheating. 13.5.6.1.3 On completion of any fire pump test, the closure of the circulation relief valve shall be verified. 13.5.5.2 Main Pressure Relief Valve. 13.5.5.2.1 Where installed downstream of a fire pump the main pressure relief valve shall be inspected during any fire pump test. 13.5.5.2.1.1 Where installed downstream of a master pressure-reducing valve, the main pressure relief valve shall be inspected quarterly 13.5.5.2.2 The inspection shall verify the following conditions: (1) Devices and associated trim components are free of physical damage and are not leaking
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	(2) The pressure downstream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated. 13.5.5.2.3 The pressure relief valve shall be verified annually to be correctly adjusted and set to relieve at the correct pressure and to close below that pressure setting. 13.5.6 Maintenance. All damaged or missing components noted during the inspections shall be repaired or replaced in accordance with the manufacturer's instructions.
Committee Text (FR)	
Statement	

Section	PI	PAGE	DISPOSITION
Global Input	187		Motion to resolve PI 187
Proposed Text (PI)	<u>With the exception of a few places throughout the entire document the work FOAM should be changed to Agent. Foam Concentrate change to Agent Concentrate and Foam Solution changed to Agent Solution.</u> <u>There are a few exceptions when Foam should remain Foam such as in the definitions Foam Concentrate should remain. Foam Discharge Devices should remain.</u>		
Committee Text (FR)			
Statement	It is not appropriate to replace “foam” for “agent” in all instances within NFPA 25. Additionally, NFPA 18 and 18A are not installation standards but refer to NFPA 25 for the ITM of water-based fire protection systems.		

Section	PI	PAGE	DISPOSITION
Global Input	3		Motion to resolve PI 3
Proposed Text (PI)	<u>Move the following summary reference tables to the annex:</u> <u>(1) Table 5.1.1.2 Summary of Sprinkler System Inspection, Testing, and Maintenance</u> <u>(2) Table 6.1.1.2 Summary of Standpipe and Hose Systems Inspection, Testing, and Maintenance</u> <u>(3) Table 7.1.1.2 Summary of Private Fire Service Main Inspection, Testing, and Maintenance</u> <u>(4) Table 8.1.1.2 Summary of Fire Pump Inspection, Testing, and Maintenance</u> <u>(5) Table 9.1.1.2 Summary of Water Storage Tank Inspection, Testing, and Maintenance</u> <u>(6) Table 9.5.1.1 Summary of Automatic Tank Fill Valve Inspection and Testing</u> <u>(7) Table 10.1.1.2 Summary of Water Spray Fixed System Inspection, Testing, and Maintenance</u> <u>(8) Table 11.1.1.2 Summary of Low-, Medium-, and High-Expansion Foam and Foam-</u>		

	<u>Water Sprinkler System Inspection, Testing, and Maintenance</u> <u>(9) Table 12.1.1.2 Summary of Water Mist System Inspection, Testing, and Maintenance</u> <u>(10) Table 13.1.1.2 Summary of Valves, Valve Components, and Trim Inspection, Testing, and Maintenance</u>
Committee Text (FR)	
Statement	It is useful to retain the tables in the body of the standard in the beginning of the chapters for ease of use.

Section	PI	PAGE	DISPOSITION
5.1.1.2	47		Create a first revision based on PI 47
Proposed Text (PI)	[See Word Document 25-2023 5 1 1 2 PI 47 TG2]		
Committee Text (FR)	[See Word Document 25-2023 5 1 1 2 PI 47 TG2]		
Statement	Primarily editorial in nature and consistent with the other chapter 13 references.		

Section	PI	PAGE	DISPOSITION
5.2.1.1.5	133		Create a first revision based on PI 133
Proposed Text (PI)	Escutcheons and coverplates for recessed, flush, and concealed sprinklers shall be replaced with their listed escutcheon or coverplate if found missing, damaged, or corroded during the inspection.		
Committee Text (FR)	<u>Any escutcheon or coverplate for recessed, flush, and concealed sprinklers that show signs of any of the following shall be replaced with their listed escutcheon or coverplate:</u> <u>(1) Missing</u> <u>(2) Physical damage</u> <u>(3) Corrosion detrimental to sprinkler performance</u> <u>(4) Loading detrimental to sprinkler performance</u>		

	<u>(5) Paint, other than that applied by the sprinkler manufacturer, detrimental to sprinkler performance</u> 5.2.1.1.5.1 Where the listed escutcheon or coverplate from a listed assembly is <u>required to be replaced in accordance with 5.2.1.1.5</u> ~~missing~~ and is no longer commercially available, the sprinkler shall be replaced.
Statement	Modifications to this section align with section 5.2.1.1.1. It is necessary to inspect the escutcheon and coverplates for listed assemblies.

Section	PI	PAGE	DISPOSITION
New A.5.2.1.1.6	48		Create a first revision based on PI 48
Proposed Text (PI)	5.2.1.1.6* Escutcheons for pendent sprinklers that are not recessed, flush, or concealed shall not be required to be replaced if found missing during the inspection. <u>A.5.2.1.1.6</u> <u>Flat and adjustable escutcheons which are also know as beauty rings, trim plates, or extension skirts that are for the aesthetics of non-recessed and non-concealed sprinklers and do not affect the response or spray pattern are not required to be listed when the sprinkler is installed properly per its listing.</u>		
Committee Text (FR)	5.2.1.1.6* Escutcheons for pendent sprinklers that are not recessed, flush, or concealed shall not be required to be replaced if found missing during the inspection. <u>A.5.2.1.1.6</u>		

	<u>Flat and adjustable escutcheons which are also known as beauty rings, trim plates, or extension skirts that are for the aesthetics of non-recessed ~~or~~ non-concealed sprinklers and do not affect the response or spray pattern are not required to be listed when the sprinkler is installed properly per its listing.</u>
Statement	The additional annex information helps to clarify the reason as to why these types of escutcheons are not required to be replaced.

Section	PI	PAGE	DISPOSITION
5.2.1.1.7	82		Move to resolve PI 82
Proposed Text (PI)	<u>~~5.2.1.1.7 Sprinkler Guards.~~</u> 5.2.1.1.7.1 Where installed, a sprinkler guard shall be inspected from the floor level annually. 5.2.1.1.7.2 A damaged sprinkler guard shall be replaced with a guard listed for the sprinkler.		
Committee Text (FR)			
Statement	The heading aids the user in locating the requirements for sprinkler guards and does not create conflict with the manual of style.		

Section	PI	PAGE	DISPOSITION
New 5.2.1.1.8	83		Move to resolve PI 83
Proposed Text (PI)	<u>5.2.1.1.8</u>		

	Any sprinkler that has been installed and subsequently is recalled or designated for replacement shall be identified, documented, and replaced.
Committee Text (FR)	
Statement	The requirements for recalled sprinklers are already addressed in Chapter 4. It is unreasonable for an inspector to identify every recalled sprinkler on an inspection from the floor level.

Section	PI	PAGE	DISPOSITION
5.2.1.4	84		Move to resolve PI 84
Proposed Text (PI)	5.2.1.4 The supply of spare sprinklers shall be inspected annually for the following: (1) The correct number and type of sprinklers as required by 5.4.1.6 (2) A sprinkler wrench for each type of sprinkler as required by 5.4.1.6.5 (3) The list of spare sprinklers as required by 5.4.1.6.6 ~~(3)(4)~~ Recalled or replacement required sprinklers		
Committee Text (FR)			
Statement	This section identifies what is required to be included in the spare sprinkler box and is not intended to identify what should not be included. Chapter 4 contains the requirements for what to do when recalled sprinklers are discovered.		

Section	PI	PAGE	DISPOSITION
5.4.1.1	85		Move to resolve PI 85
Proposed Text (PI)	5.4.1.1 Replacement Sprinklers. Sprinklers with any of the following qualifications shall be replaced: (1) Sprinklers manufactured prior to 1920. (2) Sprinklers showing signs described in 5.2.1.1.1. (3) Sprinklers with unsatisfactory performance when tested in accordance with 5.3.1. <u>(4) *Sprinklers affected by a fire as determined by the AHJ.</u> <u>(4)(5) Sprinklers that are recalled or replacement required sprinklers.</u>		
Committee Text (FR)			
Statement	The requirements for recalled sprinklers are already addressed in Chapter 4. It is unreasonable for an inspector to identify every recalled sprinkler on an inspection from the floor level.		

Section	PI	PAGE	DISPOSITION
5.2.1.2, 5.2.1.3	122		Create a first revision based on PI 122 (Contingent based on the actions for PI 121)
Proposed Text (PI)	Sections 5.2.1.2, 5.2.1.3 5.2.1.2* <u>Sprinklers clearance to storage shall be inspected from the floor annually.</u> <u>The minimum clearance to storage as described in 5.2.1.2.1 through 5.2.1.2.6 shall be maintained below all sprinkler deflectors. Sprinkler clearance to storage shall be inspected from the floor annually.</u>		

	~~5.2.1.2.1*~~ Unless greater distances are required by 5.2.1.2.3, 5.2.1.2.2, or 5.2.1.2.4, or lesser distances are permitted by 5.2.1.2.6, clearance between the deflector and the top of storage shall be 18 in. (457 mm) or greater. ~~5.2.1.2.2*~~ Clearance between the deflector and the top of storage shall be 36 in. (914 mm) or greater for ESFR and CMSA sprinklers. ~~5.2.1.2.3~~ Where standards other than NFPA 13 specify greater clearance to storage minimums, they shall be followed. ~~5.2.1.2.4~~ Clearance from the top of storage to sprinkler deflectors shall be 36 in. (914 mm) or greater where rubber tires are stored. ~~5.2.1.2.5~~ In-rack sprinklers shall not be required to meet the obstruction criteria and clearance from storage requirements. ~~5.2.1.2.6*~~ Clearance between the deflector and the top of storage shall be permitted to be less than 18 in. (457 mm) where shown to be permitted by the installation standard. ~~5.2.1.3*~~ Storage closer to the sprinkler deflector than permitted by the clearance rules of the installation standard described in 5.2.1.2.1 through 5.2.1.2.4 shall be corrected.
Committee Text (FR)	Sections 5.2.1.2, 5.2.1.3 5.2.1.2*

Sprinklers clearance to storage shall be inspected from the floor annually.

The minimum clearance to storage as described in 5.2.1.2.1 through 5.2.1.2.6 shall be maintained below all sprinkler deflectors. Sprinkler clearance to storage shall be inspected from the floor annually.

5.2.1.2.1*

Unless greater distances are required by 5.2.1.2.3, 5.2.1.2.2, or 5.2.1.2.4, or lesser distances are permitted by 5.2.1.2.6, clearance between the deflector and the top of storage shall be 18 in. (457 mm) or greater.

5.2.1.2.2*

Clearance between the deflector and the top of storage shall be 36 in. (914 mm) or greater for ESFR and CMSA sprinklers.

5.2.1.2.3

Where standards other than NFPA 13 specify greater clearance to storage minimums, they shall be followed.

5.2.1.2.4

Clearance from the top of storage to sprinkler deflectors shall be 36 in. (914 mm) or greater where rubber tires are stored.

5.2.1.2.5

In-rack sprinklers shall not be required to meet the obstruction criteria and clearance from storage requirements.

5.2.1.2.6*

Clearance between the deflector and the top of storage shall be permitted to be less than 18 in. (457 mm) where shown to be permitted by the installation standard.

5.2.1.3*

Storage closer to the sprinkler deflector than permitted by the clearance rules of the installation standard described in 5.2.1.2.1 through 5.2.1.2.4 shall be corrected.

Statement	The current requirements did not contain a frequency and the requirements to maintain storage has been relocated to Chapter 4.

New 5.2.8.1, 5.2.8.2	134		Create a first revision based on PI 134
Proposed Text (PI)	<u>5.2.8.1</u> <u>Such general information shall be provided with a permanently marked weatherproof metal or rigid plastic sign, secured with corrosion-resistant wire, chain, or other acceptable means.[13,2022]</u> <u>5.2.8.2</u> <u>Such signs shall be placed at each system control riser, antifreeze loop, and auxiliary system control valve. [13,2022]</u>		
Committee Text (FR)	<u>5.2.8.1</u> <u>Such general information shall be provided with a permanently marked weatherproof metal or rigid plastic sign, secured with corrosion-resistant wire, chain, or other acceptable means. [13, 29.6.1.12022]</u> <u>5.2.8.2</u> <u>Such signs shall be placed at each system control riser.,~~antifreeze loop, and auxiliary system control valve.~~ [13, 29.6.1.22022]</u>		
Statement	Added text clarifies where the general information sign is to be installed and to identify how it should be mounted. This will also keep consistency within the standard with other sign requirements for information and mounting locations as well as align with the requirements in NFPA 13.		

Section	PI	PAGE	DISPOSITION
A.5.2.8	135		Create a first revision based on PI's 135 & 141
Proposed Text (PI)	A.5.2.8 The sign referenced in 5.2.8 should satisfy the requirements of 4.1.9 and 5.2.7. See Figure A.5.2.8. Figure A.5.2.8 Sprinkler System General Information. [13:Figure A.29.6]		

SPRINKLER SYSTEM — GENERAL INFORMATION for

Pipe schedule system ☐ Yes ☐ No
 High-piled storage ☐ Yes ☐ No
 Rack storage: ☐ Yes ☐ No
 Commodity class: _____
 Max. storage height _____ ft m
 Aisle width (min.) _____ ft m
 Encapsulation ☐ Yes ☐ No
Solid shelving: ☐ Yes ☐ No
**Flammable/
combustible liquids:** ☐ Yes ☐ No
 Other storage: ☐ Yes ☐ No

Hazardous materials: ☐ Yes ☐ No
 Idle pallets: ☐ Yes ☐ No
Antifreeze systems ☐ Yes ☐ No
Location: _____
Dry or aux systems ☐ Yes ☐ No
Location: _____

Date: _____
Flow test data:
 Static: _____ psi b
 Resid: _____ psi b
 Flow: _____ gpm
Pitot: _____ psi b
Date: _____
Location: _____

Location of aux/low point drain

Dry pipe/double interlock preac
test results

Original main drain test res
 Static: _____ psi b
 Residual: _____ psi b
 Venting valve location: _____

Where injection systems are used to treat MIC or corrosion:
 Type of chemical: _____ Concentration: _____ For proper c

Name of contractor or designer: _____
 Address: _____
 Phone: _____

The sign should include the following information:

(1) Name and location of the facility protected

(2) Occupancy classification

	<u>(3) Commodity classification</u> <u>(4) Presence of high-piled and/or rack storage</u> <u>(5) Maximum height of storage planned</u> <u>(6) Aisle width planned</u> <u>(7) Encapsulation of pallet loads</u> <u>(8) Presence of solid shelving</u> <u>(9) Flow test data</u> <u>(10) Presence of flammable/combustible liquids</u> <u>(11) Presence of hazardous materials</u> <u>(12) Presence of other special storage</u> <u>(13) Location of venting valve</u> <u>(14) Location of auxiliary drains and low point drains on dry pipe and preaction systems</u> <u>(15) Original results of main drain flow test</u> <u>(16) Original results of dry pipe and double interlock preaction valve test</u> <u>(17) Name of installing contractor or designer</u> <u>(18) Indication of presence and location of antifreeze or other auxiliary systems</u> <u>(19) Where injection systems are installed to treat MIC or corrosion, the type of chemical, concentration of the chemical, and where information can be found as to the proper disposal of the chemical</u> <u>(20) Indication of presence of nitrogen where used to allow for increased C value in dry or preaction systems</u> <u>[13,2022]</u>
Committee Text (FR)	A.5.2.8 The sign referenced in 5.2.8 should satisfy the requirements of 4.1.9 and 5.2.7. See Figure A.5.2.8.

Figure A.5.2.8 Sprinkler System General Information. The GENERAL information sign should be secured to the riser with durable wire, chain, or equivalent. (See Figure A.5.2.58.) When the general information sign is missing it can be difficult to locate the appropriate information that is required to be on the sign. Engaging the building owner could aid in locating this information as they may be able to locate previous owners or the installing contractor. If the information is not accessible, then the system may have to be evaluated in accordance with Chapter 30 of NFPA 13 to determine the required information.

[13:Figure A.29.6]

SPRINKLER SYSTEM — GENERAL INFORMATION for

Pipe schedule system ☐ Yes ☐ No
 High-piled storage ☐ Yes ☐ No
 Rack storage: ☐ Yes ☐ No
 Commodity class: _____
 Max. storage height _____ ft m
 Aisle width (min.) _____ ft m
 Encapsulation ☐ Yes ☐ No
 Solid shelving: ☐ Yes ☐ No
 Flammable/
combustible liquids: ☐ Yes ☐ No
 Other storage: ☐ Yes ☐ No

Hazardous materials: ☐ Yes ☐ No
 Idle pallets: ☐ Yes ☐ No
 Antifreeze systems ☐ Yes ☐ No
 Location: _____
 Dry or aux systems ☐ Yes ☐ No
 Location: _____

Date: _____
Flow test data:
 Static: _____ psi b
 Resid: _____ psi b
 Flow: _____ gpm
 Pitot: _____ psi b
 Date: _____
 Location: _____

Location of aux/low point drain

Dry pipe/double interlock preac
test results

Original main drain test res
 Static: _____ psi b
 Residual: _____ psi b
 Venting valve location:

Where injection systems are used to treat MIC or corrosion:
 Type of chemical: _____ Concentration: _____ For proper c

Name of contractor or designer: _____
 Address: _____
 Phone: _____

The sign should include the following information:

(1) Name and location of the facility protected

(2) Edition of NFPA 13

- | | |
|--|--|
| | <ul style="list-style-type: none"><u>(3) Occupancy classification</u><u>(4) Commodity classification</u><u>(5) Presence of high-piled and/or rack storage</u><u>(6) Maximum height of storage planned</u><u>(7) Aisle width planned</u><u>(8) Encapsulation of pallet loads</u><u>(9) Presence of solid shelving</u><u>(10) Flow test data</u><u>(11) Presence of flammable/combustible liquids</u><u>(12) Presence of hazardous materials</u><u>(13) Presence of other special storage</u><u>(14) Location of venting valve</u><u>(15) Location of auxiliary drains and low point drains on dry pipe and preaction systems</u><u>(16) Original results of main drain flow test</u><u>(17) Original results of dry pipe and double interlock preaction valve test</u><u>(18) Name of installing contractor or designer</u><u>(19) Indication of presence and location of antifreeze or other auxiliary systems</u><u>(20) Where injection systems are installed to treat MIC or corrosion, the type of chemical, concentration of the chemical, and where information can be found as to the proper disposal of the chemical</u><u>(21) Indication of presence of nitrogen where used to allow for increased C value in dry or preaction systems</u> <p><u>[13,2022]</u></p> |
|--|--|

Statement	Added annex text to clarify what information should be included on the general information sign. Where signs are missing, this language provides guidance on the steps that can be taken to recreate the required information.
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Section	PI	PAGE	DISPOSITION
A.5.2.8	141		Create a first revision based on PI's 135 & 141
Proposed Text (PI)	A.5.2.8 The sign referenced in 5.2.8 should satisfy the requirements of 4.1.9 and 5.2.7. See Figure A.5.2.8. <u>The GENERAL information sign should be secured to the riser with durable wire, chain, or equivalent. (See Figure A.5.2.5.) When the general information sign is missing it can be difficult to locate the appropriate information that is required to be on the sign. Engaging the building owner could aid in locating this information as they may be able to locate previous owners or the installing contractor. If the information is not accessible, then the system may have to be evaluated in accordance with Chapter 30 of NFPA 13 to determine the required information.</u> Figure A.5.2.8 Sprinkler System General Information. [13:Figure A.29.6]		

SPRINKLER SYSTEM — GENERAL INFORMATION for

Pipe schedule system ☐ Yes ☐ No
 High-piled storage ☐ Yes ☐ No
 Rack storage: ☐ Yes ☐ No
 Commodity class: _____
 Max. storage height _____ ft m
 Aisle width (min.) _____ ft m
 Encapsulation ☐ Yes ☐ No
Solid shelving: ☐ Yes ☐ No
**Flammable/
combustible liquids:** ☐ Yes ☐ No
 Other storage: ☐ Yes ☐ No

Hazardous materials: ☐ Yes ☐ No
 Idle pallets: ☐ Yes ☐ No
Antifreeze systems ☐ Yes ☐ No
Location: _____
Dry or aux systems ☐ Yes ☐ No
Location: _____

Where injection systems are used to treat MIC or corrosion:

Type of chemical: _____ Concentration: _____ For proper c

Name of contractor or designer: _____
 Address: _____
 Phone: _____

Date: _____
Flow test data:
 Static: _____ psi b
 Resid: _____ psi b
 Flow: _____ gpm
Pitot: _____ psi b
Date: _____
Location: _____

Location of aux/low point drain

Dry pipe/double interlock preac
 test results

Original main drain test res
 Static: _____ psi b
 Residual: _____ psi b
 Venting valve location: _____

Committ
 ee Text
 (FR)

Statement	See action and statement on PI 135
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Section	PI	PAGE	DISPOSITION
5.3.1.1.1.4	150		Move to resolve PI's 150 & 186
Proposed Text (PI)	5.3.1.1.1.4* Where sprinklers have been ~~manufactured in 1920 and later and have been~~ installed for 75 years, ~~one of the following shall occur:~~ ~~1. The sprinklers shall be replaced.~~ ~~Representative samples of the sprinklers shall be tested and then retested every 5 years. they shall be replaced.~~		
Committee Text (FR)			
Statement	Testing data does not support the need to support replacing these sprinklers. Data from testing laboratories show that approximately 95% of these sprinklers operate normally.		

Section	PI	PAGE	DISPOSITION
5.3.1.1.1.4	186		Move to resolve PI's 150 & 186
Proposed Text (PI)	5.3.1.1.1.4* Where sprinklers have been ~~manufactured in 1920 and later and have been~~ installed for 75 years, ~~one of the following shall occur:~~ ~~The~~ sprinklers shall be replaced. ~~(1) Representative samples of the sprinklers shall be tested and then retested every 5 years.~~		

Committee Text (FR)	
Statement	See action and statement on PI 150

Section	PI	PAGE	DISPOSITION
New 5.3.1.1.1.6	132		Create a first revision based on PI 132
Proposed Text (PI)	5.3.1.1.1.6 Concealed sprinklers that fail sample testing shall have plates and sprinklers replaced.		
Committee Text (FR)	5.3.1.1.1.6 Concealed sprinklers that fail sample testing shall have coverplates and sprinklers replaced.		
Statement	Any sprinkler that is required to be replaced should be replaced as a listed assembly.		

Section	PI	PAGE	DISPOSITION
New after 5.3.1.1.1	151		Create a first revision based on PI 151
Proposed Text (PI)	Sprinklers in Dwelling Units Where sprinklers have been installed for 25 years in dwelling units, one of the following shall occur: (1) The sprinklers shall be replaced with fast response sprinklers. (2) Representative samples of the sprinklers shall be tested and the thermal sensitivity shall be such that the RTI does not exceed 65 (meters-seconds)^{1/2}.		
Committee Text (FR)			

	<u>(New section) 5.4.1.1.1 Sprinklers in Dwelling Units</u> <u>Where standard response sprinklers have been installed for 25 years in dwelling units, one of the following shall occur:</u> <u>The the sprinklers shall be replaced with fast response sprinklers.</u> <u>— Representative samples of the sprinklers shall be tested and the thermal sensitivity shall be such that the RTI does not exceed 65 (meters-seconds)1/2.</u> (1)
Statement	Dwelling units should be protected by sprinklers of a fast response element.

Section	PI	PAGE	DISPOSITION
5.3.4	143		Create a first revision based on PI 143
Proposed Text (PI)	5.3.4* Antifreeze Systems. Annually, toward the beginning of the heating season prior to the onset of freezing conditions, the antifreeze solution shall be tested using the following procedure: (1) The antifreeze information sign required by 4.1.10, installation records, maintenance records, information from the owner, chemical tests, or other reliable sources of information shall be used to determine the type of antifreeze in the system and whether implementing 5.3.4(1)(a) or 5.3.4(1)(b) is necessary: (a) If the antifreeze is a type that is no longer permitted, the system shall be drained ~~completely~~ and refilled with a listed solution or an acceptable solution in accordance with 5.3.4.4. (b) If the type of antifreeze cannot be reliably determined, the system shall be drained ~~completely~~ and refilled with a listed solution or an acceptable solution in accordance with 5.3.4.4.		

	(2) If the antifreeze is not replaced in accordance with 5.3.4(1)(a) or 5.3.4(1)(b), test samples shall be taken at the top and the bottom of each system as follows: (a) If the most remote portion of the system is not near the top or the bottom of the system, an additional sample shall be taken at the most remote portion. (b) If the connection to the water supply piping is not near the top or the bottom of the system, an additional sample shall be taken at the connection to the water supply. (3) The specific gravity of each solution shall be checked using a hydrometer with a suitable scale or a refractometer having a scale calibrated for the antifreeze solution. (4) If any of the samples exhibit values outside of the allowable range, the system shall be drained completely and refilled with a listed solution or an acceptable solution in accordance with 5.3.4.4. (5) If a concentration greater than that permitted by 5.3.4.4 was necessary to keep the fluid from freezing, alternative methods for preventing the pipe from freezing shall be employed.
Committee Text (FR)	5.3.4* Antifreeze Systems. Annually, toward the beginning of the heating season prior to the onset of freezing conditions, the antifreeze solution shall be tested using the following procedure: (1) The antifreeze information sign required by 4.1.10, installation records, maintenance records, information from the owner, chemical tests, or other reliable sources of information shall be used to determine the type of antifreeze in the system and whether implementing 5.3.4(1)(a) ~~or 5.3.4(1)(b)~~ is necessary: (a) If the antifreeze is a type that is no longer permitted, <u>or the type of antifreeze cannot be reliably determined,</u> the system shall be drained ~~completely~~ and refilled with a listed solution ~~or an acceptable solution~~ in accordance

	with 5.3.4.4.<u>1 or an acceptable solution in accordance with 5.3.4.4.3.</u> ~~(b) If the type of antifreeze cannot be reliably determined, the system shall be drained completely and refilled with a listed solution or an acceptable solution in accordance with 5.3.4.4.~~ (2) If the antifreeze is not replaced in accordance with 5.3.4(1)(a) or 5.3.4(1)(b), test samples shall be taken at the top and the bottom of each system as follows: (a) If the most remote portion of the system is not near the top or the bottom of the system, an additional sample shall be taken at the most remote portion. (b) If the connection to the water supply piping is not near the top or the bottom of the system, an additional sample shall be taken at the connection to the water supply. (3) The specific gravity of each solution shall be checked using a hydrometer with a suitable scale or a refractometer having a scale calibrated for the antifreeze solution. (4) If any of the samples exhibit values outside of the allowable range, the system shall be drained ~~completely~~ and refilled with a listed solution or an acceptable solution in accordance with 5.3.4.4. (5) If a concentration greater than that permitted by 5.3.4.4 was necessary to keep the fluid from freezing, alternative methods for preventing the pipe from freezing shall be employed. 5.3.4.2.1 If the results indicate an incorrect freeze point anywhere in the system, the system shall be drained ~~completely~~ and refilled with a listed solution ~~or an acceptable solution~~ in accordance with 5.3.4.4.<u>1 or an acceptable solution in accordance with 5.3.4.4.3.</u>
Statement	It is unreasonable and nearly impossible to drain every drop of solution from an existing system. Parens (A) and (B) were condensed for clarity

	and more specific references were provided noting the requirements for listed antifreeze or approved solutions for ESFR systems.
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Section	PI	PAGE	DISPOSITION
5.3.4	52		Motion to resolve on PI 52
Proposed Text (PI)	5.3.4* Antifreeze Systems. Annually, toward the beginning of the heating season prior to the onset of freezing conditions, the antifreeze solution shall be tested using the following procedure: (1) The antifreeze information sign required by 4.1.10, installation records, maintenance records, information from the owner, chemical tests, or other reliable sources of information shall be used to determine the type of antifreeze in the system and whether implementing 5.3.4(1)(a) or 5.3.4(1)(b) is necessary: (a) If the antifreeze is a type that is no longer permitted, the system shall be drained completely and refilled with a listed solution or an acceptable solution in accordance with 5.3.4.4. (b) If the type of antifreeze cannot be reliably determined, the system shall be drained completely and refilled with a listed solution or an acceptable solution in accordance with 5.3.4.4. (2) If the antifreeze is not replaced in accordance with 5.3.4(1)(a) or 5.3.4(1)(b), test samples shall be taken at the top and the bottom of each system as follows: (a) If the most remote portion of the system is not near the top or the bottom of the system, an additional sample shall be taken at the most remote portion. (b) If the connection to the water supply piping is not near the top or the bottom of the system, an additional sample shall be taken at the connection to the water supply.		

	(3) The specific gravity of each solution shall be checked using a hydrometer with a suitable scale or a refractometer having a scale calibrated for the antifreeze solution. (4) If any of the samples exhibit values outside of the allowable range, the system shall be drained completely, flushed, and refilled with a listed solution or an acceptable solution in accordance with 5.3.4.4. (5) If a concentration greater than that permitted by 5.3.4.4 was necessary to keep the fluid from freezing, alternative methods for preventing the pipe from freezing shall be employed.
Committee Text (FR)	
Statement	The antifreeze manufacturer's recommendations state to see the installation section for instructions on flushing, but no flushing procedures are outlined in the manufacturer's installation instructions for flushing systems. Also it is unclear on if flushing a system is required for all cases.

Section	PI	PAGE	DISPOSITION
A.5.3.4	99		Create a first revision based on PI 99
Proposed Text (PI)	A.5.3.4 Sampling from the top and bottom of the system helps to determine if the solution has settled. Antifreeze solutions are heavier than water. If the antifreeze compound is separating from the water due to poor mixing, it will exhibit a higher concentration in the lower portion of the system than in the upper portion. If the concentration is acceptable near the top, but too low near the water connection, it might mean the system is becoming diluted near the water supply. If the concentration is either too high or too low in both the samples, it might mean the wrong concentration was added to the system. Two or three times during the freezing season, test samples can be drawn from Valve B as shown in Figure 8.6.3.1 of NFPA 13, especially if the		

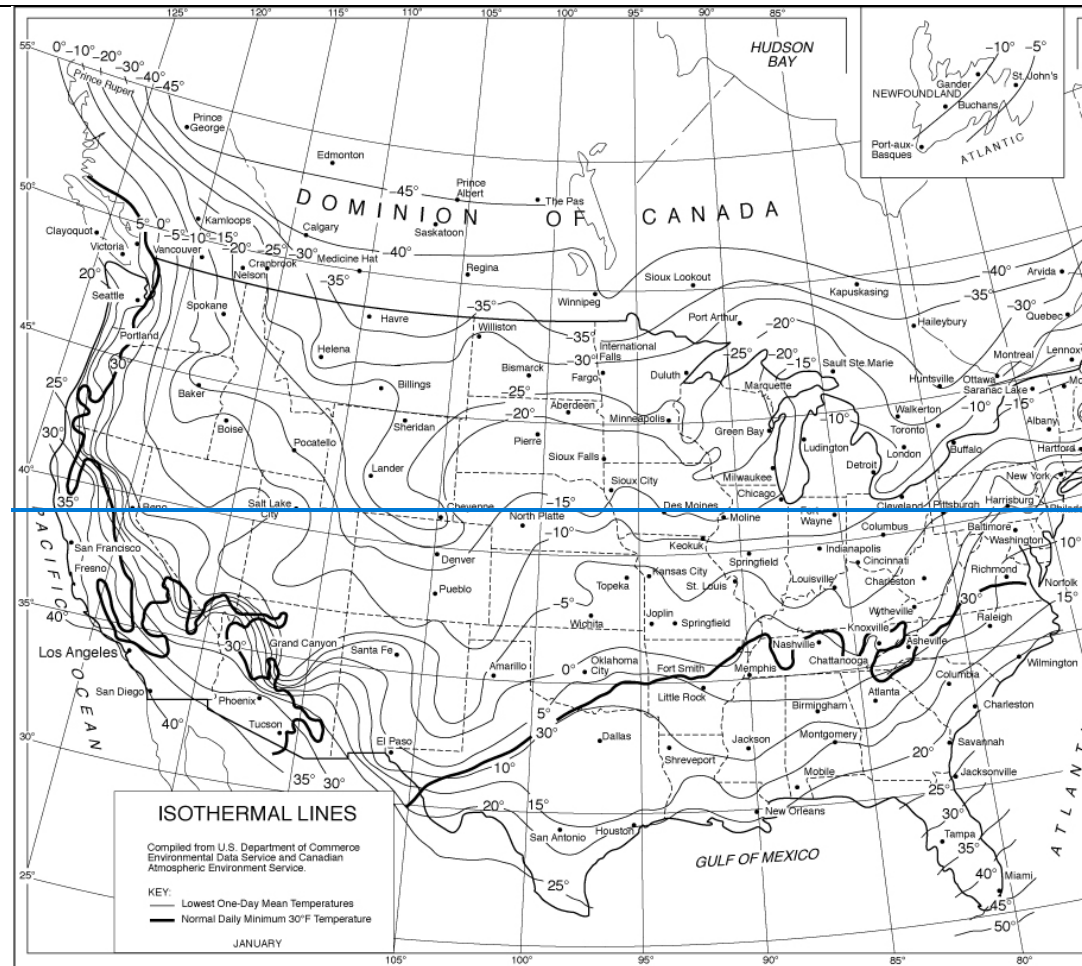
water portion of the system has been drained for maintenance or repairs. A small hydrometer can be used so that a small sample is sufficient. Where water appears at Valve B, or where the sample indicates that the solution has become weakened, the entire system should be emptied and refilled with acceptable solution as previously described.

~~See Figure A.5.3.4 for expected minimum air temperatures in 48 of the United States and parts of Canada where the lowest one-day mean temperature can be used as one method of determining the minimum reasonable air temperature. In situations where the piping containing the antifreeze solution is protected in some way from exposure to the outside air, higher minimum temperatures can be anticipated.~~

Where systems are drained in order to be refilled, it is not typically necessary to drain drops. Most systems with drops have insufficient volume to cause a problem, even if slightly higher concentration solutions collect in the drops. For drops in excess of 36 in. (915 mm), consideration should be given to draining drops if there is evidence that unacceptably high concentrations of antifreeze have collected in these long drops.

~~When emptying and refilling antifreeze solutions, every attempt should be made to recycle the old solution with the antifreeze manufacturer rather than discard it.~~

~~Figure A.5.3.4 Isothermal Lines — Lowest One-Day Mean Temperature (°F).~~



Source: Compiled from United States Weather Bureau records.
For SI units, °C = $\frac{5}{9} (°F - 32)$; 1 mi = 1.609 km.

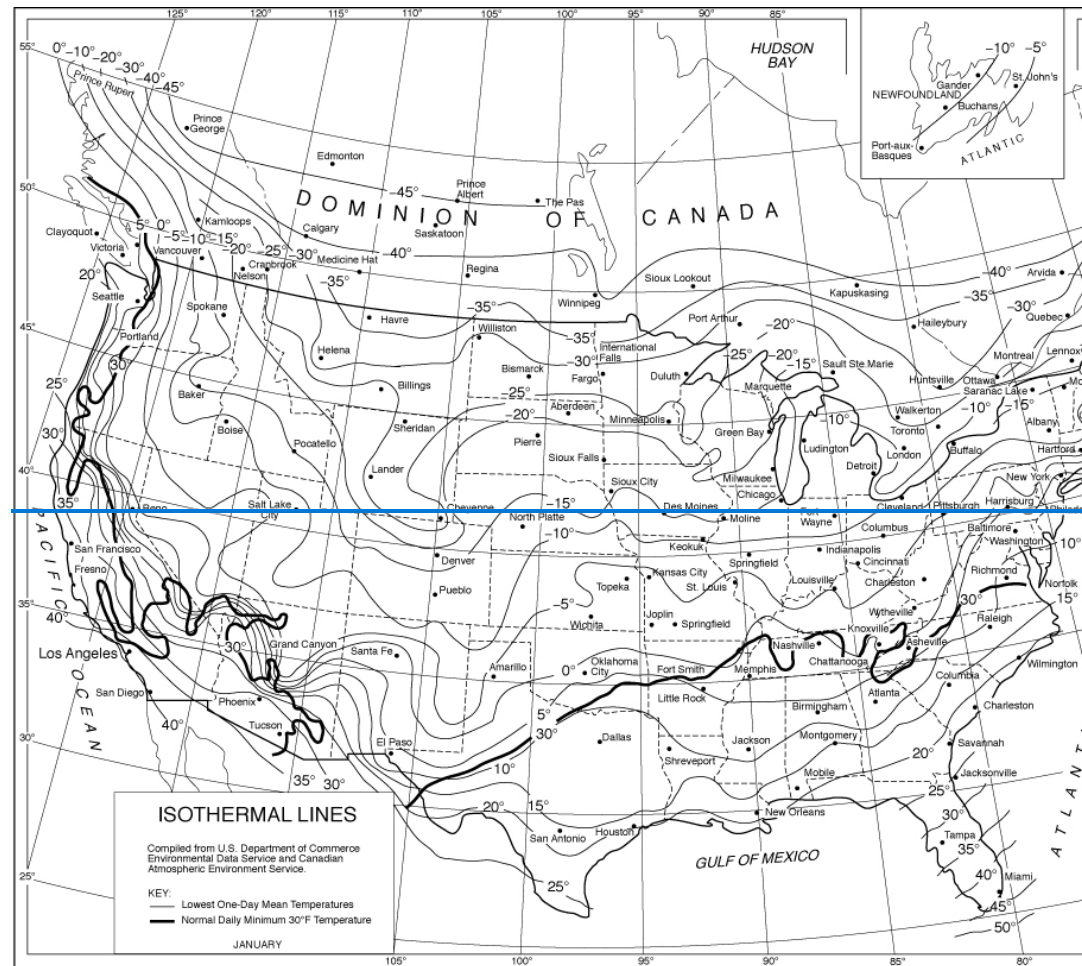
The internal temperature and duration of exposure that water-filled piping could be subjected to, under freezing conditions, in an unconditioned space should be carefully considered and approved by the AHJ.

Dependable sources of information on historic temperatures include the following:

- (1) National Oceanic and Atmospheric Administration — National Climatic Data Center
- (2) National Weather Service
- (3) Plant Hardiness Zone Maps (See Oregon State University)
- (4) American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

	(5) Other approved sources [13, A.16.4.1.1.1]
Committee Text (FR)	A.5.3.4 Sampling from the top and bottom of the system helps to determine if the solution has settled. Antifreeze solutions are heavier than water. If the antifreeze compound is separating from the water due to poor mixing, it will exhibit a higher concentration in the lower portion of the system than in the upper portion. If the concentration is acceptable near the top, but too low near the water connection, it might mean the system is becoming diluted near the water supply. If the concentration is either too high or too low in both the samples, it might mean the wrong concentration was added to the system. Two or three times during the freezing season, test samples can be drawn from Valve B as shown in Figure 8.6.3.1 of NFPA 13, especially if the water portion of the system has been drained for maintenance or repairs. A small hydrometer can be used so that a small sample is sufficient. Where water appears at Valve B, or where the sample indicates that the solution has become weakened, the entire system should be emptied and refilled with acceptable solution as previously described. ~~See Figure A.5.3.4 for expected minimum air temperatures in 48 of the United States and parts of Canada where the lowest one-day mean temperature can be used as one method of determining the minimum reasonable air temperature. In situations where the piping containing the antifreeze solution is protected in some way from exposure to the outside air, higher minimum temperatures can be anticipated.~~ Where systems are drained in order to be refilled, it is not typically necessary to drain drops. Most systems with drops have insufficient volume to cause a problem, even if slightly higher concentration solutions collect in the drops. For drops in excess of 36 in. (915 mm), consideration should be given to draining drops if there is evidence that unacceptably high concentrations of antifreeze have collected in these long drops. ~~When emptying and refilling antifreeze solutions, every attempt should be made to recycle the old solution with the antifreeze manufacturer rather than discard it.~~

Figure A.5.3.4 Isothermal Lines — Lowest One-Day Mean Temperature (°F).



The internal temperature and duration of exposure that water-filled piping could be subjected to, under freezing conditions, in an unconditioned space should be carefully considered and approved by the AHJ.

Dependable sources of information on historic temperatures include the following:

- (1) National Oceanic and Atmospheric Administration — National Climatic Data Center
- (2) National Weather Service
- (3) Plant Hardiness Zone Maps (See Oregon State University)

	(4) American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) (5) Other approved sources [13, A.16.4.1.1.1]
Statement	It is no longer appropriate to recycle non-listed antifreeze and this added language correlates with NFPA 13 and NFPA 24.

Section	PI	PAGE	DISPOSITION
5.3.4.4.1	144		Create a first revision based on PI 144
Proposed Text (PI)	5.3.4.4.1* Where used to replace nonlisted factory premixed antifreeze solutions, listed antifreeze solutions shall be permitted to be used outside their listing limitationssystem volume and hydraulic calculation requirements, provided the temperature range limitations are not exceeded. All other requirements of the listed antifreeze shall be adhered to.		
Committee Text (FR)	5.3.4.4.1* ~~Where acceptable to the AHJ, Where used to replace non~~listed ~~factory premixed~~ antifreeze solutions ~~used to replace, non~~listed antifreeze solutions shall be permitted to be used outside their ~~listing limitationssystem volume and hydraulic calculation requirements~~, provided the temperature range limitations are not exceeded. 5.3.4.4.1.1 All other requirements of the listed antifreeze shall be adhered to.		
Statement	This language more specifically identifies the installation requirements for how an antifreeze solution can be used outside of their listing requirements.		

Section	PI	PAGE	DISPOSITION
5.3.4.4.2	145		Create a first revision based on PI 145
Proposed Text (PI)	5.3.4.4.2* An existing <u>nonlisted</u> antifreeze solution <u>that tests within it's specifications</u> shall be permitted to remain in an <u>existing</u> system, provided the <u>antifreeze solution is known to be factory premixed and the</u> concentration of the ~~factory premixed antifreeze~~ solution is limited to 30 percent propylene glycol by volume or 38 percent glycerine by volume.		
Committee Text (FR)	5.3.4.4.2* An existing <u>nonlisted</u> antifreeze solution <u>that tests within it's specified concentration specifications</u> shall be permitted to remain in an <u>existing</u> system, provided the <u>concentration of premixed antifreeze solution is known to be factory premixed and the</u> ~~concentration of the factory premixed antifreeze~~ solution is limited to 30 percent propylene glycol by volume or 38 percent glycerine by volume.		
Statement	This language helps clarify of the allowances for legacy antifreeze to remain in service.		

Section	PI	PAGE	DISPOSITION
5.3.4.4.3	146		Create a first revision based on PI 146
Proposed Text (PI)	5.3.4.4.3 ~~Premixed-Nonlisted~~ <u>factory premixed</u> antifreeze solutions of propylene glycol exceeding 30 percent concentration by volume shall be permitted for use with ESFR sprinklers, provided the ESFR sprinklers are listed for such use in a specific application.		

Committee Text (FR)	5.3.4.4.3 ~~Premixed Nonlisted factory premixed~~ antifreeze solutions of propylene glycol exceeding 30 percent concentration by volume shall be permitted for use with ESFR sprinklers, provided the ESFR sprinklers are listed for such use in a specific application.
Statement	This language clarifies where legacy antifreeze solutions can remain in service.

Section	PI	PAGE	DISPOSITION
New 5.4.1.3.2.1	104		Create a first revision based on PI 104
Proposed Text (PI)	5.4.1.3.2.1 Where the requirements of 5.4.1.3.2 can not be met a sprinkler with the next closest larger orifice shall be allowed for replacement.		
Committee Text (FR)	5.4.1.3.2* Where replacing residential sprinklers manufactured prior to 2003 that are no longer available from the manufacturer and are installed using a design density less than 0.05 gpm/ft²(204 mm/min), a residential sprinkler with an equivalent K-factor (± 5 percent ~~or next larger k-factor~~) shall be permitted to be used provided the currently listed coverage area for the replacement sprinkler is not exceeded.		
Statement	There are some existing k-factor sprinklers for which a replacement cannot be procured. A sprinkler with a slightly larger k-factor will allow the space to be protected with a slightly larger flow when a sprinkler first activates.		

Section	PI	PAGE	DISPOSITION
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5.4.1.6.1	138		Move to resolve PI 138
Proposed Text (PI)	5.4.1.6.1 The sprinklers shall correspond proportionally to the types and temperature ratings of the sprinklers in the property.		
Committee Text (FR)			
Statement	The spare sprinkler cabinet already requires a legend with a number of sprinklers required in the cabinet, it would be in conflict with NFPA 13 as only one sprinkler of each type is required to be provided in the spare sprinkler cabinet.		

Section	PI	PAGE	DISPOSITION
5.4.1.6.5	113		Create a first revision based on PI 113
Proposed Text (PI)	5.4.1.6.5* One sprinkler wrench as specified by the sprinkler manufacturer shall be provided in the cabinet for each type of sprinkler installed to be used for the removal and installation of sprinklers in the system.		
Committee Text (FR)	A.5.4.1.6.5 One sprinkler wrench design can be appropriate for many types of sprinklers, and multiple wrenches of the same design should not be required. <u>The sprinkler wrench as specified by the manufacturer should not be required for the removal of sprinklers, but could be beneficial for the removal of concealed or other special sprinklers.</u>		
Statement	Since sprinklers that are being removed will not be reused, it is not necessary to require an approved wrench from the manufacturer to facilitate the removal of the sprinkler.		

Section	PI	PAGE	DISPOSITION
5.4.1.6.5.1	114		Create a first revision based on PI 114
Proposed Text (PI)	5.4.1.6.5.1 The sprinkler wrench shall be permitted to be maintained on the premises so that any sprinklers that have operated or been damaged in any way can be promptly replaced.		
Committee Text (FR)	5.4.1.6.5* One sprinkler wrench as specified by the sprinkler manufacturer shall be provided ~~in the cabinet and maintained on the premises with the spare sprinklers~~ for each type of sprinkler installed to be used for the removal and installation of sprinklers in the system.		
Statement	Alternative language meets the submitters intent and aligns with the requirement to have spare sprinkler provided on the premises.		

Section	PI	PAGE	DISPOSITION
5.4.1.6.6.1	139		Create a first revision based on PI's 139, 155, 157, & 158
Proposed Text (PI)	5.4.1.6.6.1* The list shall include the following: (1) Sprinkler identification number (SIN) if equipped; or the manufacturer, model, orifice, deflector type, thermal sensitivity, and pressure rating (2) General description ~~(2)~~ (3) Quantity of each type contained in the building ~~(3)~~ (4) Quantity of each type to be contained in the cabinet (5) Issue or revision date of the list		

	~~(4)~~ (6) <u>Manufacturers sprinkler wrench model for each sprinkler type</u>
Committee Text (FR)	<u>[Extract NFPA 13 16.2.7.7.1 and A.16.2.7.7.1]</u> <u>[Extract Figure A.16.2.7.7.1]</u>
Statement	This aligns the spare sprinkler list with the requirements in NFPA 13 and NFPA 13R for the next editions.

Section	PI	PAGE	DISPOSITION
5.4.1.6.6.1	155		Create a first revision based on PI's 139, 155, 157, & 158
Proposed Text (PI)	5.4.1.6.6.1* The list shall include the following: (1) Sprinkler identification number (SIN) if equipped; or the manufacturer, model, orifice, deflector type, thermal sensitivity, and pressure rating <u>(2)</u> General description ~~(2)~~(3) <u>Quantity of each type installed in the property</u> <u>(4)</u> Quantity of each type to be contained in the cabinet ~~(3)~~(5) <u>Manufacturer's sprinkler wrench model number for each sprinkler type</u> ~~(4)~~(6) <u>Issue or revision date of the list</u>		
Committee Text (FR)			
Statement	See the action and statement for PI 139		

Section	PI	PAGE	DISPOSITION																
A.5.4.1.6.6.1	157		Create a first revision based on PI's 139, 155, 157, & 158																
Proposed Text (PI)	A.5.4.1.6.6.1 The minimum information in the list contained in the spare sprinkler cabinet should be marked with the following sprinkler identification described in 5.4.1.6.6.1: General~~a general~~ description of the sprinkler, including upright, pendent, residential, ESFR, and so forth; the quantity of each type of sprinkler installed in the property; the Quantity~~quantity~~ of each type sprinklers that is to be maintained in the spare sprinkler cabinet; and sprinkler wrench type An example of the list is shown in Figure A.5.4.1.6.6.1. Figure A.5.4.1.6.6.1 Sample List. [13:Figure A.16.2.7.7.1] <table><tr><th colspan="4">Sprinklers Contained in this Cabinet</th></tr><tr><th>Sprinkler Identification, SIN</th><th>General Description</th><th>Temperature Rating, °F</th><th>Sprinkler Quantity Maintained</th></tr><tr><td>TY9128</td><td>Extended Coverage, K-25, upright</td><td>165</td><td>6</td></tr><tr><td>VK494</td><td>Residential concealed pendent</td><td>155</td><td>6</td></tr></table> Issued: 8/31/19 Revised:			Sprinklers Contained in this Cabinet				Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained	TY9128	Extended Coverage, K-25, upright	165	6	VK494	Residential concealed pendent	155	6
Sprinklers Contained in this Cabinet																			
Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained																
TY9128	Extended Coverage, K-25, upright	165	6																
VK494	Residential concealed pendent	155	6																
Committee Text (FR)																			
Statement	See the action and statement for PI 139																		

Section	PI	PAGE	DISPOSITION																
A.5.4.1.6.6.1	158		Create a first revision based on PI's 139, 155, 157, & 158																
Proposed Text (PI)	[Modify the Figure by adding a new column that states “Sprinkler Quantity in the Property,” and a new column that states “Sprinkler Wrench Type.”] A.5.4.1.6.6.1 The minimum information in the list contained in the spare sprinkler cabinet should be marked with the following: (1) General description of the sprinkler, including upright, pendent, residential, ESFR, and so forth (2) Quantity of sprinklers to be maintained in the spare sprinkler cabinet An example of the list is shown in Figure A.5.4.1.6.6.1. Figure A.5.4.1.6.6.1 Sample List. [13:Figure A.16.2.7.7.1] <table><tr><th colspan="4">Sprinklers Contained in this Cabinet</th></tr><tr><th>Sprinkler Identification, SIN</th><th>General Description</th><th>Temperature Rating, °F</th><th>Sprinkler Quantity Maintained</th></tr><tr><td>TY9128</td><td>Extended Coverage, K-25, upright</td><td>165</td><td>6</td></tr><tr><td>VK494</td><td>Residential concealed pendent</td><td>155</td><td>6</td></tr></table> Issued: 8/31/19 Revised:			Sprinklers Contained in this Cabinet				Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained	TY9128	Extended Coverage, K-25, upright	165	6	VK494	Residential concealed pendent	155	6
Sprinklers Contained in this Cabinet																			
Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained																
TY9128	Extended Coverage, K-25, upright	165	6																
VK494	Residential concealed pendent	155	6																

Committee Text (FR)	
Statement	See the action and statement for PI 139

Section	PI	PAGE	DISPOSITION
5.4.2.2	58		Create a first revision based on PI 58
Proposed Text (PI)	5.4.2.2 Refrigerated spaces or other areas within the building interior where temperatures are subject to freezing and maintained at or below 40°F (4°C) shall not be permitted to be left wet.		
Committee Text (FR)	5.4.2.2 Refrigerated spaces or other areas within the building interior <u>that are subject to freezing where temperatures are subject to freezing and maintained at or below 40°F (4°C)</u> shall not be permitted to be left wet.		
Statement	NFPA 13 allows for piping to be below 40 degrees in refrigerated spaces if it is not subject to freezing. Coolers may be maintained between 33-40 degrees and it may not be considered a deficiency or an impairment in these areas.		

Section	PI	PAGE	DISPOSITION
New 5.4.5	154		Create a first revision based on PI 154
Proposed Text (PI)	5.4.5 Inactive Sprinkler System Components 5.4.5.1 Where all or part of an inactive sprinkler system is abandoned in place, components including sprinklers, hose valves and hoses, and alarm devices shall be removed. [13, 2022]		

	<u>5.4.5.2</u> <u>Control valves abandoned in place shall have the operating mechanisms removed. [13, 2022]</u> <u>5.4.5.3</u> <u>Sprinkler system piping and/or valves abandoned in place shall be uniquely identified to differentiate them from active system piping and valves. [13, 2022]</u>
Committee Text (FR)	<u>5.4.54.1.12 Inactive Sprinkler Water-based Fire Protection System Components</u> ~~5.4.5.1~~ <u>4.1.12.1</u> <u>Where all or part of an inactive ~~sprinkler~~water-based fire protection system is abandoned in place, components including sprinklers, hose valves and hoses, and alarm devices shall be removed. [13, 2022]</u> ~~5.4.5.2~~ <u>4.1.12.2</u> <u>Control valves abandoned in place shall have the operating mechanisms removed. [13, 2022]</u> ~~5.4.5.3~~ <u>4.1.12.3</u> ~~Sprinkler s~~<u>System piping and/or valves abandoned in place shall be uniquely identified to differentiate them from active system piping and valves. [13, 2022]</u>
Statement	This new language provides the needed guidance so inspectors don't confuse these abandoned components with ones they should be inspecting. Marking abandoned piping will hopefully eliminate mistakes when modifying a system. This new language applies to all systems and is preferred in Chapter 4.

Section	PI	PAGE	DISPOSITION
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A.5.2.5	140		Create a first revision based on PI 140
Proposed Text (PI)	A.5.2.5 The hydraulic design information sign should be secured to the riser with durable wire, chain, or equivalent. (See <i>Figure A.5.2.5</i>.) <u>When the hydraulic design information sign is missing it can be difficult to locate the appropriate information that is required to be on the sign. Engaging the building owner could aid in locating this information as they may be able to locate previous owners or the installing contractor. If the information is not accessible, then the system may have to be evaluated in accordance with Chapter 30 of NFPA 13 to determine the required information.</u> Figure A.5.2.5 Sample Hydraulic Design Information Sign. [13:Figure A.29.4]		

	This system as shown on company print no dated for at contract no is designed to discharge at a rate of gpm/ft² (L/min/m²) of floor area over a maximum area of ft² (m²) when supplied with water at a rate of gpm (L/min) at psi (bar) at the base of the riser. Hose stream allowance of gpm (L/min) is included in the above. Occupancy classification Commodity classification Maximum storage height
Committee Text (FR)	A.5.2.5 The hydraulic design information sign should be secured to the riser with durable wire, chain, or equivalent. (See <i>Figure A.5.2.5</i>.) When the hydraulic design information sign is missing it can be difficult to locate the appropriate information that is required to be on the sign. Engaging the building owner could aid in locating this information as they may be able to locate previous owners or the installing contractor. If the information is not accessible, then the system may have to be evaluated in accordance with Chapter 30 of NFPA 13 to determine the required information.

Figure A.5.2.5 Sample Hydraulic Design Information Sign. [13:Figure A.29.4]

This system as shown on company
print no dated
for
at contract no
is designed to discharge at a rate of gpm/ft²
(L/min/m²) of floor area over a maximum area of
ft² (m²) when supplied with water at a rate of
gpm (L/min) at psi (bar) at the base of the riser.
Hose stream allowance of gpm (L/min)
is included in the above.
Occupancy classification
Commodity classification
Maximum storage height

Statement	This may assist the owner and contractor with some of the possible steps that can be taken to replace the hydraulic design information sign with the appropriate information.
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Section	PI	PAGE	DISPOSITION
A.5.3.1.1.2	120		Create a first revision based on PI 120

Proposed Text (PI)	A.5.3.1.1.2 Examples of these environments are paper mills, packing houses, tanneries, alkali plants, organic fertilizer plants, foundries, forge shops, fumigation areas, pickle and vinegar works, stables, storage battery rooms, electroplating rooms, galvanizing rooms, steam rooms of all descriptions including moist vapor dry kilns, salt storage rooms, locomotive sheds or houses, drivewayspool equipment rooms, areas exposed to outside weather, areas around bleaching equipment in flour mills, and portions of any area where corrosive vapors prevail, outdoor installation with a corrosive environment.
Committee Text (FR)	A.5.3.1.1.2 Examples of these environments are paper mills, packing houses, tanneries, alkali plants, organic fertilizer plants, foundries, forge shops, fumigation areas, pickle and vinegar works, stables, storage battery rooms, electroplating rooms, galvanizing rooms, steam rooms of all descriptions including moist vapor dry kilns, salt storage rooms, locomotive sheds or houses, drivewayspool equipment rooms, areas exposed to outside weather, areas around bleaching equipment in flour mills, and portions of any area where corrosive vapors prevail, outdoor installation with a corrosive environment.
Statement	The committee agrees that driveways and outdoor areas do not necessarily make the environment corrosive. However, exposure to the environment, pool equipment rooms, and areas located near the ocean are notorious for corrosion.

Section	PI	PAGE	DISPOSITION
6.1.1.2	111		FR
Proposed Text (PI)	[See Word Document 25-2023 6 1 1 2 PI 111 TG3]		
Committee Text (FR)	As written in word document		
Statement	This establishes requirements in Table 6.1.1.2 that correlate with the requirements in Chapter 13. [NOTE: TG suggest verifying the definitions coordinate with NFPA 25 TG1.]		

Section	PI	PAGE	DISPOSITION
6.2.3.1	60		See PI 100
Proposed Text (PI)	6.2.3.1 Hose connections shall be inspected annually for the following conditions: (1) Valve cap(s) missing or damaged (2) Fire hose connection damaged (3) Valve handles missing or damaged (4) Cap gaskets missing or deteriorated (5) Valve leaking (6) Visible and physical obstructions to hose connections (7) Pressure restricting device missing		

	~~(8) Manual, semiautomatic, or dry standpipe valve does not operate smoothly~~ ~~(9)~~(8) Valve threads damaged
Committee Text (FR)	
Statement	

Section	PI	PAGE	DISPOSITION
6.2.3.1	100		FR based on PI 100 and PI 60
Proposed Text (PI)	6.2.3.1 Hose connections shall be inspected ~~annually~~<u>quarterly</u> for the following conditions: <u>- please clarify or bring hose connections and hose valves (12.6.1.1 into the same frequency as they are very similar and hose connections cover hose valves,</u> (1) Valve cap(s) missing or damaged (2) Fire hose connection damaged (3) Valve handles missing or damaged (4) Cap gaskets missing or deteriorated (5) Valve leaking (6) Visible and physical obstructions to hose connections (7) Pressure restricting device missing (8) Manual, semiautomatic, or dry standpipe valve does not operate smoothly (9) Valve threads damaged		

Committee
Text (FR)

~~6.2.3.1~~

~~Hose connections shall be inspected annually for the following conditions:~~

- ~~(1) Valve cap(s) missing or damaged~~
- ~~(2) Fire hose connection damaged~~
- ~~(3) Valve handles missing or damaged~~
- ~~(4) Cap gaskets missing or deteriorated~~
- ~~(5) Valve leaking~~
- ~~(6) Visible and physical obstructions to hose connections~~
- ~~(7) Pressure restricting device missing~~
- ~~(8) Manual, semiautomatic, or dry standpipe valve does not operate smoothly~~
- ~~(9) Valve threads damaged~~

[NOTE: Revise Table 6.1.1.2 for Hose Connections to reference chapter 13 instead of chapter 6.2.3 and delete frequency.]

13.6 Hose Valves and Hose Connections.

13.6.1 Inspection.

13.6.1.1

Hose valves shall be inspected ~~annually~~quarterly to verify that the valves are in the following condition:

- (1) Hose caps are in place and not damaged.
- (2) Hose threads are not damaged.
- (3) Valve handles are present and not damaged.
- (4) Gaskets are not damaged or showing signs of deterioration.
- (5) No leaks are present.
- (6) Valves are not obstructed or otherwise not capable of normal operation.

13.6.1.2

	Hose valves shall be inspected to ensure that hose caps are in place and not damaged. 13.6.1.3 Hose threads shall be inspected for damage. 13.6.1.4 Valve handles shall be present and not damaged. 13.6.1.5 Gaskets shall be inspected for damage or deterioration. 13.6.1.6 Hose valves shall be inspected for leaks. 13.6.1.7 Hose valves shall be inspected to ensure no obstructions are present. 13.6.1.8* Hose valves shall be inspected to ensure that restricting devices are present, where required. 13.6.1.9 Where approved by the authority having jurisdiction, existing hose valve restricting devices shall be permitted to be removed and shall not be recorded as a deficiency. A.13.6.1.8 NFPA 1 and NFPA 14 permit the removal of restricting devices in existing systems.
Statement	Delete section 6.2.3.1 since this section is redundant. Hose valves and their connections are covered in Chapter 13.6. Modifying 13.6.1.8 is a clarification to indicate “where required” since not all hose valves utilize restricting devices. Add annex language to clarify the removal of restricting devices based on installation and fire code requirements. Annual inspection of hose valves and hose connections is more appropriate annually rather than quarterly due to the secondary function of standpipes and there is no evidence that quarterly inspection is needed.

Section	PI	PAGE	DISPOSITION
7.3.1.2	188		Resolve
Proposed Text (PI)	7.3.1.2 Where underground piping supplies individual fire sprinkler, standpipe, water spray, or ~~foam~~agent-water sprinkler systems and there are no means to conduct full flow tests, tests generating the maximum available flows shall be permitted.		
Committee Text (FR)	N/A		
Statement	Wetting agents and additives covered by NFPA 18 and 18A are not currently within the scope of NFPA 25 and not within the scope of the NFPA 25 Technical Committee.		

Section	PI	PAGE	DISPOSITION
7.3.3	191		FR based on PI 191
Proposed Text (PI)	7.3.3 Monitor Nozzles. 7.3.3.1 Monitor nozzles ~~that are mounted on hydrants~~ shall be tested ~~as specified in 7.3.2~~<u>annually to ensure proper functioning</u>. 7.3.3.2 ~~All m~~Monitor nozzles shall be oscillated and moved throughout their full range ~~annually~~ to ensure proper operability.		
Committee Text (FR)	7.3.3 Monitor Nozzles. 7.3.3.1 Monitor nozzles ~~that are mounted on hydrants~~ shall be tested ~~as specified in 7.3.2~~<u>annually to ensure full functioning</u>.		

	7.3.3.2 All ~~m~~Monitor nozzles shall be oscillated and moved throughout their full range ~~annually~~ to ensure <u>full operation</u>~~proper operability~~.
Statement	The revised text now applies to all monitor nozzles, whether or not they are mounted on a hydrant.

Section	PI	PAGE	DISPOSITION
8.1.1.2.14	184		Resolve
Proposed Text (PI)	~~8.1.1.2.14—~~ ~~Back pressure on the engine turbos shall be measured annually.~~		
Committee Text (FR)	N/A		
Statement	The back pressure measurement on engine turbos is important of an indicator of possible troubles. Data has not been presented that justifies the decrease or removal of this testing annually. [NOTE: Several items in Table 8.1.1.2 that are currently identified as maintenance should be considered to be moved to testing.]		

Section	PI	PAGE	DISPOSITION
8.3.1.2.1	1		Resolve
Proposed Text (PI)	8.3.1.2.1 Except as permitted in 8.3.1.2.2 and 8.3.1.2.3, a weekly test frequency shall be required for the following electric fire pumps: (1) Fire pumps that serve fire protection systems in buildings that are beyond the pumping capacity of the fire department		

	(2) Fire pumps with limited service controllers (3) Vertical turbine fire pumps <u>that do not take suction from a water storage tank supplied from a public waterworks.</u> (4) Fire pumps taking suction from ground level tanks or a water source that does not provide sufficient pressure to be of material value without the pump
Committee Text (FR)	
Statement	This concept is already required in parenthesis (4).

Section	PI	PAGE	DISPOSITION
8.3.2.1.2	25		FR
Proposed Text (PI)	8.3.2.1.2 For fire pump installations that were installed under a standard (1993 and earlier editions of NFPA 20) that did not prohibit a design that required operation of a pressure relief valve to keep the discharge pressure below the rating of the system components, the pressure relief valve <u>and circulation relief valve</u> shall be permitted to operate as designed during a no-flow test. 8.3.2.1.2.1* The pressure readings on the discharge and suction gauges shall be recorded, and a pressure difference that is greater than 95 percent of the rated pump pressure shall be investigated and corrected. 8.3.2.1.2.2* The discharge temperature of the water shall be monitored and the pump shut down if necessary to prevent exposing the pump and/or driver to excessive temperatures.		

Committee Text (FR)	As written.
Statement	For the 1993 and earlier editions of NFPA 20, the main relief could be tied back into the suction. For these installations, the circulation relief may need to operate to cool the pump.

Section	PI	PAGE	DISPOSITION
8.3.7.1.1.1	123		FR based on PI 123
Proposed Text (PI)	8.3.7.1.1.1 The interpretation of the gross flow test performance relative to acceptably meeting the demands of all connected fire protection systems shall be the basis for determining acceptable performance of the ~~pump assembly and~~ connected water supply.		
Committee Text (FR)	8.3.7.1.1.1*<u>-</u> The interpretation of the gross flow test performance relative to acceptably meeting the demands of all connected fire protection systems shall be the basis for determining acceptable performance of the pump assembly and connected water supply. <u>A.8.3.7.1.1.1 The gross performance of the fire pump is not necessarily an indication of a deficient pump and could be a result of a degraded or obstructed water supply. Where the gross performance of the fire pump does not meet the demand of the fire protection systems downstream, the water supply should be evaluated.</u>		
Statement	The added Annex material provides clarification for analyzing pump test results.		

Section	PI	PAGE	DISPOSITION
8.3.7.2.3	159		Resolve

Proposed Text (PI)	8.3.7.2.3 The fire pump test results shall be considered acceptable if all of the following conditions are satisfied: (1) Fire pump meets the flow and pressure requirements of the most demanding system(s) supplied by the fire pump based on owner-provided system design information (2) *Fire pump supplies 100 percent of rated flow (3) *Net pressure at each flow point is at least 95 percent of one of the following: 1. Original manufacturer's pump curve <u>- In few cases Suction pressure is varying/impacting due to water supply/storage from manufacturer facility arrangement to actual site installation, pump net pressure is lesser than 95% of manufacturer facility, since the testing facility/locations are different the results are also differs and some cases exceeding the allowance provided.</u> 2. Original unadjusted field test curve <u>- Shall we compare the test result (conducted at Rated RPM) with unadjusted field test curve? Please clarify more on unadjusted field test, unadjusted of which test parameter and the comparable test result should satisfy what? On one hand test conducted with rated speed and on the other hand commissioning test result conducted with unadjusted to rated RPM. how good the comparison is?</u> 3. Test curve generated from the fire pump nameplate <u>- If the fire pump does not have 0% and 150% rated flow and pressure details on the nameplate, is it acceptable to compare only rated flow and pressure with test parameters?</u> (4) Requirements of 8.1.5 are met
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Committee Text (FR)	None
Statement	There are no proposed changes to this section, only questions. The submitter is encouraged to propose language for consideration at the Second Draft Meeting.

Section	PI	PAGE	DISPOSITION
9.2.6	27		Create Committee Input
Proposed Text (PI)	9.2.6 Tests During Interior Inspection. Where a drained interior inspection of a steel tank is required by 9.2.5.4, the following tests shall be conducted: <u>(1) NACE RP0288-2004 Inspection of Linings on Steel and Concrete shall be used when initial coating applications or coating repair is being performed.</u> <u>(2) Evaluation of tank coatings shall be made in accordance with the ~~adhesion test of~~ ASTM ~~D3359~~D610-08, <i>Standard Practice for Evaluating Degree of Rusting on Painted steel Surfaces</i>. “<i>This practice provides a standardized means for quantifying the amount and distribution of visible surface rust.</i>”~~Test Methods for Rating Adhesion by Tape Test~~, generally referred to as the “cross-hatch test.”</u> <u>(3) Evaluation of tank coatings shall be made in accordance with ASTM D714-02 Standard Test Method for Evaluating Degree of Blistering of Paints. “This test method employs photographic reference standards to evaluate the degree of blistering that may develop when paint systems are subjected to conditions which will cause blistering.”</u> ~~(2) Dry film thickness measurements shall be taken at random locations to determine the overall coating thickness.~~ ~~(3) Nondestructive ultrasonic readings shall be taken to evaluate the wall thickness where there is evidence of pitting or corrosion.~~ <u>(4) Interior surfaces shall be spot wet-sponge tested to detect pinholes, cracks, or other compromises in the coating. Special</u>		

	attention shall be given to sharp edges such as ladder rungs, nuts, and bolts. <u>(5) Destructive testing shall not be performed on in-service lining unless failure analysis is required b the owner. Refer to NACE PP0288-2004 Inspection of Linings on Steel and Concrete Section 3.3 for further information.</u> ~~(4)~~<u>(6)</u> <u>Nondestructive ultrasonic readings shall be taken to evaluate the wall thickness where there is evidence of pitting or corrosion.</u> ~~(5)~~<u>(7)</u> Tank bottoms shall be tested for metal loss and/or rust on the underside by use of ultrasonic testing where there is evidence of pitting or corrosion. Removal, visual inspection, and replacement of random floor coupons shall be an acceptable alternative to ultrasonic testing. ~~(6)~~<u>(8)</u> Tanks with flat bottoms shall be vacuum-box tested at bottom seams in accordance with test procedures found in NFPA 22.
Committee Text (FR)	Committee Input text as written.
Statement	The proposed language does not meet the manual of style. A Task Group will be created to draft language in line with the manual of style for review by the committee with the intention of creating a Public Comment or Second Revision.

Section	PI	PAGE	DISPOSITION
10.1.1.2	156		FR
Proposed Text (PI)	<u>[See Word Document 25-2023 10 1 1 2 PI 156 TG3]</u>		
Committee Text (FR)	As written		

Statement	This revision aligns the requirements in Table 10.1.1.2 with the requirements in 10.4.2.
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Section	PI	PAGE	DISPOSITION
11.1.1.2	183		FR
Proposed Text (PI)	[See Word Document 25-2023 11 1 1 2 PI 183 TG3]		
Committee Text (FR)	As written		
Statement	This revision corrects the section reference in the table. This is editorial.		

Section	PI	PAGE	DISPOSITION
Chapter 11	189		Resolve
Proposed Text (PI)	This action looks to change the term “foam” to “agent” throughout Chapter 11.		
Committee Text (FR)	N/A		
Statement	Wetting agents and additives covered by NFPA 18 and 18A are not currently within the scope of NFPA 25 and not within the scope of the NFPA 25 Technical Committee.		

Section	PI	PAGE	DISPOSITION
A.7.3.1.	71		FR
Proposed Text (PI)	A.7.3.1 Full flow tests of underground piping can be accomplished by several methods including, but not limited to, flow through yard hydrants, fire department connections once the check valve has been removed, main drain connections, and hose connections. The flow test and		

	<u>measurements</u> should be conducted in accordance with A.5.2.2.2 of NFPA 13 and NFPA 291 <u>to try and reach the full connected system demand flow for analysis of degradation</u>. Full flow tests of underground piping can also be accomplished during a five-year standpipe flow test or an annual fire pump flow test. A separate analysis should be performed in conjunction with these tests to determine if there's a deterioration of the available water flow and pressure from the water supply. Additional test gauges might be needed and placed at appropriate locations on the underground piping to perform the separate analysis.
Committee Text (FR)	As written.
Statement	This corrects the reference from NFPA 13 and emphasizes that a full flow test would mean meeting maximum system demand for comparison for determining deterioration.

Section	PI	PAGE	DISPOSITION
13.1.1.2	87, 169		<u>Create First Revision</u>
Proposed Text (PI)	[See Word Document 25-2023 13 1 1 2 PI 87 169 TG4]		
Committee Text (FR)	<u>Copy text/First Draft Revision – follow-up w/ C.D.</u>		
Statement	<u>Align with the requirements of NFPA 13 and 72.</u>		

Section	PI	PAGE	DISPOSITION
13.2.2.3	97		<u>Resolve</u>
Proposed Text (PI)	13.2.2.3 When there is a 10 percent reduction in full flow pressure or 3 second increase in rebound time when compared to the original acceptance test or previously performed tests, the cause of the reduction shall be identified and corrected if necessary.		
Committee Text (FR)			
Statement	<u>No data to support justification of “3 second increase in rebound time” and no other requirement to measure time in other documents or standards.</u>		

Section	PI	PAGE	DISPOSITION
13.2.3.2.3	62		<u>Resolve</u>
Proposed Text (PI)	13.2.3.2.3 ~~Activation-Audible alarm~~ of the ~~electrical~~ waterflow alarm device shall occur within ~~90-100~~ seconds of waterflow <u>after flow begins</u> at the alarm-initiating device when flow equal to ~~that or greater than that~~ from a single sprinkler of the smallest orifice size <u>or smaller</u> installed in the system occurs.		
Committee Text (FR)			
Statement	<u>Testing audible alarms is a requirement of NFPA 72. Switches are required to activate within 90 seconds.</u>		

Section	PI	PAGE	DISPOSITION
13.2.3.6	147, 148		<u>Create two (2) First Revisions</u>
Proposed Text (PI)	13.2.3.6* Testing waterflow alarm devices on dry pipe, preaction, or deluge systems shall be accomplished by using <u>any of the following methods:</u> (1) <u>Opening the</u> bypass connection- (2) <u>Opening the inspector's test connection</u> ~~(1)(3)~~ <u>Using the automated test equipment in accordance with</u> <u>4.6.6</u> A.13.2.3.6 ~~Opening the inspector's test connection can cause the system to trip accidentally.~~ <u>When conducting more frequent testing of waterflow alarms, using the bypass or automated test equipment can be used to</u>		

	<u>avoid tripping of the valve. When conducting the annual trip test and 3-year full flow testing, using the inspectors test connection could be a means to test the waterflow alarm.</u>
Committee Text (FR)	<u>13.2.3.6*</u> <u>Testing waterflow alarm devices on dry pipe, preaction, or deluge systems shall be accomplished by using any of the following methods:</u> <u>(1)Opening the bypass connection</u> <u>(2)Opening the inspector's test connection</u> <u>(3)Using the automated test equipment in accordance with 4.6.6</u> <u>A.13.2.3.6</u> <u>When conducting more frequent testing of waterflow alarms, bypass or automated test equipment might be used to avoid tripping of the valve. When conducting the annual trip test and 3-year full flow testing, using the inspectors test connection could be a means to test the waterflow alarm.</u>
Statement	<u>All methods to test were not captured in the existing text.</u> <u>Annex helped clarify the acceptable testing methods.</u>

Section	PI	PAGE	DISPOSITION
13.2.3.7	126		<u>Create First Revision</u>
Proposed Text (PI)	~~13.2.3.7 Waterflow Alarm Device Status.~~ ~~13.2.3.7.1—~~ ~~During testing and maintenance, vane-type waterflow alarm devices shall remain in service unless impairment procedures are followed in accordance with NFPA 72 or the adopted fire code.~~ ~~13.2.3.7.1.1*~~		

	~~Disabling vane-type waterflow alarm devices by preventing movement of the vane or stem shall be prohibited.~~ ~~13.2.3.7.1.2*~~ ~~Interruption of the signal sent by the vane-type waterflow alarm device is permitted in accordance with 13.2.3.7.1.3 and 13.2.3.7.1.4.~~ ~~13.2.3.7.1.3~~ ~~Interruption of the waterflow alarm circuit shall be accomplished using a device listed for the purpose.~~ ~~13.2.3.7.1.4~~ ~~Interruption of the waterflow alarm circuit shall result in an audible and visual trouble signal in accordance with NFPA 72 or the adopted fire code, or other approved indication at the switch signal in accordance with NFPA 72 or the adopted fire alarm code, or other approved indication at the switch.~~
Committee Text (FR)	<u>Delete 13.2.3.7.1.2, 13.2.3.7.1.3 and 13.2.3.7.1.4 and associated Annex.</u>
Statement	<u>Deleted text was confusing. NFPA 72 adequately addresses disconnecting the alarm/flow switch circuit. Certain States require a certified alarm technician to perform functions in the fire alarm control unit (FACU).</u>

Section	PI	PAGE	DISPOSITION
13.2.4.2	22, 23, 24		<u>Create First Revision</u>
Proposed Text (PI)	13.2.4.2*		

	Gauges shall be replaced ~~every 5 years~~ <u>after the date of installation</u> or tested ~~every 5 years~~ by comparison with a calibrated gauge <u>every 5 years</u>. A.13.2.4.2 The gauge is permitted to have an accuracy level of ± 3 percent of the maximum (i.e., full-scale) gauge reading. For example, a gauge having 200 psi (13.8 bar) maximum range installed on a system with 60 psi (4.1 bar) normal pressure can be permitted if the gauge reads from 54 psi to 66 psi (3.7 to 4.5 bar). Gauges located on riser manifolds can be replaced with new gauges or compared to a calibrated gauge from the same three-way test outlet. Where multiple system risers are supplied by a common water supply source with gauges located at the same elevation, are not divided by a check valve, and the gauges for all systems read ± 3 percent of the other(s), only one gauge shall be required to be tested to determine if a replacement is required. <u>The date of manufacture marked gauges does not limit when they can be used. These devices have unlimited shelf life. Where gauges are replaced in lieu of tested, the 5-year replacement interval begins on the date of installation.</u> <u>To aid in compliance and enforcement, an adhesive label that allows recording of date of installation and recording of the date to test or replace should be installed on sprinkler gauges (See Figure A.13.2.4.2 for an example of a typical sprinkler gauge record label).</u>
Committee Text (FR)	<u>13.2.4.2*</u> <u>Gauges shall be replaced 5 years after the date of installation or tested by comparison with a calibrated gauge every 5 years.</u> <u>A.13.2.4.2</u> <u>The gauge is permitted to have an accuracy level of ± 3 percent of the maximum (i.e., full-scale) gauge reading. For example, a gauge having 200 psi (13.8 bar) maximum range installed on a system with 60 psi (4.1 bar) normal pressure can be permitted if the gauge reads from 54 psi to 66 psi (3.7 to 4.5 bar). Gauges located on riser manifolds can be replaced with new gauges or compared to a calibrated gauge from the same three-way test outlet. Where multiple system risers are supplied by a common water supply source with gauges located at the</u>

	<u>same elevation, are not divided by a check valve, and the gauges for all systems read ± 3 percent of the other(s), only one gauge shall be required to be tested to determine if a replacement is required.</u> <u>The date of manufacture marked gauges does not limit when they can be used. These devices have unlimited shelf life. Where gauges are replaced in lieu of tested, the 5-year replacement interval begins on the date of installation.</u> <u>One way to aid in compliance and enforcement, an adhesive label that allows recording of date of installation or comparison to a calibrated gauge to record the date on the gauge (See Figure A.13.2.4.2 for an example of a typical sprinkler gauge record label).</u>
Statement	<u>This language clarifies the requirement to replace or compare installed gauges to a calibrated gauge.</u>

Section	PI	PAGE	DISPOSITION
13.2.4.3	124		<u>Create First Revision</u>
Proposed Text (PI)	13.2.4.3 Gauges <u>with pressure readings</u> not accurate to within 3 percent ~~of the full scale~~ shall be recalibrated or replaced.		
Committee Text (FR)	<u>13.2.4.3</u> <u>Gauges with pressure readings not accurate to within 3 percent as compared to the calibrated gauge shall be recalibrated or replaced.</u>		
Statement	<u>The new text clarifies gauge pressure readings should be within 3 percent of the actual pressure determined by a calibrated gauge.</u>		

Section	PI	PAGE	DISPOSITION
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13.3.3.4	106		<u>Create First Revision</u>
Proposed Text (PI)	13.3.3.4 A valve status test shall be conducted any time ~~the a~~ control valve is closed and reopened ~~at system riser~~ .		
Committee Text (FR)	<u>13.3.3.4</u> <u>A valve status test shall be conducted any time a control valve is closed and reopened.</u>		
Statement	<u>Closed valves remain an issue for system failures. This test will ensure control valves are open.</u>		

Section	PI	PAGE	DISPOSITION
13.4.3.1.2.1	94		<u>Create First Revision</u>
Proposed Text (PI)	~~13.4.3.1.2.1~~ ~~Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every 5 years.~~		
Committee Text (FR)			
Statement	<u>Corrosion problem does not go away because the valve is externally reset.</u>		

Section	PI	PAGE	DISPOSITION
13.4.3.1.2.1	128		<u>Resolve</u>

Proposed Text (PI)	13.4.3.1.2.1 Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every ~~5~~ <u>3</u> years.
Committee Text (FR)	
Statement	<u>See PI 94</u>

Section	PI	PAGE	DISPOSITION
13.4.3.3.2.1	96		<u>Create First Revision</u>
Proposed Text (PI)	~~13.4.3.3.2.1—~~ ~~Interior cleaning and parts replacement or repair shall be permitted every 5 years for valves that can be reset without removal of a faceplate.~~		
Committee Text (FR)			
Statement	<u>See PI 94</u>		

Section	PI	PAGE	DISPOSITION
13.4.4.1.2.1	95		<u>Create First Revision</u>
Proposed Text (PI)	~~13.4.4.1.2.1—~~ ~~Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every 5 years.~~		
Committee Text (FR)			

Statement	See PI 94
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Section	PI	PAGE	DISPOSITION
13.4.4.1.2.1	129		Resolve
Proposed Text (PI)	13.4.4.1.2.1 Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every ~~5~~ <u>3</u> years.		
Committee Text (FR)			
Statement	See PI 94		

Section	PI	PAGE	DISPOSITION
13.4.4.2.7.4	192		Resolve
Proposed Text (PI)	13.4.4.2.7.4 Where the hydraulically most remote nozzle or sprinkler is inaccessible, nozzles or sprinklers in other than ~~foam~~ <u>agent</u> -water sprinkler systems shall be permitted to be inspected visually without taking a pressure reading on the most remote nozzle or sprinkler.		
Committee Text (FR)			
Statement	NFPA 18 and 18A are not water-based system installation standards. Within 18 it references NFPA 13, NFPA 14, and NFPA 15 as acceptable system to utilize wetting agents. NFPA 11 is not referenced, and it is inappropriate to replace "agent" for "foam" one for one. NFPA 18 requires "wetting agents" to be tested annually. NFPA 25 does not need to address this.		

	<u>NFPA 18 already covers everything within its scope: 10.2 Inspection of Wetting Agent Concentrate. Annually, samples of wetting agent concentrate shall be sent to the manufacturer or qualified laboratory for quality condition testing.</u>
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Section	PI	PAGE	DISPOSITION
New 13.4.4.2.14	31		<u>Create First Revision</u>
Proposed Text (PI)	<u>Solenoid Supervisory Switch.</u> <u>Supervisory switches monitoring the position of coil shall be tested quarterly.</u> <u>[Renumber subsequent sections]</u>		
Committee Text (FR)	<u>Solenoid Supervisory Switch.</u> <u>Supervisory switches monitoring the position of coil shall be tested quarterly.</u>		
Statement	<u>NFPA 13 requires solenoid supervisory switch monitoring and aligns with the preaction system low air switch requirement.</u>		

Section	PI	PAGE	DISPOSITION
New 13.4.5.1.3.1	109		<u>Resolve</u>
Proposed Text (PI)	<u>13.4.5.1.3.1</u> <u>Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every 5 years.</u>		
Committee Text (FR)			

Statement	See PI 94
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Section	PI	PAGE	DISPOSITION
New 13.4.5.1.3.1	130		Resolve
Proposed Text (PI)	13.4.5.1.3.1 Internal inspection of mechanical dry pipe valves that can be reset without removal of faceplate shall be permitted to be conducted every 3 years.		
Committee Text (FR)			
Statement	See PI 94		

Section	PI	PAGE	DISPOSITION
13.4.5.2.6	86		Create First Revision
Proposed Text (PI)	13.4.5.2.6 Low and high air pressure alarms, if provided, shall be tested annually in accordance with the manufacturer's instructions.		
Committee Text (FR)	13.4.5.2.6 Low and high air pressure alarms, if provided, shall be tested annually in accordance with the manufacturer's instructions.		
Statement	Aligns with NFPA 13 and 72 requirements.		

Section	PI	PAGE	DISPOSITION
New 13.8.5.2	163		<u>Resolve</u>
Proposed Text (PI)	<u>13.8.5.2</u> <u>Where the length of the piping from the fire department connection to the fire department check valve is less than 48" and can be visually inspected, the 5-year hydrostatic test shall not be required.</u>		
Committee Text (FR)			
Statement	<u>The purpose of the 5 year hydrostatic test is to ensure structural integrity of the material which cannot be verified via visual inspection.</u>		

Section	PI	PAGE	DISPOSITION
13.10.2	167		<u>Create First Revision</u>
Proposed Text (PI)	13.10.2 Inspection. Air compressors and nitrogen generators dedicated to water-based fire protection systems shall be inspected monthly to verify the following: 1. Air compressor or nitrogen generator is free of physical damage. 2. Power wiring to the air compressor is intact and free of physical damage. 3. Piping from the air compressor or nitrogen generator to the fire protection system is intact and free of physical damage. 4. The means of anchoring the air compressor or nitrogen generator to the structure or to the system piping is secure, tight, and free of physical damage.		

	<u>5.</u> Air compressors requiring oil have the required amount of oil in the oil reservoir. <u>5-6.</u> <u>Vapor phase corrosion inhibitor equipment is intact and free of physical damage.</u>
Committee Text (FR)	<u>13.10.2 Inspection.</u> <u>Air compressors and nitrogen generators dedicated to water-based fire protection systems shall be inspected monthly to verify the following:</u> <u>1. Air compressor or nitrogen generator is free of physical damage.</u> <u>2. Power wiring to the air compressor is intact and free of physical damage.</u> <u>3. Piping from the air compressor or nitrogen generator to the fire protection system is intact and free of physical damage.</u> <u>4. The means of anchoring the air compressor or nitrogen generator to the structure or to the system piping is secure, tight, and free of physical damage.</u> <u>5. Air compressors requiring oil have the required amount of oil in the oil reservoir.</u> <u>6. Vapor corrosion inhibitor equipment is intact and free of physical damage.</u>
Statement	<u>Aligns with new NFPA 13 allowance for Vapor Corrosion Inhibitor equipment.</u>

Section	PI	PAGE	DISPOSITION
New 13.10.4.3	168		<u>Create First Revision</u>
Proposed Text (PI)	<u>13.10.4.3</u> <u>Vapor phase corrosion inhibitors shall be maintained in accordance with the manufacturer's instructions.</u>		

Committee Text (FR)	<u>13.10.4.3</u> <u>Vapor corrosion inhibitors shall be maintained in accordance with the manufacturer's instructions.</u>
Statement	<u>Aligns with new NFPA 13 allowance for Vapor Corrosion Inhibitor equipment.</u>

Section	PI	PAGE	DISPOSITION
New 14.2.1.1.1	66		<u>Resolve</u>
Proposed Text (PI)	<u>14.2.1.1.1</u> <u>Internal examination shall be performed at the following minimum five point:</u> <u>(1) System valve or water control valve, where provided</u> <u>(2) Cross main – most remote end of remote cross main</u> <u>(3) Branch line near the most remote line at connection to cross main</u> <u>(4) Branch line near the most remote line at end of branch line</u> <u>(1)(5) Branch line piping directly connected to the most remote low point drain</u>		
Committee Text (FR)			
Statement	<u>Internal examination at these points are required per 14.3. The internal assessment can be performed by various other means.</u>		

Section	PI	PAGE	DISPOSITION
New 14.2.1.6	142		<u>Create First Revision</u>

Proposed Text (PI)	<u>14.2.1.6*</u> <u>Antifreeze loops connected to a wet pipe sprinkler system shall not be required to comply with Section 14.2</u> <u>A.14.2.1.6</u> <u>Antifreeze loops connected to a wet pipe sprinkler system should not require an internal assessment because other portions of the system (cross main and branch line) can be used to meet the requirements of Section 14.2. Standalone antifreeze systems should be drained to conduct the internal assessment and the solution placed back into the system without replacing the antifreeze solution provided it meets the requirements outlined in Section 5.3.4.</u>
Committee Text (FR)	<u>14.2.1.6*</u> <u>Antifreeze systems not exceeding 40 gal. connected to a wet pipe sprinkler system shall not be required to comply with Section 14.2</u> <u>A.14.2.1.6</u> <u>Antifreeze systems connected to a wet pipe sprinkler system should not require an internal assessment because other portions of the system (cross main and branch line) can be used to meet the requirements of Section 14.2. Standalone antifreeze systems should be drained to conduct the internal assessment and the solution placed back into the system without replacing the antifreeze solution provided it meets the requirements outlined in Section 5.3.4.</u>
Statement	<u>Draining the antifreeze can take extensive time and resources as well as there is the possibility of spillage and contamination of the solution.</u>

Section	PI	PAGE	DISPOSITION
14.3.1	67		<u>Resolve</u>
Proposed Text (PI)	14.3.1* An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist: (1) Defective intake for fire pumps taking suction from open bodies of water (2) Discharge of obstructive material during routine water tests (3) Foreign materials in fire pumps, dry pipe valves, or check valves (4) Foreign material in water during drain tests or plugging of inspector's test connection(s) (5) Unknown materials heard in the system piping during draining, refilling, or otherwise flowing water through the system (6) Plugged sprinklers (7) Foreign organic or inorganic material with the potential to obstruct pipe or sprinklers found in the pipe (8) Failure to flush yard piping or surrounding public mains following new installations or repairs (9) Record of broken public mains in the vicinity (10) Abnormally frequent false tripping of a dry pipe valve(s) (11) System returned to service after an extended shutdown (i.e., greater than 1 year)		

	(12) Reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems (13) System supplied with raw water via the fire department connection (14) Leakage caused by internal corrosion (15) *A 25 percent <u>increase change</u> or a 5-second <u>increase change</u> for portions of systems protecting dwelling units in the total water delivery time for dry pipe systems and double interlock preaction systems, with normal air pressure on the system and starting at the time of fully opened inspection test connection, when compared to the original system acceptance test (16) *Failure to maintain a nitrogen supply, except in instances of preplanned impairments, installed in accordance with NFPA 13 when a Hazen-Williams C value of 120 is used for dry and preaction systems.
Committee Text (FR)	
Statement	<u>Decrease in water transit time should not be an indicator warranting an obstruction investigation.</u>

Section	PI	PAGE	DISPOSITION
14.3.1	92		<u>Resolve</u>
Proposed Text (PI)	14.3.1* An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist: (1) Defective intake for fire pumps taking suction from open bodies of water		

- | | |
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| | <ul style="list-style-type: none"> (2) Discharge of obstructive material during routine water tests (3) Foreign materials in fire pumps, dry pipe valves, or check valves (4) Foreign material in water during drain tests or plugging of inspector's test connection(s) (5) Unknown materials heard in the system piping during draining, refilling, or otherwise flowing water through the system (6) Plugged sprinklers (7) Foreign organic or inorganic material with the potential to obstruct pipe or sprinklers found in the pipe (8) Failure to flush yard piping or surrounding public mains following new installations or repairs (9) Record of broken public mains in the vicinity (10) Abnormally frequent false tripping of a dry pipe valve(s) (11) System returned to service after an extended shutdown (i.e., greater than 1 year) (12) Reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems (13) System supplied with raw water via the fire department connection (14) Leakage caused by internal corrosion (15) *A 25 percent increase or a 5-second increase for portions of systems protecting dwelling units in the total water delivery time for dry pipe systems and double interlock preaction systems, with normal air pressure on the system and starting at the time of fully opened inspection test connection, when compared to the original system acceptance test <u>(16)</u> *Failure to maintain a nitrogen supply, except in instances of preplanned impairments, installed in accordance with NFPA 13 when a Hazen-Williams C value of 120 is used for dry and preaction systems. |
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	~~(16)~~ (17) <u>Ice is observed in dry pipe or preaction sprinkler system piping.</u>
Committee Text (FR)	
Statement	<u>NFPA 25 is a minimum standard. It is not uncommon to find small quantities of ice in a dry pipe and preaction systems which should not create a requirement for an obstruction investigation.</u>

Section	PI	PAGE	DISPOSITION
14.3.1	115		<u>Create First Revision</u>
Proposed Text (PI)	14.3.1* An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist: (1) Defective intake for fire pumps taking suction from open bodies of water (2) Discharge of obstructive material during routine water tests (3) Foreign materials in fire pumps, dry pipe valves, or check valves (4) Foreign material in water during drain tests or plugging of inspector's test connection(s) (5) Unknown materials heard in the system piping during draining, refilling, or otherwise flowing water through the system (6) Plugged sprinklers (7) Foreign organic or inorganic material with the potential to obstruct pipe or sprinklers found in the pipe (8) Failure to flush yard piping or surrounding public mains following new installations or repairs (9) Record of broken public mains in the vicinity		

	(10) Abnormally frequent false tripping of a dry pipe valve(s) (11) System returned to service after an extended shutdown (i.e., greater than 1 year) (12) Reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems (13) System supplied with raw water via the fire department connection ~~(14)~~—Leakage caused by internal corrosion ~~(15)~~<u>(14)</u> *A 25 percent increase or a 5-second increase for portions of systems protecting dwelling units in the total water delivery time for dry pipe systems and double interlock preaction systems, with normal air pressure on the system and starting at the time of fully opened inspection test connection, when compared to the original system acceptance test ~~(16)~~<u>(15)</u> *Failure to maintain a nitrogen supply, except in instances of preplanned impairments, installed in accordance with NFPA 13 when a Hazen-Williams C value of 120 is used for dry and preaction systems.
Committee Text (FR)	<u>14.3.1*</u> <u>An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist:</u> <u>1. Defective intake for fire pumps taking suction from open bodies of water</u> <u>2. Discharge of obstructive material during routine water tests</u> <u>3. Foreign materials in fire pumps, dry pipe valves, or check valves</u> <u>4. Foreign material in water during drain tests or plugging of inspector's test connection(s)</u> <u>5. Unknown materials heard in the system piping during draining, refilling, or otherwise flowing water through the system</u> <u>6. Plugged sprinklers</u>

	<u>7. Foreign organic or inorganic material with the potential to obstruct pipe or sprinklers found in the pipe</u> <u>8. Failure to flush yard piping or surrounding public mains following new installations or repairs</u> <u>9. Record of broken public mains in the vicinity</u> <u>10. Abnormally frequent false tripping of a dry pipe valve(s)</u> <u>11. System returned to service after an extended shutdown (i.e., greater than 1 year)</u> <u>12. Reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems</u> <u>13. System supplied with raw water via the fire department connection</u> <u>14. Pinhole leaks or leakage caused by internal corrosion</u> <u>15. *A 25 percent increase or a 5-second increase for portions of systems protecting dwelling units in the total water delivery time for dry pipe systems and double interlock preaction systems, with normal air pressure on the system and starting at the time of fully opened inspection test connection, when compared to the original system acceptance test</u> <u>16. *Failure to maintain a nitrogen supply, except in instances of preplanned impairments, installed in accordance with NFPA 13 when a Hazen-Williams C value of 120 is used for dry and preaction systems.</u>
Statement	<u>Pinhole leaks are an early indicator of internal corrosion and should indicate a requirement for an internal investigation.</u>

Section	PI	PAGE	DISPOSITION
14.3.1	116		<u>Create First Revision</u>
Proposed Text (PI)	14.3.1*		

An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist:

- (1) Defective intake for fire pumps taking suction from open bodies of water
- (2) Discharge of obstructive material during routine water tests
- (3) Foreign materials in fire pumps, dry pipe valves, or check valves
- (4) Foreign material in water during drain tests or plugging of inspector's test connection(s)
- (5) Unknown materials heard in the system piping during draining, refilling, or otherwise flowing water through the system
- (6) Plugged sprinklers
- (7) Foreign organic or inorganic material with the potential to obstruct pipe or sprinklers found in the pipe
- (8) Failure to flush yard piping or surrounding public mains following new installations or repairs
- (9) Record of broken public mains in the vicinity
- (10) Abnormally frequent false tripping of a dry pipe valve(s)
- (11) System returned to service after an extended shutdown (i.e., greater than 1 year)
- (12) Reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems
- (13) System supplied with raw water via the fire department connection
- (14) Leakage caused by internal corrosion
- (15) *A 25 percent increase or a 5-second increase for portions of systems protecting dwelling units in the total water delivery time for dry pipe systems and double interlock preaction systems, with normal air pressure on the system and

	starting at the time of fully opened inspection test connection, when compared to the original system acceptance test ~~(16) — *Failure to maintain a nitrogen supply, except in instances of preplanned impairments, installed in accordance with NFPA 13 when a Hazen-Williams C value of 120 is used for dry and preaction systems.~~
Committee Text (FR)	<u>14.3.1*</u> <u>An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist:</u> <u>1. Defective intake for fire pumps taking suction from open bodies of water</u> <u>2. Discharge of obstructive material during routine water tests</u> <u>3. Foreign materials in fire pumps, dry pipe valves, or check valves</u> <u>4. Foreign material in water during drain tests or plugging of inspector's test connection(s)</u> <u>5. Unknown materials heard in the system piping during draining, refilling, or otherwise flowing water through the system</u> <u>6. Plugged sprinklers</u> <u>7. Foreign organic or inorganic material with the potential to obstruct pipe or sprinklers found in the pipe</u> <u>8. Failure to flush yard piping or surrounding public mains following new installations or repairs</u> <u>9. Record of broken public mains in the vicinity</u> <u>10. Abnormally frequent false tripping of a dry pipe valve(s)</u> <u>11. System returned to service after an extended shutdown (i.e., greater than 1 year)</u> <u>12. Reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems</u> <u>13. System supplied with raw water via the fire department connection</u> <u>14. Leakage caused by internal corrosion</u> <u>15. *A 25 percent increase or a 5-second increase for portions of systems protecting dwelling units in the total water delivery time for dry pipe systems and double interlock</u>

	<u>preaction systems, with normal air pressure on the system and starting at the time of fully opened inspection test connection, when compared to the original system acceptance test</u> <u>16. Where the original system design included a nitrogen supply, in accordance with NFPA 13 utilizing Hazen-Williams c-value 120 and the nitrogen supply has been permanently removed or disabled.</u>
Statement	<u>Revised language clarified the condition where the removal of a nitrogen supply would require an obstruction investigation.</u>

Section	PI	PAGE	DISPOSITION
14.4	14		<u>Resolve</u>
Proposed Text (PI)	14.4 Ice Obstruction. Dry pipe or preaction sprinkler system piping that protects or passes through refrigerated spaces maintained at temperatures below 32°F (0°C) shall be inspected internally on an annual basis for ice obstructions at the point where the piping enters the refrigerated area. <u>14.4.1</u> <u>Where a listed dry air compressor or a listed nitrogen generator are used, the ice obstruction investigation shall be permitted to be performed every 3 years.</u> <u>14.4.1-2</u> Alternative nondestructive examinations shall be permitted. <u>14.4.2-3</u> All penetrations into the refrigerated spaces shall be inspected and, if an ice obstruction is found, additional pipe shall be examined to ensure that no additional ice obstructions or ice blockages exist.		

Committee Text (FR)	
Statement	<u>Listed dry air compressor or Listed nitrogen generator does not necessarily justify extending the inspection period.</u>

Section	PI	PAGE	DISPOSITION
14.4	88		<u>Create First Revision</u>
Proposed Text (PI)	<u>14.4.1</u> Dry pipe or preaction sprinkler system piping that protects or passes through refrigerated spaces maintained at temperatures below 32°F (0°C) shall be inspected internally on an annual basis for ice obstructions at the point where the piping enters the refrigerated area.		
Committee Text (FR)	<u>14.4.1</u> <u>Dry pipe or preaction sprinkler system piping that protects or passes through refrigerated spaces maintained at temperatures below 32°F (0°C) shall be inspected internally on an annual basis for ice obstructions at the point where the piping enters the refrigerated area.</u>		
Statement	<u>Editorial – manner of style</u>		

Section	PI	PAGE	DISPOSITION
14.4.1	89		<u>Create First Revision</u>
Proposed Text (PI)	14.4.1–2 Alternative nondestructive examinations shall be permitted.		
Committee Text (FR)	<u>14.4.2</u> <u>Alternative nondestructive examinations shall be permitted.</u>		

Statement	<u>Editorial – manner of style</u>

Section	PI	PAGE	DISPOSITION
14.4.2	90		<u>Create First Revision</u>
Proposed Text (PI)	<u>14.4.2–3</u> All penetrations into the refrigerated spaces shall be inspected and, if an ice obstruction is found, additional pipe shall be examined to ensure that no additional ice obstructions or ice blockages exist.		
Committee Text (FR)	<u>14.4.3</u> <u>All penetrations into the refrigerated spaces shall be inspected and, if an ice obstruction is found, additional pipe shall be examined to ensure that no additional ice obstructions or ice blockages exist.</u>		
Statement	<u>Editorial – manner of style</u>		

Section	PI	PAGE	DISPOSITION
14.4.3	91		<u>Resolve</u>
Proposed Text (PI)	<u>14.4.3</u> <u>An obstruction investigation shall be conducted when ice is observed in dry pipe or preaction sprinkler system piping.</u>		
Committee Text (FR)			
Statement	<u>This would be a redundant requirement... reference section 14.4.2. Committee suggestion as Annex language.</u>		

Section	PI	PAGE	DISPOSITION
15.4.2	193		<u>Resolve</u>
Proposed Text (PI)	15.4.2 The impaired equipment shall include, but shall not be limited to, the following: (1) Sprinkler systems (2) Standpipe systems (3) Fire hose systems (4) Underground fire service mains (5) Fire pumps (6) Water storage tanks (7) Water spray fixed systems (8) <u>FoamAgent</u>-water sprinkler systems (9) Water mist systems (10) Fire service control valves (11) Water supply		
Committee Text (FR)			
Statement	<u>NFPA 18 and 18A are not water-based system installation standards. Within 18 it references NFPA 13, NFPA 14, and NFPA 15 as acceptable system to utilize wetting agents. NFPA 11 is not referenced, and it is inappropriate to replace "agent" for "foam" one for one.</u> <u>NFPA 18 requires "wetting agents" to be tested annually. NFPA 25 does not need to address this.</u> <u>NFPA 18 already covers everything within its scope: 10.2 Inspection of Wetting</u>		

	<u>Agent Concentrate. Annually, samples of wetting agent concentrate shall be sent to the manufacturer or qualified laboratory for quality condition testing.</u>
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Section	PI	PAGE	DISPOSITION
A.13.2.2	98		<u>Resolve</u>
Proposed Text (PI)	A.13.2.2 Assessing the status of a water supply is a critical component of the inspection, testing, and maintenance process. One common method for conducting this assessment is a main drain test. Main drains are installed on system risers for one principal reason: to drain water from the overhead piping after the system is shut off. This allows the contractor or plant maintenance department to perform work on the system or to replace nozzles after a fire or other incident involving system operation. Data collected from the suction gauges during a fire pump flow test, that tests the water supply, would satisfy the requirements for a main drain test. These drains also are used to determine whether there is a major reduction in water flow to the system, such as could be caused by a major obstruction, a dropped gate, a valve that is almost fully closed, or a check valve clapper stuck to the valve seat. A satisfactory main drain test (i.e., one that reflects the results of previous tests) does not necessarily indicate an unobstructed passage, nor does it prove that all valves in the upstream flow of water are fully opened. However, these tests provide a reasonable level of confidence that the water supply has not been compromised. The main drain test is conducted in the following manner: (1) Record the pressure indicated by the supply water gauge. (2) Close the alarm control valve on alarm valves. (3) Fully open the main drain valve.		

	(4) After the flow has stabilized, record the residual (i.e., flowing) pressure indicated by the water supply gauge. (5) Close the main drain valve slowly. ~~(5)~~(6) <u>Record the rebound pressure and time.</u>
Committee Text (FR)	
Statement	See PI 97

Section	PI	PAGE	DISPOSITION
A.14.3.1(15)	68		Resolve
Proposed Text (PI)	A.14.3.1(15) When the original system acceptance test results are not available, the following water delivery times should be used to determine when an obstruction investigation is warranted: (1) Portions of systems protecting dwelling units: 20 seconds or greater (2) Ordinary hazard: 63 seconds or greater with a test manifold simulating two open sprinklers (3) Extra hazard: 56 seconds or greater with a test manifold simulating four open sprinklers (4) High-piled storage: 50 seconds or greater with a test manifold simulating four open sprinklers (5) All other hazards with a test connection equal to a single sprinkler: 75 seconds or greater A decrease in water delivery time may depict a decrease in system volume due to obstructions, corrosion, or partial freezing. The water delivery time should be relatively stable over time.		

Committee Text (FR)	
Statement	<u>See PI 67</u>

Section	PI	PAGE	DISPOSITION
D.5.1	19		<u>Create First Revision</u>
Proposed Text (PI)	<u>[See Word Document 25-2023 Annex D D 5 1 PI 19 TG4]</u>		
Committee Text (FR)	<u>See Word Doc. Table D.5.1 and spreadsheet with calculations.</u>		
Statement	<u>Committee modified values to obtain flow rates of 10 ft/sec. for steel pipe.</u>		

Section	PI	PAGE	DISPOSITION
12.2.1.1.1	34		Resolve – <u>Passed – Done in Terra</u>
Proposed Text (PI)	12.2.1.1.1 Any water mist nozzle that shows signs of any of the following shall be replaced: (1) Leakage (2) Corrosion (3) Physical damage, <u>including coating with dirt, grime, grease, or any combination of the contaminants</u> (4) Loss of fluid in the glass bulb heat responsive element ~~(5)~~ *Loading ~~(6)~~ (5) Painting, unless painted by the water mist nozzle manufacturer		
Committee Text (FR)			
Statement	Loading is a commonly used term within the industry to describe the collection of dirt, grease, grime and other contaminants on a sprinkler or water discharge nozzle. Physical damage is not considered loading and they should not be grouped together.		

Section	PI	PAGE	DISPOSITION
12.2.1.1.1	None		Create First Revision <u>– Create FR – Done in Terra</u>
Proposed Text (PI)			
Committee Text (FR)	12.2.1.1.1 * Any water mist nozzle that shows signs of any of the following shall be replaced: (1) Leakage (2) Corrosion <u>detrimental to nozzle performance</u> (3) Physical damage (4) Loss of fluid in the glass bulb heat responsive element (5) *Loading <u>detrimental to nozzle performance</u> (6) Painting, <u>other than that applied by the nozzle manufacturer detrimental to nozzle performance.</u> ~~unless painted by the water mist nozzle manufacturer~~ <u>A.12.2.1.1.1</u> <u>See A.5.2.1.1.1.</u>		
Statement	These revisions provide consistency with sprinkler requirements in Chapter 5.		

Section	PI	PAGE	DISPOSITION
12.2.1.1.4	35		Resolve <u>– Passed – Done in Terra</u>
Proposed Text (PI)	12.2.1.1.4 ~~Water mist nozzles installed in concealed spaces such as above suspended ceilings shall not require inspection.~~		
Committee Text (FR)			
Statement	Concealed spaces are often inaccessible for inspection from the floor and could require damaging the building environment to access the nozzle. These provisions are consistent with the requirements for sprinklers in Chapter 5 (See Section 5.2.1.1.3).		

Section	PI	PAGE	DISPOSITION
12.2.1.1.5	36		<u>Create First Revision – Resolve – Done in Terra</u>
Proposed Text (PI)	12.2.1.1.5 ~~Water mist nozzles installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shutdown.~~		
Committee Text (FR)	12.2.1.1.5* Water mist nozzles installed in areas that <u>cannot be accessed because of</u> ~~are inaccessible for~~ safety considerations due to process operations shall be inspected <u>annually</u> during ~~each~~ -scheduled shutdown. <u>A.12.2.1.1.5.</u> <u>Shutdowns not performed in a timely manner to allow annual inspection can be addressed via a performance-based compliance program per Section 4.7.</u>		
Statement	~~Coordination needs to be established were there is safety risk to personnel performing inspections within the facility or equipment during shutdowns annually. Shutdowns not in a timely manner to allow annual inspection can be addressed via performance-based compliance program per Section 4.7.~~ The current section aligns with Chapter 4 and other Chapters and needs to be retained. This aligns with the standard's commitment to inspector safety.		

Section	PI	PAGE	DISPOSITION
12.2.1.1.7	45		Create a First Revision <u>– Create FR – Done in Terra</u>
Proposed Text (PI)	12.2.1.1.7 Open nozzles, <u>including their strainer</u> shall be removed, inspected, and cleaned <u>after the discharge of water from installed nozzles. during the flushing procedure for the mainline strainer.</u>		
Committee Text (FR)	12.2.1.1.7 Open nozzles, <u>including their strainers</u> , shall be removed, inspected, and cleaned <u>after the discharge of water from installed nozzles. during the flushing procedure for the mainline strainer.</u>		
Statement	The inspection and cleaning of nozzles and strainers is required after any water flow through the system and is not limited to occurrences of system flushing. A water mist nozzle has a higher risk of obstructive material clogging the orifices.		

Section	PI	PAGE	DISPOSITION
12.2.2.1	49, 53		Create a First Revision <u>– Create FR – Done in Terra</u>
Proposed Text (PI)	[PI-49] 12.2.2.1 Mainline strainers and filters shall be ~~flushed until clear~~ <u>inspected and cleaned</u> after each operation or flow test. [PI-53] 12.2.2.1 ~~Mainline-System~~ strainers and filters <u>located downstream of the main system control valve</u> shall be flushed until clear after each operation or flow test.		
Committee Text (FR)	~~12.2.2.1~~ ~~Mainline strainers and filters shall be flushed until clear after each operation or flow test.~~		
Statement	This is a testing requirement covered by 12.3.3.		

Section	PI	PAGE	DISPOSITION
12.3.2.1	61		~~Create First Revision~~ Create FR using the submitters proposed text in PI 61 – Done in Terra
Proposed Text (PI)	12.3.2.1 Water mist nozzles installed to protect <u>spray areas and mixing rooms in resin</u> application areas without protective coverings shall be capable to operate and protect the hazard with an overspray residue in the event of a fire.		
Committee Text (FR)	12.3.2.1 <u>Protective Coverings.</u> <u>12.3.2.1.1</u> Water mist nozzles installed to protect <u>spray areas and mixing rooms in resin</u> application areas <u>with</u> ~~without~~ protective coverings shall <u>continue to</u> be ~~capable protected against to operate and protect the hazard with an~~ overspray residue <u>so that they will operate</u> in the event of a fire. <u>12.3.2.1.2*</u> <u>Water Mist nozzles installed as described in 12.3.2.1.1 shall be protected using cellophane bags having a thickness of 0.003 in. (0.076 mm) or less or thin paper bags.</u> <u>12.3.2.1.3</u> <u>Coverings shall be replaced periodically so that heavy deposits of residue do not accumulate.</u> <u>A.12.3.2.1.2</u> <u>See A.5.4.1.10.1.</u>		
Statement	~~Provides consistent provision with Chapter 5 regarding protective coverings of sprinkler and nozzles.~~ This provides clarification as to the types of application areas.		

Section	PI	PAGE	DISPOSITION
12.3.3	55		Create a First Revision <u>– Create FR – Done in Terra</u>
Proposed Text (PI)	12.3.3 Strainers and Filters. ~~Mainline Systems~~ strainers (basket or screen) <u>located downstream of the system control valve</u> shall be flushed until clear after each operation or flow test.		
Committee Text (FR)	12.3.3 Strainers and Filters. ~~Mainline System~~ strainers (basket or screen) shall be flushed until clear after each operation or flow test.		
Statement	System strainers are to be flushed after each operation regardless of location. The use of the term system strainers is consistent with NFPA 750.		

Section	PI	PAGE	DISPOSITION
12.3.16	37		Create First Revision <u>Create FR including changes form actions on PI37 and 50 – Done in Terra</u>
Proposed Text (PI)	12.3.16 Water Mist System. Water mist systems shall be operated annually <u>including a complete system discharge</u> in accordance with the manufacturer's instructions.		
Committee Text (FR)	12.3.16 Water Mist System <u>with Open Nozzles.</u> Water mist systems shall be operated annually in accordance with <u>section 12.3.16.1 through 12.3.16.8 and</u> the manufacturer's instructions.		
Statement	The title was revised to clarify the section is applicable to open nozzle systems. The subsections include conditions for when water flow is not possible.		

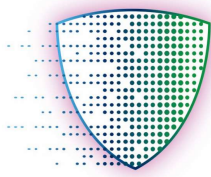
Section	PI	PAGE	DISPOSITION
12.3.16.2.1	50		Create First Revision
Proposed Text (PI)	12.3.16.2.1 Where the nature of the protected property is such that water cannot be discharged into the occupancy or onto the hazard, an operational test shall be conducted from a test connection ~~with an orifice to validate a flow~~ equivalent to ~~the friction loss for or greater than the flow produced from~~ the total number of nozzles.		
Committee Text (FR)	12.3.16.2.1 Where the nature of the protected property is such that water cannot be discharged into the occupancy or onto the hazard, an operational test shall be conducted from a test connection with an orifice <u>that is designed to simulate the flow rate equivalent to or greater than the flow produced from the total number of nozzles within the protected space.</u> ~~to validate a flow equivalent to the friction loss for or greater than the flow produced from the total number of nozzles.~~		
Statement	This clarifies how to conduct the test and provides an alternate method of discharging water in the scenario where normal discharge would damage equipment.		

Section	PI	PAGE	DISPOSITION
12.4.1.8	51		Resolve <u>– Passed – Done in Terra</u>
Proposed Text (PI)	12.4.1.8 ~~Annually, a w~~ Water mist systems with open nozzles shall be ~~flushed~~ <u>operated annually, including a complete system discharge in accordance with the manufacturer' instructions.</u>		
Committee Text (FR)			
Statement	Flushing is a Maintenance task that is covered within section 12.4. The proposed text is applicable to testing which is covered under 12.3.16.		

Section	PI	PAGE	DISPOSITION
8.3.5.8	33, 190		Create First Revision – <u>Create FR – Done in Terra</u>
Proposed Text (PI)	8.3.5.8 ~~Annual~~ Activation Test for Water Mist Positive Displacement Pumping Units. 8.3.5.8.1 Annually, <u>and after every system modification</u>, an automatic activation test for systems with automatic nozzles shall be conducted using a test connection that simulates the smallest system nozzle in the hydraulically most remote area discharged at system maintenance pressure/standby pressure. 8.3.5.8.2 The pumping unit shall achieve the system design discharge pressure within the time specified in the listing but not greater than 60 seconds after the start of flow from the smallest nozzle.		
Committee Text (FR)	8.3.5.8 ~~Annual~~ Activation Test for Water Mist Positive Displacement Pumping Units. 8.3.5.8.1 <u>Annually and after every system modification, an automatic pump activation test for systems with automatic nozzles shall be conducted using one of the following methods:</u> <u>1) A test connection that simulates the smallest system nozzle in the hydraulically most remote area discharged at system maintenance pressure/standby pressure.</u> <u>2) * ~~a~~A test orifice in the pump header that is designed to simulate the flow rate discharged from the smallest nozzle K-factor in the most hydraulically remote area.</u> <u>A.8.3.5.8.1(2)</u> <u>The intent of this test is to verify the timely operation of the pumping unit to achieve the system design pressure when the smallest nozzle in the hydraulically most remote area is activated. It is not the intent of</u>		

	<u>this section to require the orifice to be located in the most remote location of the system. The test orifice at the pump test header is designed by the system manufacturer to simulate the flow rate from the smallest nozzle kK-factor in the most hydraulically remote area. The orifice is to account for friction loss and elevation.</u> ~~Annually, an automatic activation test for systems with automatic nozzles shall be conducted using a test connection that simulates the smallest system nozzle in the hydraulically most remote area discharged at system maintenance pressure/standby pressure.~~ 8.3.5.8.2 The pumping unit shall achieve the system design discharge pressure within the time specified in the listing but not greater than 60 seconds after the start of flow from the smallest nozzle.
Statement	The changes describe options for how the pumping unit can be evaluated to demonstrate that it can achieve the system design pressure.

New Technology?



VAPOR Pipe Shield

- Fully Pneumatic & Mechanical
- No Electrical Connections
- Easy To Install & Maintain
- Efficient & Effective
- Minimal Air Flow Loss
- Environmentally Safe
- Patented & UL Listed
- LOW COST...



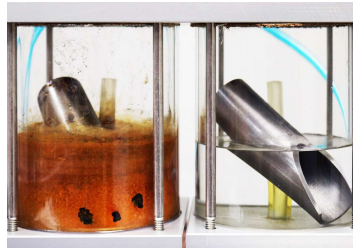
TERPconsulting
fire + life safety

Courtesy of Ray Fremont, Jr., General Air Products

1

Vapor Corrosion Inhibitor

How can corrosion control in dry-pipe & preaction sprinkler systems be simplified?



2 Years Later...



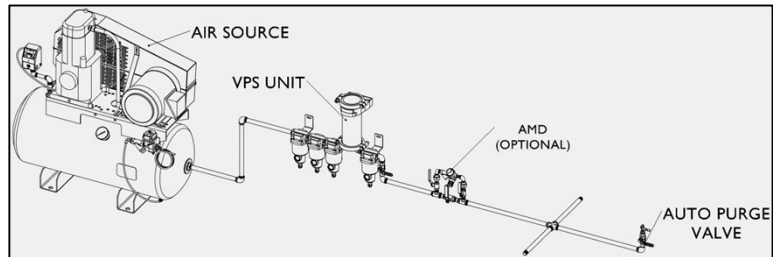
Courtesy of Ray Fremont, Jr., General Air Products

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2

Vapor Corrosion Inhibitor

Vapor Pipe Shield™ – How Does it Work?



Vapor Pipe Shield is a delivery device for VPCI Corrosion Inhibitor connected to Dry & Pre-Action systems between the air compressor & the dry pipe valve or air maintenance device.



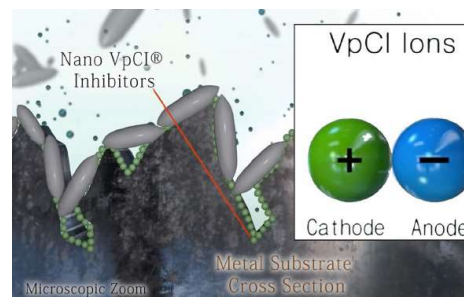
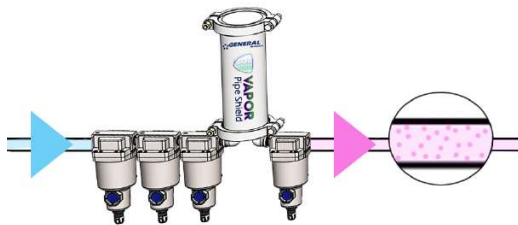
Courtesy of Ray Fremont, Jr., General Air Products

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3

Vapor Phase Corrosion Inhibitor

Vapor Pipe Shield™ – How Does it Work?



VpCI Molecules attach to the metal pipe. They form a **ONE MOLECULE LAYER** or shield that acts as a barrier between the metal pipe surface and the corrosive environment inside the pipe.



Courtesy of Ray Fremont, Jr., General Air Products

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4

Vapor Phase Corrosion Inhibitor



TOXICOLOGICAL RISK ASSESSMENT REPORT

DOCUMENT STATUS
REVISED DRAFT FOR CLIENT (v.3)

REPORT TITLE Vapor Pipe Shield Formulation for Sprinkler Systems: ANSI/CAN/UL 2901 Human Health and Environmental Risk Assessment

PRODUCT NAME Vapor Pipe Shield

PREPARED BY ToxServices LLC
1367 Connecticut Avenue, N.W., Suite 300
Washington, D.C. 20006

SPONSOR General Air Products

AUTHOR: Zach Guerrette, Ph.D., D.A.B.T.
Senior Toxicologist
ToxServices LLC

APPROVAL **SENIOR REVIEWERS:** Jennifer Aizer, Ph.D., M.H.S., D.A.B.T.
Senior Toxicologist
ToxServices LLC

Margaret H. Whitaker, Ph.D., M.P.H.,
C Biol. F.R.S.B., F.R.T., D.A.B.T.
Managing Director and Chief
Toxicologist
ToxServices LLC

DATE: October 10, 2022



1367 Connecticut Ave., N.W., Suite 300
Washington, D.C. 20006

Contains Confidential Business Information

General Air Products

ToxServices assessed risks of adverse localized and systemic human health effects and environmental impacts from General Air Products' Vapor Pipe Shield formulation when used in dry pipe or preaction fire sprinkler systems in order to assess compliance of this formulation with the Section 17 (Toxicity) requirements of ANSI/CAN/UL Standard 2901 (Antifreeze Solutions for Use in Fire Sprinkler Systems) (UL 2019). The powdered Vapor Pipe Shield formulation generates a vapor that permeates dry pipe sprinkler system components. ToxServices evaluated three of the four exposure scenarios required under Section 17 of ANSI/CAN/UL 2901 as part of the risk assessment of the Vapor Pipe Shield formulation vapor:

- Exposure Scenario 1: Release into potable water (*not assessed by ToxServices due to physical form of product*);
- Exposure Scenario 2: Release into an occupied space during sprinkler discharge;
- Exposure Scenario 3: Release into an occupied space during commissioning phase of the system and operation of a relief valve; and
- Exposure Scenario 4: Release into the natural environment.

Although ANSI/CAN/UL Standard 2901 requires assessment of antifreeze release into potable water (through a backflow device), Exposure Scenario 1 is not relevant for a vapor-phase corrosion inhibitor used in dry pipe or preaction sprinkler systems.

5

Understanding How Leak Rates Effect Your Air Supply Equipment

Sample Dry System at Commissioning (New System):

- Largest Riser: 2000 gallons
- Number of Risers: 4
- System Pressure: 40 psi
- Total System Capacity: 5000 gallons
- Total System Volume: 2487.2 cubic feet @ pressure

New System Allowable Leak Rate: 1.5 psi per day

System Volume Loss: 0.047 CFM (0.151 CFM w/ purge or N2 monitoring)

Minimal Air Flow Loss with Vapor Pipe Shield



Correctly Sized Membrane Nitrogen Generator	Correctly Sized PSA Nitrogen Generator	Correctly Sized Dry Air Generator	Correctly Sized Fire Protection Air Compressor With Vapor Pipe Shield
0.6 CFM	0.88 CFM	21 CFM	19 CFM

Courtesy of Ray Fremont, Jr., General Air Products

6

NFPA 13 Changes

- SR-1065 – Adds new Definition 3.3.242 and A.3.3.242



Second Revision No. 1065-NFPA 13-2023 [New Section after 3.3.241]

3.3.242* Vapor Corrosion Inhibitor (VCI).

A chemical compound (substance) that emits rust-inhibiting vapor to protect ferrous and non-ferrous metals against corrosion in an air-filled dry pipe or preaction sprinkler systems. (AUT-SSI)

A.3.3.242 Vapor Corrosion Inhibitor (VCI).

VCIs are also referred to as vapor phase corrosion inhibitors, volatile corrosion inhibitors, and vapor phase inhibitors (VPI). All of these terms relate to a specific class of corrosion inhibitors. The inhibitor forms a thin protective layer through adsorption separating the pipe from the air or water and provides protection against corrosion. Other classifications include passivating (anodic), cathodic, organic, and precipitation inhibitors. VCIs are appropriate for atmospheric or gaseous corrosion. This is corrosion happening in the air-filled portion of the sprinkler system containing water vapor. Corrosion will occur when the relative humidity is greater than 60%. VCIs can also provide protection in partially aqueous environments (partially water-filled pipes) and aqueous environments (water-filled pipes). VCIs can inhibit anodic reactions, cathodic reactions, or both. VCIs protecting against both anodic and cathodic reactions provide the best level of protection for applications in sprinkler systems. (AUT-SSI)

7

NFPA 13 Changes

- SR-1101 – Adds new A.5.1.4.3



Second Revision No. 1101-NFPA 13-2023 [Section No. 5.1.4.3]

5.1.4.3* Inhibitors.

A.5.1.4.3

Vapor corrosion inhibitors entering a sprinkler system as vapor in the air supply are not part of the water supply. Requirements for air supply are applicable to vapor corrosion inhibitors.

5.1.4.3.1

Where used, listed bacterial inhibitors and/or corrosion inhibitors shall be compatible with system components.

5.1.4.3.2

Where used together, listed bacterial inhibitors and corrosion inhibitors shall be compatible with each other.

8

NFPA 13 Changes

- SR-1062 – Adds new 8.2.11



Second Revision No. 1062-NFPA 13-2023 [New Section after 8.2]

8.2.11 Vapor Corrosion Inhibitor.

8.2.11.1

The vapor corrosion inhibitor shall be from a listed assembly permanently installed in accordance with the manufacturer's instructions.

8.2.11.2

The vapor corrosion inhibitor equipment shall be maintained in accordance with Chapter 32 and manufacturer's instructions.

8.2.11.3

A means of verifying vapor concentration shall be provided for each system.

9

NFPA 13 Changes

- SR-1052 – Adds new 16.4.5.(7)
- Relocated from 5.1.4.2.2 as part of FR-1079



Second Revision No. 1052-NFPA 13-2023 [Section No. 16.4.2.5]

16.4.2.5

Where conditions are found or are known to exist that contribute to unusual corrosive properties, the owner(s) shall notify the sprinkler system installer, and a plan shall be developed to treat the system using at least one of the following methods:

- (1) Install system piping that is corrosion resistant.
- (2) Treat water that enters the system using a listed corrosion inhibitor.
- (3) Implement an approved plan for monitoring the interior conditions of the pipe at established intervals and locations.
- (4) Install approved corrosion monitoring stations and monitor at established intervals.
- (5) Fill dry-pipe or preaction systems with at least 98 percent pure nitrogen in lieu of air to mitigate against corrosion.
- (6) Use a listed nitrogen generator that is sized and installed in accordance with the manufacturer's instructions.
- (7) Use a listed vapor corrosion inhibitor delivery system sized and installed in accordance with the manufacturer's instructions.

10

NFPA 13 Changes

- SR-1170 – Adds new 28.3.4.8.1(16)
- Modifies Table 23.4.8.1



Second Revision No. 1170-NFPA 13-2023 [Section No. 28.3.4.8.1]

Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with C values from Table 28.3.4.8.1, as follows:

- (1) Pipe, fittings, flexible sprinkler hose fittings, and devices such as valves, meters, flow switches in pipes 2 in. (50 mm) or less in size, and strainers shall be included, and elevation changes that affect the sprinkler discharge shall be calculated.
- (2) Tie-in drain piping shall not be included in the hydraulic calculations.
- (3) Losses for a tee or a cross shall be calculated where flow direction change occurs based on the equivalent pipe length of the piping segment in which the fitting is included.
- (4) The tee at the top of a riser nipple shall be included in the branch line, the tee at the base of a riser nipple shall be included in the riser nipple, and the tee or cross at a cross main-feed main junction shall be included in the cross main.
- (5) Losses for straight-through flow in a tee or cross shall not be included.
- (6) The loss of reducing elbows based on the equivalent length value of the smallest outlet shall be calculated.
- (7) The equivalent length value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern, shall be used.
- (8) The equivalent length value for a fitting with a bushing shall be the same as for a similarly sized and configured reducing fitting.
- (9) The equivalent length value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type, shall be used. (See Table 28.3.3.1.1.)
- (10) Losses shall be permitted to be excluded for tapered reducers.
- (11) Losses shall be permitted to be excluded for a fitting with or without a bushing, directly connected to a sprinkler, except as required in 28.3.3.1.2 and 28.3.3.4.
- (12) Losses for flexible sprinkler hose fittings shall be based upon the number of bends referenced in the listing for the hose length.
- (13) Losses through a pressure-reducing valve shall be included based on the normal inlet pressure condition, and pressure loss data from the manufacturer's literature shall be used.
- (14) In new systems, an increased C value of 120 shall be permitted where nitrogen is provided in accordance with 8.2.10.
- (15) In new systems, an increased C value of 120 shall be permitted where vacuum pressure is provided in accordance with Section 8.11
- (16) In new systems, an increased C value of 120 shall be permitted where a vapor corrosion inhibitor is provided in accordance with Section 8.11

11

NFPA 13 Changes

- SR-1170 – Adds new 28.3.4.8.1(16)
- Modifies Table 23.4.8.1



Second Revision No. 1170-NFPA 13-2023 [Section No. 28.3.4.8.1]

Table 28.3.4.8.1 Hazen–Williams C Values

Pipe or Tube	C Value ^a
Unlined cast or ductile iron	100
Black steel (dry systems including preaction)	100
Black steel (wet systems including deluge)	120
Black steel (dry system including preaction) using nitrogen ^{†b}	120
<u>Black steel (dry system including preaction) using vacuum pressure^c</u>	<u>120</u>
<u>Black steel (dry system including preaction) using a vapor corrosion inhibitor^d</u>	<u>120</u>
Galvanized steel (dry systems including preaction)	100
<u>Galvanized steel (wet systems including deluge)</u>	<u>120</u>
<u>Galvanized steel (dry systems including preaction) using vacuum pressure^c</u>	<u>120</u>
<u>Galvanized steel (dry systems including preaction) using a vapor corrosion inhibitor^d</u>	<u>120</u>
Plastic all (listed)	150
Cement-lined cast- or ductile iron	140
Copper tube, brass or stainless steel	150
Asbestos cement	140
Concrete	140

^aThe authority having jurisdiction is permitted to allow other C values.

^{†b}Nitrogen supply shall be installed in accordance with 8.2.10.

^cVacuum pressure shall be installed in accordance with Section 8.11

^dVapor corrosion inhibitor shall be installed in accordance with Section 8.11

12

NFPA 25 Public Inputs

- PI-166 – Adds new definition



Public Input No. 166-NFPA 25-2023 [New Section after 3.3.49]

3.3.xx*

Vapor Phase Corrosion Inhibitor (VCI) - a chemical compound (substance) that emits rust-inhibiting vapor to protect ferrous and non-ferrous metals against corrosion in an air-filled dry pipe or preaction sprinkler system. The inhibitor forms a thin protective layer through adsorption separating the pipe from the air or water and provides protection against corrosion.

A.3.3.xxx

VCIs are also referred to as vapor phase corrosion inhibitors, volatile corrosion inhibitors, and vapor phase inhibitors (VPI). All of these terms relate to a specific class of corrosion inhibitors. Other classifications include passivating (anodic), cathodic, organic, and precipitation inhibitors. VCIs are appropriate for atmospheric or gaseous corrosion. This is corrosion happening in the air-filled portion of the sprinkler system containing water vapor. Corrosion will occur when the relative humidity is greater than 60%. VCIs can also provide protection in partially aqueous environments (partially water-filled pipes) and aqueous environments (water-filled pipes). VCIs can inhibit anodic reactions, cathodic reactions, or both. VCIs protecting against both anodic and cathodic reactions provide the best level of protection for applications in sprinkler systems.

13

NFPA 25 Public Inputs

- PI-165 – Adds new section 4.1.4.3



Public Input No. 165-NFPA 25-2023 [New Section after 4.1.4]

4.1.4.3 *

Where a vapor phase corrosion inhibitor is used as part of the dry pipe or preaction system design in accordance with NFPA 13, it shall be maintained, repaired, or replaced.

14

NFPA 25 Public Inputs

- PI-169 – Modifies Table 13.1.1.2



Public Input No. 169-NFPA 25-2023 [Section No. 13.1.1.2]

Table 13.1.1.2 shall be used to determine the minimum required frequencies for inspection, testing, and maintenance.

Table 13.1.1.2 Summary of Valves, Valve Components, and Trim Inspection, Testing, and Maintenance

Item	Frequency	Reference
Inspection		
Alarm valves	-	-
Exterior	Quarterly	13.4.1.1
Interior	5 years	13.4.1.2
Strainers, filters, orifices	5 years	13.4.1.2
Backflow prevention assemblies	-	-
Reduced pressure	Weekly	13.7.1
Reduced-pressure detectors	Weekly	13.7.1
Interior	5 years	13.7.1.3
Check valves	-	-
Interior	5 years	13.4.2.1
Control valves	-	-
All valves except locked or supervised	Weekly	13.3.2.1
Locked or supervised	Monthly	13.3.2.1.1
Electrically supervised	Quarterly	13.3.2.1.2
Dry pipe valves/	-	-
quick-opening devices	-	-
Enclosure (during cold weather)	—	Chapter 4
Exterior	Monthly	13.4.5.1.2
Interior	Annually	13.4.5.1.3
Strainers, filters, orifices	5 years	13.4.5.1.4
Low temperature alarm	Annually	Chapter 4
Deluge valves	-	-
Enclosure (during cold weather)	Daily/weekly	Chapter 4
Exterior	Monthly	13.4.4.1.1
Interior	Annually/5 years	13.4.4.1.2
Strainers, filters, orifices	5 years	13.4.4.1.3
Fire department connections	Quarterly	13.8.1
Gauges	Monthly/quarterly	13.2.4
Hose valves	Quarterly	13.6.1
Precision valves	-	-
Enclosure (during cold weather)	—	Chapter 4
Exterior	Monthly	13.4.3.1.1
Interior	Annually/5 years	13.4.3.1.2
Strainers, filters, orifices	5 years	13.4.3.1.3
Pressure-regulating and relief valves	-	-
Master pressure regulating	Weekly	13.5.4.1
Sprinkler system pressure reducing	Quarterly	13.5.1.1
Item	Frequency	Reference

15

NFPA 25 Public Inputs

- PI-169 – Modifies Table 13.1.1.2



Public Input No. 169-NFPA 25-2023 [Section No. 13.1.1.2]

Item	Frequency	Reference
Hose connection pressure regulating	Annually	13.2.1
Hose rack pressure regulating	Annually	13.5.3.1
Fire pump circulation relief	With no flow test	13.5.6.1
Fire pump main pressure-relief	With fire pump test	13.5.6.2
Valve supervisory signal initiating device	Quarterly	13.3.2.1.3
Supervisory signal devices (except valve supervisory switches)	Quarterly	13.2.5.1
Air compressors and nitrogen generators	Monthly	13.10.2
Vapor phase corrosion inhibitor	Monthly	13.10.2
Waterflow alarms	Quarterly	13.2.3
Testing		
Backflow prevention assemblies	Annually	13.7.2
Control valves	-	-
Operation and position	Annually	13.3.3.1
Valve status test	After the control valve closed and reopened	13.3.3.4
Supervisory	Semiannually	13.3.3.5
Deluge valves	-	-
Trip test	Annually/3 years	13.4.4.2.3
Dry pipe valves/	-	-
quick-opening devices	-	-
Air leakage	3 years	13.4.5.2.9
Priming water	Quarterly	13.4.5.2.1
Low air pressure alarm	Annually	13.4.5.2.6
Quick-opening devices	Quarterly	13.4.5.2.4
Trip test	Annually	13.4.5.2.2
Full-flow trip test	3 years	13.4.5.2.2.2
Gauges	5 years	13.2.4.2
Main drains	Annually/quarterly	13.2.2
Precision valves	-	-
Priming water	Quarterly	13.4.3.2.1
Low air pressure alarms	Quarterly	13.4.3.2.11
Trip test	Annually/3 years	13.4.3.2.2 and 13.4.3.2.3
Air leakage	3 years	13.4.3.2.6
Low temperature alarm	Annually	13.4.3.2.12
Pressure-regulating and relief valves	-	-
Master pressure regulating	Quarterly/annually	13.5.4.2 and 13.5.4.3
Sprinkler systems pressure reducing	Annually/5 years	13.5.1.3 and 13.5.1.2
Hose connection pressure regulating	Annually/5 years	13.5.2.3 and 13.5.2.2
Hose rack pressure regulating	Annually/5 years	13.5.3.3 and 13.5.3.2
Item	Frequency	Reference

16

NFPA 25 Public Inputs

- PI-169 – Modifies Table 13.1.1.2



Public Input No. 169-NFPA 25-2023 [Section No. 13.1.1.2]

Item	Frequency	Reference
Fire pump circulation relief	With churn test	13.5.6.1.2
Fire pump pressure relief valves	With fire pump test	13.5.6.2.3
Air compressors and nitrogen generators	Annually	13.10.3
Hose valves	Annually/3 years	13.6.2
Waterflow alarms	Semiannually	13.2.3
Supervisory signal devices (except valve supervisory switches)	Annually	13.2.5.2
Maintenance		
Alarm valves	Per manufacturer	13.4.1.3
Backflow prevention assemblies	Per manufacturer	13.7.3
Check valves	Per manufacturer	13.4.2.2
Control valves (outside screw and yoke)	Annually	13.3.4
Deluge valves	Annually/5 years	13.4.4.3
Dry pipe valves/	Annually	13.4.5.3
quick-opening devices	As needed	13.6.3
Hose valves	Annually/5 years	13.4.3.3
Precision valves	Per manufacturer	13.10.4
Air compressors and nitrogen generators	Per manufacturer	13.10.4
Vapor phase corrosion inhibitor	Per manufacturer	13.10.4.3

17

NFPA 25 Public Inputs

- PI-168 – Adds new section 13.10.4



Public Input No. 168-NFPA 25-2023 [Section No. 13.10.4]

13.10.4 Maintenance.

13.10.4.1

Air compressors or nitrogen generators dedicated to water-based fire protection systems shall be maintained in accordance with the manufacturer's instructions.

13.10.4.2

Compressors requiring oil shall have the oil replaced on an annual basis unless the manufacturer's instructions require more frequent replacement.

13.10.4.3

Vapor phase corrosion inhibitors shall be maintained in accordance with the manufacturer's instructions.

18

NFPA 25 Public Inputs

- PI-167 – Adds new section 13.10.2(6)



Public Input No. 167-NFPA 25-2023 [Section No. 13.10.2]

13.10.2 Inspection.

Air compressors and nitrogen generators dedicated to water-based fire protection systems shall be inspected monthly to verify the following:

- (1) Air compressor or nitrogen generator is free of physical damage.
- (2) Power wiring to the air compressor is intact and free of physical damage.
- (3) Piping from the air compressor or nitrogen generator to the fire protection system is intact and free of physical damage.
- (4) The means of anchoring the air compressor or nitrogen generator to the structure or to the system piping is secure, tight, and free of physical damage.
- (5) Air compressors requiring oil have the required amount of oil in the oil reservoir.
- (6) Vapor phase corrosion inhibitor equipment is intact and free of physical damage.

Attachment #2: Public Comment Report



Public Comment No. 13-NFPA 25-2024 [Section No. 1.1.3.1]

1.1.3.1*

[This standard does not require the inspector to verify the adequacy of the design of the system.](#)

[1.1.3.2 Unless otherwise stated in this standard, the inspector is not required to verify the adequacy of the ~~design or~~ installation of the system.](#)

Statement of Problem and Substantiation for Public Comment

I agree with Mr. Ketner's negative ballot, the current wording implies that there are times where an inspector will need to also verify the adequacy of the design of the system. However, it is the property owner or his representative who is responsible for such verifications. There is no where in NFPA 25 that I am aware of where an ITM inspector is charged with conducting a design review.

I am also in agreement with Mr. Larrimer in PI 117, that there are occasions when an inspector is required to inspect installation aspects.

Therefore, the text suggested above breaks the verbiage into two separate paragraphs, one to design and one to deal with installation issues.

Related Item

- FR-1, PI-117

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

Street Address:

City:

State:

Zip:

Submittal Date: Tue Apr 02 16:54:51 EDT 2024

Committee: INM-AAA



Public Comment No. 88-NFPA 25-2024 [New Section after 3.3.10]

TITLE OF NEW CONTENT

Add a definition for Dwelling Unit

3.3.12 Dwelling Unit

One or more rooms arranged for the use of one or more individuals living together, as in a single housekeeping unit normally having cooking, living, sanitary, and sleeping facilities that include, but are not limited to, hotel rooms, dormitory rooms, apartments, condominiums, sleeping rooms in nursing homes, and similar living units.

Statement of Problem and Substantiation for Public Comment

Provides a definition of a dwelling unit to support PC XYZ?

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 87-NFPA 25-2024 [<u>Section No. 5.3.1.1.1 [Excluding any Sub-Sections]</u>]	Provides required definition for PC 87
Public Comment No. 89-NFPA 25-2024 [<u>New Section after 5.3.1.1.1]</u>]	
<u>Related Item</u>	
• Public Input No. 152-NFPA 25-2023 [New Section after 3.3]	

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Committee: INM-AAA



Public Comment No. 39-NFPA 25-2024 [Section No. 3.3.24]

3.3.24* Inspection, Testing, and Maintenance Service.

A service provided by ~~qualified~~ knowledgeable and trained personnel through which specific system components are inspected and tested at required frequencies and are maintained as necessary.

Statement of Problem and Substantiation for Public Comment

The term "qualified" should be replaced with "knowledgeable and trained" to correlate with the installation standards referenced in NFPA 25.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 38-NFPA 25-2024 [Section No. 4.1.1.3]	Qualified
<u>Related Item</u>	
• CI-67	

Submitter Information Verification

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Committee: INM-AAA



Public Comment No. 38-NFPA 25-2024 [Section No. 4.1.1.3]

4.1.1.3*

Inspection, testing, and maintenance shall be performed by ~~qualified personnel~~.

~~4.1.1.3.1~~ * –

~~Qualified personnel shall meet at least one of the following qualifications:~~

- ~~(1) Meets the requirements and training for a given field acceptable to the authority having jurisdiction~~
- ~~(2) Is certified by a nationally recognized fire protection certification organization acceptable to the authority having jurisdiction~~
- ~~(3) Is registered, licensed, or certified by a state or local authority to perform inspection, testing, and maintenance of water-based fire protection systems~~

knowledgeable and trained personnel for the specific tasks performed in accordance with this standard.

Statement of Problem and Substantiation for Public Comment

This PC is submitted in support of CI-67 to correlate with the language used in the water-based installation standards. Additionally, new text is proposed to address the different tasks required by NFPA 25 that would require different knowledge and training in order to perform those tasks adequately.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 39-NFPA 25-2024 [Section No. 3.3.24]	
<u>Related Item</u>	
• CI-67	

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Committee: INM-AAA



Public Comment No. 73-NFPA 25-2024 [Section No. 4.1.1.3.1]

4.1.1.3.1*

Qualified personnel shall meet

~~at least one of~~

~~the~~

~~following qualifications:~~Meets the

requirements and training for a given field acceptable to the authority having jurisdiction

~~to~~

.

A.4.1.1.3.1

The following are examples that could meet the definition of qualified

(1) certified by a nationally recognized fire protection certification organization acceptable to the authority having jurisdiction

~~to~~

(2) registered, licensed, or certified by a state or local authority to perform inspection, testing, and maintenance of water-based fire protection systems

Statement of Problem and Substantiation for Public Comment

This substantiation is enhanced content from NFPA and fits this section very well as general in nature. The use of the term qualified in the standard is intended to be general in nature. The intent of NFPA 25 is that the owner or the owner's designated representative(s) perform many of the required inspections. For example, the owner or the owner's representative could be trained to a level acceptable to the AHJ, and therefore, be qualified to perform the monthly inspection to verify that the system control valve(s) are open. A facility maintenance person could be trained to inspect pressure gauges, exterior conditions of water storage tanks, accessibility of fire hydrants, and so forth. Moving specific requirements to the annex provides detailed information as to what some jurisdictions or states may require to meet qualifications.

Related Item

- CI-67

Submitter Information Verification

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Committee:	INM-AAA



Public Comment No. 51-NFPA 25-2024 [Section No. 4.1.4]

4.1.4 Notification of Impairment, System Shutdown, or Testing.

The property owner or designated representative shall notify the authority having jurisdiction, the fire department, if required, and the alarm-receiving facility when an impairment is identified and before testing or shutting down a system or its supply.

4.1.4.1– The notification of an impairment shall be required for both pre-planned and emergency impairments.

4.1.4.1.1 Additional information required by 15.5.2 as applicable shall be included in the notification.

4.1.4.2 The notification of system shutdown or test shall include the purpose for the shutdown or test, the system or component involved, the estimated time of shutdown or test, and the expected duration of the shutdown or test.

4.1.4.2–

The

3 The authority having jurisdiction, the fire department, and the alarm-receiving facility shall be notified when the system, supply, or component is returned to service or when the test is complete.

Statement of Problem and Substantiation for Public Comment

A requirement for the notification of different entities in chapter 4 currently doesn't get triggered when an impairment is discovered. An impairment is the same as the system being shut down for repairs or testing and should be included in 4.1.4. As an example, a frozen system is an impaired system requiring notifications by the owner or their authorized representative..

Related Item

- FR-19

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Committee: INM-AAA



Public Comment No. 72-NFPA 25-2024 [New Section after 4.1.5.1]

4.1.5.1*

Whenever impairments, critical deficiencies, or non-critical deficiencies are identified in water-based fire protection systems maintained in accordance with NFPA 25, both of the following shall apply:

- (1) Deficiencies shall be repaired in a time frame approved by the AHJ.
- (1) Until impairments are repaired, an approved impairment program shall be implemented in accordance with Chapter 15

A.4.1.5.1

A generally accepted practice is for critical deficiencies to be corrected or repaired within 30 days, noncritical deficiencies should be corrected or repaired within 90 days, and impairments should be corrected as soon as practical. [1 , A.13.1.9]

Statement of Problem and Substantiation for Public Comment

New language was added in the 2024 edition of NFPA 1 addressing enforcement of deficiencies and impairments with annex language for suggested repair times. In the first draft the language was extracted but the committee did not like the way it was written. The language in this PC shows the corrections that were suggested and not extracted from NFPA 1. The annex note is an extract from NFPA 1. This language will assist in enforcement from the AHJ as well as provide guidance to the building owner on time frames that items should be repaired. Currently NFPA 25 annex states impairment should be corrected as soon as possible, critical deficiencies in a timely fashion, and non critical in a reasonable time period. Also this language is being submitted as a PI for the 2027 edition of NFPA 1.

Related Item

- PI-16

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Committee:	INM-AAA



Public Comment No. 14-NFPA 25-2024 [Section No. 4.1.10.1]

4.1.10.1

A permanently marked metal or rigid plastic information sign shall be placed at the first control valve after the water supply main enters the protected structure or at an approved location **each** system riser, antifreeze loop or auxiliary system control valve .

Statement of Problem and Substantiation for Public Comment

The proposed text is contrary to the similar provisions of NFPA 13 for General Information Signs. As per FR-1144 of the recent NFPA 13 revision cycle, which states in Section 29.6.1.2 that "Such signs shall be placed at each system riser." With this, the proposed NFPA 25 text is directly at odds with a corresponding installation standard, so it should not be adopted.

Further, if there are multiple systems in a building (ie. standpipe, dry sprinkler system, antifreeze system, etc.), a single sign at the (first) water supply control valve would be very complicated, vis-à-vis identifying the location of control valves, auxiliary drains, etc. where/on which system the various drain connections are located, etc.

Additionally, in recent projects that I have been involved with, I have seen those first control valves being in awkward locations, above ceilings, in void spaces or in isolated service rooms, which are impractical places for sign placement.

Therefore, the text should be returned to call for information signs to be located at each system riser.

Related Item

- FR-11, PI-119

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Submittal Date: Tue Apr 02 16:58:58 EDT 2024

Committee: INM-AAA



Public Comment No. 74-NFPA 25-2024 [Section No. 4.1.10.1]

4.1.10.1

A permanently marked metal or rigid plastic information sign shall be placed
~~at the first control valve after the water supply main enters the protected structure or at an~~
~~approved location~~
at each system riser .

Statement of Problem and Substantiation for Public Comment

There are situations where this information is required at locations other than where the system enters the building. Also an information sign is required on all dry and preaction systems to indicate location of low point drains. This requirement also aligns with the requirement of the general information sign.

Related Item

- FR-11

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Committee: INM-AAA



Public Comment No. 15-NFPA 25-2024 [Sections 4.1.11.1, 4.1.11.2]

Sections 4.1.11.1, 4.1.11.2

4.1.11.1*

For existing antifreeze solutions that are permitted to remain in a system, as per 5.3.4.4.2 and 5.3.4.4.3, an antifreeze information sign shall be placed on the antifreeze system control valve indicating the manufacture type and brand of the antifreeze solution, the concentration by volume of the antifreeze solution used, and the volume of the antifreeze solution used in the system.

4.1.11.2

An antifreeze information sign for listed solutions shall be placed on the antifreeze system main valve indicating the manufacture type and brand of the antifreeze solution, the minimum use temperature of the antifreeze solution used, and the volume of the antifreeze solution used in the system.

Statement of Problem and Substantiation for Public Comment

A.4.1.11.1 is incorrect. As currently proposed, there are now two paragraphs which call for antifreeze signs. The new paragraph 4.1.11.2 calls for a sign when listed antifreeze solutions are utilized as per 5.3.4.4, and the exiting paragraph 4.1.11.1 discusses the signage requirements for existing antifreeze solutions that are permitted to remain in a system as per 5.3.4.4.2 and 5.3.4.4.3. Therefore, the annex text should be deleted as is not relevant.

Also, in this PC, some additional text is suggested for the beginning of 4.1.11.1, to clarify what the type of antifreeze solution that specific signage information is required for.

Related Item

- FR-16, PI-26

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Submittal Date: Tue Apr 02 17:02:11 EDT 2024

Committee: INM-AAA



Public Comment No. 48-NFPA 25-2024 [Section No. 4.1.11.2]

4.1.11.2

An antifreeze information sign for listed solutions shall be placed on the antifreeze system main valve indicating the manufacture type and brand of the antifreeze solution, the minimum ~~use~~ design temperature of the antifreeze solution used, and the volume of the antifreeze solution used in the system.

Statement of Problem and Substantiation for Public Comment

The minimum use temperature is irrelevant to the design when considering viscosity and other temperature-dependent characteristics of the antifreeze solution. The sign needs to identify the temperature that the system was designed to.

Related Item

- FR-16

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Committee: INM-AAA



Public Comment No. 52-NFPA 25-2024 [Section No. 4.3.6]

4.3.6 –

~~All records shall be maintained in a documentation cabinet, where required.~~

Statement of Problem and Substantiation for Public Comment

This added section creates more problems and questions than it resolves. Adding "Where Required" is ambiguous and creates confusion about when a document cabinet must be provided. In addition, this section is in conflict with section 4.3.1.2 which permits records to be stored and accessed electronically.

Related Item

- PI 136 and FR 12

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Committee: INM-AAA



Public Comment No. 6-NFPA 25-2024 [Section No. 4.3.6]

4.3.6

All records shall be maintained ~~in a documentation cabinet~~ and be readily available , where required.

Statement of Problem and Substantiation for Public Comment

Many ITM and CMMS system PM documents are stored digitally. This prescriptive requirement of a "documentation cabinet" will require physical hard copies to be developed and stored in an defined cabinet. In accordance with 4.3.1.1, records shall be maintained by the property owner. The owner should be able to decide the best accessible methodology for the records. In addition, 4.3.1.2 that states that records may be permitted to be stored and accessed electronically. The requirement of a documentation cabinet is in conflict with 4.3.1.2 that allows for electronic access. It is recommended the addition either be revised by removing the verbiage "document cabinet" or removed the proposed section all together.

Related Item

- FR 12

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Committee: INM-AAA



Public Comment No. 61-NFPA 25-2024 [Section No. 4.3.6]

4.3.6

All records shall be maintained in a documentation cabinet, where required.

A.4.3.6 The document cabinet required by 4.3.6 of NFPA 25 and Section 16.11.1.3 of NFPA 13 was introduced in the 2025 edition of NFPA 13 and, as such, should not be expected to be present on systems installed prior. The documents that could be maintained in the cabinet include hard or electronic copies of as-built drawings, original acceptance tests, manufacturers data sheets, hydraulic data plates and any other documents related to the fire sprinkler system that could be of importance.

Statement of Problem and Substantiation for Public Comment

This PC is to clarify that the documentation cabinet is not required to be a retroactive requirement and provide guidance on documents that could be maintained inside the cabinet.

Related Item

- FR-12

Submitter Information Verification

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Committee: INM-AAA



Public Comment No. 44-NFPA 25-2024 [Section No. 5.2.1.1.1]

5.2.1.1.1*

Any sprinkler that shows signs of any of the following shall be replaced:

- (1) Leakage
- (2) Corrosion- ~~detrimental to sprinkler performance~~
- (3) Physical damage
- (4) Loss of fluid in the glass bulb heat-responsive element
- (5) Loading- ~~detrimental to sprinkler performance~~
- (6) Paint, other than that applied by the sprinkler manufacturer, ~~detrimental to sprinkler performance~~

Statement of Problem and Substantiation for Public Comment

The subjective application of this requirement increases the liability of the inspector and any corrosion, loading, or paint on a sprinkler should require replacement.

Related Item

- FR-21

Submitter Information Verification

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Submittal Date: Mon May 13 18:06:02 EDT 2024

Committee: INM-AAA



Public Comment No. 16-NFPA 25-2024 [Section No. 5.2.1.1.5]

5.2.1.1.5

Where escutcheons ~~Escutcheons~~ and coverplates for recessed, flush, and concealed sprinklers ~~that~~ are found to be missing or ~~that~~ show signs of any of the following deficiencies, they shall be replaced with ~~their~~ their listed escutcheons or coverplates that are part of the listed sprinkler assembly :

- (1) Physical damage
- (2) Corrosion detrimental to sprinkler performance
- (3) Loading detrimental to sprinkler performance
- (4) Paint, other than that applied by the sprinkler manufacturer, detrimental to sprinkler performance

5.2.1.1.5.1

Where the listed escutcheon or coverplate from a listed sprinkler assembly is required to be replaced in accordance with 5.2.1.1.5 and is no longer commercially available, the entire sprinkler assembly shall be replaced.

Statement of Problem and Substantiation for Public Comment

Editorial. As proposed the text is awkward, I would respectfully suggest that It should be revised for better clarity.

Related Item

- FR-21

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Submittal Date: Tue Apr 02 17:16:01 EDT 2024

Committee: INM-AAA



Public Comment No. 50-NFPA 25-2024 [Section No. 5.2.1.1.5]

5.2.1.1.5

Escutcheons and coverplates for recessed, flush, and concealed sprinklers that are missing or that show signs of any of the following shall be replaced with their listed escutcheons or coverplates:

- (1) Physical damage
- (2) Corrosion detrimental to sprinkler performance
- (3) Loading detrimental to sprinkler performance
- (4) Paint, other than that applied by the sprinkler manufacturer, detrimental to sprinkler performance

5.2.1.1.5.1— Coverplates for concealed sprinklers found to be glued or caulked to the ceiling shall be replaced.

5.2.1.1.5.2 Where the listed escutcheon or coverplate from a listed assembly is required to be replaced in accordance with 5.2.1.1.5 or 5.2.1.1.5.1 and is no longer commercially available, the sprinkler shall be replaced.

Statement of Problem and Substantiation for Public Comment

The standard makes reference to concealed sprinklers that are caulked or glued to the ceiling in Table A.3.3.8, but there isn't a requirement in the body of the standard to have them replaced. This new text is needed to fill this gap.

Related Item

- PI-133, FR-21

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Committee: INM-AAA



Public Comment No. 45-NFPA 25-2024 [Section No. 5.2.1.1.5 [Excluding any Sub-Sections]]

Escutcheons and coverplates for recessed, flush, and concealed sprinklers that are missing or that show signs of any of the following shall be replaced with their listed escutcheons or coverplates:

- (1) Physical damage
- (2) ~~Corrosion detrimental to sprinkler performance~~
~~Loading detrimental to sprinkler performance~~
- (3) Corrosion
- (4) Loading
- (5) Paint, other than that applied by the sprinkler manufacturer, ~~detrimental to sprinkler performance~~

Statement of Problem and Substantiation for Public Comment

The subjective application of this requirement increases the liability of the inspector and any corrosion or paint on a sprinkler should require replacement

Related Item

- FR-21

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Submittal Date: Mon May 13 18:08:17 EDT 2024

Committee: INM-AAA



Public Comment No. 77-NFPA 25-2024 [Section No. 5.2.1.1.5 [Excluding any Sub-Sections]]

Escutcheons and coverplates for ~~recessed, flush, and concealed sprinklers~~ that are missing or that show signs of any of the following shall be replaced with their listed escutcheons or coverplates:

- (1) Physical damage
- (2) Corrosion detrimental to sprinkler performance
- (3) Loading detrimental to sprinkler performance
- (4) Paint, other than that applied by the sprinkler manufacturer, detrimental to sprinkler performance
- (5) Coverplates plates caulked or glued to the ceiling or wall.

A.5.2.1.1.5

flat and adjustable escutcheons that do not affect the response or spray pattern are not required to be listed and should not require replacement.

Statement of Problem and Substantiation for Public Comment

escutcheons are required where sprinkler/piping penetrates membranes. The inspector will not be able to determine this during routine inspections so cup and skirt style escutcheons should be included to required replacement.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
<u>Public Comment No. 76-NFPA 25-2024 [Section No. 5.2.1.1.6]</u>	
<u>Public Comment No. 76-NFPA 25-2024 [Section No. 5.2.1.1.6]</u>	
<u>Public Comment No. 78-NFPA 25-2024 [Section No. A.5.2.1.1.6]</u>	

Related Item

- FR-21

Submitter Information Verification

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Committee: INM-AAA



Public Comment No. 76-NFPA 25-2024 [Section No. 5.2.1.1.6]

5.2.1.1.6 * –

~~Escutcheons for pendent sprinklers that are not recessed, flush, or concealed shall not be required to be replaced if found missing during the inspection.~~

Statement of Problem and Substantiation for Public Comment

Escutcheons are used in certain situations when sprinkler piping penetrates through membranes an escutcheon is required. this includes cup and skirts, there is no way for the inspector to know this therefore we should error on the side of caution and require escutcheons for cup and skirt style escutcheons as well.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
<u>Public Comment No. 77-NFPA 25-2024 [Section No. 5.2.1.1.5 [Excluding any Sub-Sections]]</u>	
<u>Public Comment No. 77-NFPA 25-2024 [Section No. 5.2.1.1.5 [Excluding any Sub-Sections]]</u>	
<u>Public Comment No. 78-NFPA 25-2024 [Section No. A.5.2.1.1.6]</u>	

Related Item

- FR-22

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Public Comment No. 40-NFPA 25-2024 [Section No. 5.2.1.1.7]

5.2.1.1.7 Sprinkler Guards.

5.2.1.1.7.1

Where installed, ~~a~~ ~~sprinkler guard~~ guards shall be inspected from the floor level annually.

5.2.1.1.7.2

~~A damaged~~ Damaged ~~sprinkler guard~~ guards shall be replaced with a guard listed for the sprinkler.

Statement of Problem and Substantiation for Public Comment

Editorial

Related Item

- FR-41

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Committee: INM-AAA



Public Comment No. 46-NFPA 25-2024 [Section No. 5.2.5]

5.2.5* Hydraulic Design Information Sign.

The hydraulic design information sign shall be inspected annually to verify that it is provided, attached securely to the sprinkler riser, and is legible.

5.2.5.1

The hydraulic design information sign shall not be required to be inspected where the occupancy does not contain any high-piled storage.

5.2.5.2

A hydraulic design information sign that is missing or illegible shall be replaced.

5.2.5.2 3

A pipe schedule system shall have a hydraulic design information sign that reads "Pipe Schedule System."

Statement of Problem and Substantiation for Public Comment

Design criteria for high-piled storage is necessary, but for the occupancy classification approach, the sign is not as critical and would be required to be replaced anyway by NFPA 13 once any modifications are made to the system.

Related Item

.

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Submittal Date: Mon May 13 18:10:28 EDT 2024

Committee: INM-AAA



Public Comment No. 2-NFPA 25-2024 [Sections 5.2.7, 5.2.8]

The general information sign required by NFPA 13

Sections 5.2.7, ~~5.2.8~~

5.2.7 – Information Sign.

The information sign required by ~~4.1.10~~ shall be inspected annually to verify that it is provided, securely attached, and legible.

5.2.8 * – General Information Sign.

8* General Information Signs.

Where required by NFPA 13, the general information sign shall be inspected annually to verify that it is provided, securely attached, and legible.

5.2.8.1

–

Such general information shall be provided with a permanently marked weatherproof metal or rigid plastic sign, secured with corrosion-resistant wire, chain, or other acceptable means. [13 : 29.6.1.1]

5.2.8.2

–

Such signs shall be placed at each system riser. [13 : 29.6.1.2]

5.2.8.3

Where the general information sign was not required at the time of system acceptance, only the information sign required by 4.1.10 shall be inspected annually to verify that it is provided, securely attached, and legible.

Statement of Problem and Substantiation for Public Comment

Combine the requirements of 5.2.7 and 5.2.8 to clarify the intent on when either sign is required.

Related Item

- FR-22

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Submittal Date: Tue Mar 19 16:04:42 EDT 2024

Committee: INM-AAA



Public Comment No. 89-NFPA 25-2024 [New Section after 5.3.1.1.1]

Sprinklers in Dwelling Units

Where sprinklers have been installed for 50 years in dwelling units, one of the following shall occur:

- (1) The sprinklers shall be replaced with fast response sprinklers.
- (2) Representative samples of the sprinklers shall be tested and the thermal sensitivity shall be such that the RTI does not exceed 65 (meters-seconds)^{1/2}.

Statement of Problem and Substantiation for Public Comment

Existing standard response sprinklers in dwelling units with RTI<350 should be replaced with new fast response sprinklers with an RTI<50 to provide the life safety benefits that have been required by NFPA 13 in all new light hazard occupancies since 1996. Allowing 50-year-old standard response sprinklers with an RTI<350 to remain in dwelling units does not provide an appropriate level of life safety for building occupants.

Data has been provided to support this public comment and the need to replace standard response sprinklers with fast response after 50 years in dwelling units. This requirement is not in conflict with NFPA 13, Chapter 30, as that chapter is specific to modifications or additions to existing systems with existing standard response sprinklers and NFPA 25 is specific to periodic inspection, testing, and maintenance including testing or replacement of sprinklers.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 88-NFPA 25-2024 [New Section after 3.3.10]	
	<u>Related Item</u>
• Public Input No. 151-NFPA 25-2023 [New Section after 5.3.1.1.1]	

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Submittal Date: Thu May 30 14:19:52 EDT 2024
Committee: INM-AAA



Public Comment No. 49-NFPA 25-2024 [Section No. 5.3.4.4.1 [Excluding any Sub-Sections]]

~~Where acceptable to the AHJ, listed~~ Listed antifreeze solutions used to replace nonlisted antifreeze solutions shall be permitted to be used outside their system volume and hydraulic calculations requirements if the temperature range limitations are not exceeded.

Statement of Problem and Substantiation for Public Comment

Requesting and obtaining AHJ approval is problematic and isn't necessary.

First, on any given project there are multiple AHJs as defined by the NFPA, including local fire officials, building officials, insurance underwriters, and any number of entities as described in Annex A. From which one should approval be requested or should it be from all potential AHJs? Will the AHJ(s) understand what they're approving? Many AHJs take the position that if the code or standard allows it, then they're good with it. Submitting for a variance or for special permission is usually denied unless first signed off by a PE or equivalent.

Second, either it's acceptable to use listed antifreeze solutions in existing systems outside of their listing for the two specific conditions, or it isn't. The NFPA 25 technical committee is the best entity to determine that since they have the necessary technical data to support this allowance.

Related Item

- First Revision No. 27

Submitter Information Verification

Submitter Full Name: Terry Victor

Organization: Risk Suppression Partners LLC

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City:

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Submittal Date: Tue May 21 15:17:37 EDT 2024

Committee: INM-AAA



Public Comment No. 83-NFPA 25-2024 [Section No. 5.3.4.4.1 [Excluding any Sub-Sections]]

~~Where acceptable to the AHJ, listed~~ Listed antifreeze solutions used to replace nonlisted antifreeze solutions shall be permitted to be used outside their system volume and hydraulic calculations requirements if the temperature range limitations are not exceeded.

Statement of Problem and Substantiation for Public Comment

Requiring the AHJ to determine acceptability puts an undue burden on the AHJ to take the time to understand the details around using listed antifreeze in systems where unlisted antifreeze has been used. Many AHJ's do not have the time or resources necessary to do this. Additionally, as there isn't guidance on what things need to be considered or what would make it acceptable, there is an inherent inconstancy in how these cases are evaluated by AHJs. I believe it's the Technical Committee who has the expertise and is better suited to determine the requirements for allowing the use of listed antifreeze in systems where unlisted antifreeze has been used.

Related Item

- First Revision 27

Submitter Information Verification

Submitter Full Name: Manuel Silva

Organization: Johnson Controls

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Submittal Date: Thu May 30 11:47:25 EDT 2024

Committee: INM-AAA



Public Comment No. 18-NFPA 25-2024 [Section No. 5.4.1.6.6.1]

5.4.1.6.6.1*

The list shall include the following:

- (1) [Sprinkler identification number \(SIN\)](#)
;
- (2) [_ if equipped](#)
;
- (3) [; or, the manufacturer, model,](#)
~~K-factor~~
- (4) [orifice , deflector type, thermal sensitivity, and pressure rating](#)
~~, and temperature rating~~
- (5)
- (6) ~~Manufacturer's sprinkler wrench model number for each sprinkler type~~
- (7) [General description](#)
- (8) [Quantity of each type](#)
~~of sprinkler installed in the property~~ ~~Quantity of each type of sprinkler~~
- (9) [_ to be contained in the cabinet](#)
- (10) [Issue or revision date of the list](#)

[~~13: 16.2.7.7.1~~]

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballots of Mr. Larrimer and Mr. Bellamy. The proposed changes to 5.4.1.6.6.1 makes the new NFPA 13 criteria retroactive, which is overly burdensome. The additional information called for was only introduced into NFPA 13-2025, which has not even been published yet. It will take many years before the Building Codes catch up and start to reference the 2025 edition of NFPA 13, so NFPA 25-2026 should not be mandating information such as the quantity of each type of sprinkler installed in the property. A value which serves little purpose in any case, and if needed, should be available from the as-built drawings which are required to be maintained on site.

Related Item

- FR-56

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

Street Address:

City:

State:

Zip:

Submittal Date: Tue Apr 02 17:28:20 EDT 2024

Committee: INM-AAA



Public Comment No. 53-NFPA 25-2024 [Section No. 5.4.1.6.6.1]

5.4.1.6.6.1*

The list shall include the following:

- (1) Sprinkler identification number (SIN), if equipped, the manufacturer, model, K-factor, deflector type, thermal sensitivity, and pressure rating, ~~and temperature rating~~ .
- (2) Manufacturer's sprinkler wrench model number for each sprinkler type
- (3) General description
- (4)
- (5) Quantity of each type of sprinkler
~~installed in the property~~
- (6) ~~Quantity of each type of sprinkler~~ to be contained in the cabinet
- (7) Issue or revision date of the list

{ ~~13: 46.2.7.7.1~~ }

Statement of Problem and Substantiation for Public Comment

This is a retroactive requirement. Adding the temperature ratings and the total quantity of each type of sprinkler installed in property can be costly and burdensome to the owner with little to no benefit.

Related Item

- Pls 139, 155 FR-56

Submitter Information Verification

Submitter Full Name: Russell Leavitt

Organization: Telgian Corporation

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Zip:

Submittal Date: Wed May 22 11:26:03 EDT 2024

Committee: INM-AAA



Public Comment No. 57-NFPA 25-2024 [Section No. 6.2.4.1]

6.2.4.1

Piping shall be inspected annually for the following conditions:

- (1) Damaged piping
- (2) ~~Damaged control valves~~
- (3) Missing or damaged pipe support device (i.e., missing or damaged hanger or seismic brace)
- (4) ~~Damaged supervisory signal initiating device~~

Statement of Problem and Substantiation for Public Comment

Control valves and supervisory signal initiating devices are covered in Chapter 13.

Related Item

- FR-80 • FR-81

Submitter Information Verification

Submitter Full Name: Kevin Hall

Organization: American Fire Sprinkler Association

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City:

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Zip:

Submittal Date: Wed May 22 11:48:51 EDT 2024

Committee: INM-AAA



Public Comment No. 58-NFPA 25-2024 [Section No. 6.2.5]

6.2.5 Hose.

6.2.5.1

Hose shall be inspected annually for the following conditions as required by NFPA 1930:

- (1) Mildew, cuts, abrasions, and deterioration
- (2) Couplings hose threads damaged
- (3) Gaskets missing or deteriorated
- (4) Incompatible threads on coupling
- (5) Hose not connected to hose rack nipple or valve
- (6) ~~Hose test outdated~~

6.2.5.2

Where any deficiency is noted, the appropriate corrective action shall be taken.

Statement of Problem and Substantiation for Public Comment

As determined by the technical committee on similar issues, past due inspections and tests are not deficiencies and are addressed through the enforcement of the fire code. The party inspecting the hose do not have the power to police conformance with the standard for tasks that they might not be contracted to perform.

Related Item

- FR-92

Submitter Information Verification

Submitter Full Name: Kevin Hall

Organization: American Fire Sprinkler Association

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City:

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Submittal Date: Wed May 22 11:56:04 EDT 2024

Committee: INM-AAA



Public Comment No. 63-NFPA 25-2024 [Section No. 6.3.1.2.1]

6.3.1.2.1

Where a horizontal standpipe on a Class I or Class III system is present and supplies three or more hose connections, system demand shall include 750 gpm (2840 L/min) for the most remote standpipe and 250 gpm (946 L/min) for each additional standpipe until the total system demand is simultaneously flowing.

A.6.3.1.2.1 Section 6.3.1.2.1 is not intended to flow test both vertical and horizontal standpipe systems if installed in the same building, but only to flow test the most demanding system of the two. All other hose valve and pressure regulating valve testing required by chapter 13 is not changed by this testing.

Statement of Problem and Substantiation for Public Comment

This PC was added to clarify that if a horizontal and vertical standpipe system is installed in the same building, only the more demanding system would be required to be flow tested. To conduct a flow test on both system is costly and not needed. Also language was added to clarify that this does not change the flow testing existing requirements for hose valve and pressure reducing valves in chapter 13.

Related Item

- FR-103 • FR-105

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: National Fire Sprinkler Association Engineering and Standards Committee.
Street Address:
City:
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Submittal Date: Tue May 28 15:09:58 EDT 2024
Committee: INM-AAA



Public Comment No. 43-NFPA 25-2024 [Section No. 8.1.1.2.7]

8.1.1.2.7

Fuel tanks, float switches, and tank level float switches and supervisory signals for interstitial space shall be tested quarterly- for liquid intrusion .

Statement of Problem and Substantiation for Public Comment

Water intrusion is covered in 8.1.1.2.9. Proposed change cleans up the language as liquid intrusion is not applicable for float switches and supervisory signals.

Related Item

.

Submitter Information Verification

Submitter Full Name: Kevin Hall

Organization: American Fire Sprinkler Association

Affiliation: AFSA Technical Advisory Council

Street Address:

City:

State:

Zip:

Submittal Date: Mon May 13 18:03:38 EDT 2024

Committee: INM-AAA



Public Comment No. 35-NFPA 25-2024 [New Section after 8.2.3]

8.2.4 Main Pressure Relief Valve.

8.2.4.1

Where installed, main pressure relief valves shall be inspected during any fire pump test.

8.2.4.2

The inspection shall verify the following conditions:

- (1) Devices and associated trim components are free of physical damage and are not leaking.
- (2) The pressure downstream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated.

8.2.4.3

The pressure relief valve shall be verified annually to be correctly adjusted and set to relieve at the correct pressure and to close below that pressure setting.

Statement of Problem and Substantiation for Public Comment

This language was previously located in Chapter 13, but is specific to fire pumps, so it is more appropriate in Chapter 8

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 36-NFPA 25-2024 [Section No. 13.5.5]	
<u>Related Item</u>	
• FR-76	

Submitter Information Verification

Submitter Full Name: Kevin Hall
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Submittal Date: Wed Apr 03 10:47:25 EDT 2024
Committee: INM-AAA



Public Comment No. 20-NFPA 25-2024 [Section No. 8.2.3.3]

8.2.3.3

Upon completion of any fire pump test, the ~~closure of the~~ circulation relief valve shall be verified to have closed automatically with discharge stopped when exposed to the normal supply pressure.

Statement of Problem and Substantiation for Public Comment

I agree with the ballot statements of Mr. Hall and Mr. Montembeault. As currently written in the First Draft Report, it could be mistakenly interpreted that the Circulation Relief Valve should be closed after testing is completed. whereas as the discharge should stop automatically when the pump operation is discontinued.

Related Item

- FR-77

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

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City:

State:

Zip:

Submittal Date: Tue Apr 02 17:38:45 EDT 2024

Committee: INM-AAA



Public Comment No. 1-NFPA 25-2024 [Section No. 8.3.2.1.3 [Excluding any Sub-Sections]]

For positive displacement pumps, the pressure relief valve shall be permitted to operate as designed during a no-flow test.

Statement of Problem and Substantiation for Public Comment

As currently written, NFPA 25 Section 8.3.2.1.3 contradicts the retroactivity clauses of NFPA 20 and NFPA 750, and is inconsistent with NFPA 20's definition of no flow. This PI recommends that the same language from 8.3.2.1.2 be employed to maintain consistency, avoid conflict with the retroactivity sections of the applicable design standard, and to permit legacy installation testing to operate as originally designed. See below for additional PI basis:

1. Consistency with NFPA 25 8.3.2.1.2: this section provides the end user with a broader range of operational testing flexibility given the language employed "shall be permitted to operate as designed." This language is necessary in 8.3.2.1.3 for legacy installations that were "designed to operate" during a no flow (i.e.: no flow to the distribution system, but recognizing flow is required to go somewhere given the pump characteristics), but may not have been through the pressure relief valve. I.e.: the design flow path could have been back through a bypass line that returns flow to the source/supply, while allowing the "operational test" to occur.
2. Existing/legacy installations that were designed to early editions of NFPA 750 (e.g.: 1996 edition) may not have the installation configuration with both an unloader and pressure relief valve (a.k.a.: safety relief valve per 2023 NFPA 20 8.5.2.1). In prior/early editions of NFPA 750, the standard was much less developed than it is today and previously there was no inclusion of positive displacement pumps in NFPA 20 nor water mist systems in NFPA 25. I.e.: without the proposed modification, NFPA 25 is effectively imparting a retroactive design requirement for designs that conform with earlier editions of NFPA 750. This is above/beyond the retroactively sections (1.4) of both NFPA 20 and NFPA 750. The inclusion of a safety relief in addition to the unloader valve was not present until the 1999 Edition of NFPA 20 which included for the first time water mist system pump (reference NFPA 20 A99 ROP). Previous editions of NFPA 750 (i.e.: 1996) did not include both an unloader and pressure relief/safety valve in either the pump section or standard as a whole.
3. NFPA 20 3.3.43 defines "No Flow" as "The condition of zero flow when the fire pump is running but the only water passing through the pump is a small flow that is discharged through the pump circulation relief valve or supplies the cooling for a diesel engine driver." Positive displacement pumps are incapable of being operated as defined by this NFPA definition of "no flow," and as specified in NFPA 20 8.3.2.1.3 (i.e.: 100% of the flow is required to go somewhere given the unique pump design, not "zero flow" or "small flow" per the no flow definition).

Related Item

- 8.3.2.1.3 PD Pump No Flow

Submitter Information Verification

Submitter Full Name: Brendan Karchere

Organization: Conocophillips

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City:

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Submittal Date: Mon Mar 18 12:03:35 EDT 2024

Committee: INM-AAA



Public Comment No. 7-NFPA 25-2024 [Section No. 8.3.3.5.3]

8.3.3.5.3*

Flow meters shall be calibrated ~~annually to~~ every 3 years to an accuracy level of ± 3 percent.

Statement of Problem and Substantiation for Public Comment

It is a burden to have building owners calibrate flow meters every year and thus they are not being utilized. Since the requirement is to flow water every three years this would require the gauge to be recalibrated at that time. All gauges that are under pressure or in use daily are required to be calibrated every 5 years. Since the flow meter gauge is generally only used once a year and not in use the rest of the year the requirement for an every year recalibration seems excessive and not practical.

Related Item

- Fire pump testing

Submitter Information Verification

Submitter Full Name: Michael Giannott

Organization: Global Fire Sprinklers

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City:

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Submittal Date: Mon Mar 25 15:40:25 EDT 2024

Committee: INM-AAA



Public Comment No. 41-NFPA 25-2024 [Section No. 8.3.7.1.3]

8.3.7.1.3

Where applicable, ~~speed and velocity pressure adjustments~~ speed adjustments shall be applied to the net pressure and flow data obtained to determine compliance with 8.3.7.2.3(3).

Statement of Problem and Substantiation for Public Comment

NFPA 20 states that velocity pressure adjustments are typically negligible and do not need to be included when evaluating pump performance. Including this language in the requirement overly complicates the evaluation of fire pumps.

Related Item

- PI-123

Submitter Information Verification

Submitter Full Name: Kevin Hall

Organization: American Fire Sprinkler Association

Affiliation: AFSA Technical Advisory Council

Street Address:

City:

State:

Zip:

Submittal Date: Mon May 13 17:54:06 EDT 2024

Committee: INM-AAA



Public Comment No. 86-NFPA 25-2024 [Section No. 8.3.7.2.3.1]

8.3.7.2.3.1

~~The fire pump assembly shall be considered acceptable where the water supply is not capable of providing flow rates beyond rated flow of the fire pump, requirements of 8.3.3.1 shall not be required if the fire pump assembly can provide system demand and at least 95 percent~~
When the suction supply does not provide enough volume to test the fire pump beyond 100 percent of its rated capacity the test shall be considered acceptable provided the fire pump assembly meets all other requirements of 8.3.7.2.3

~~(3)(a);~~

~~.~~

*A. 8.3.7.2.3

~~(3)(b), or 8.3.7.2.3(3) (c) at rated flow~~

.1

This section is not intended to no conduct flow testing of the fire pump beyond 100 percent of rated capacity. In cases where water supplies do not permit flow testing beyond rated capacity it should not be considered a failure of the fire pump. To provide a graph of the test results, the pump could be tested at churn, system demand and 100 percent of it's rated capacity.

Statement of Problem and Substantiation for Public Comment

the language submitted in first draft was not written very well. This PC is to simplify the language and add annex notes to the section

Related Item

- FR-69

Submitter Information Verification

Submitter Full Name: Vincent Powers
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Street Address:
City:
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Submittal Date: Thu May 30 12:29:17 EDT 2024
Committee: INM-AAA



Public Comment No. 37-NFPA 25-2024 [Section No. 9.2.6]

9.2.6 Tests During Interior Inspection.

Where a drained interior inspection of a steel tank is required by 9.2.5.4, the following tests shall be conducted:

- (1) Evaluation of tank coatings shall be made in accordance with the adhesion test of ASTM D3359, *Standard Test Methods for Rating Adhesion by Tape Test*, generally referred to as the “cross-hatch test.”
- (2) Dry film thickness measurements shall be taken at random locations to determine the overall coating thickness.
- (3) Nondestructive ultrasonic readings shall be taken to evaluate the wall thickness where there is evidence of pitting or corrosion.
- (4) Interior surfaces shall be spot wet-sponge tested to detect pinholes, cracks, or other compromises in the coating. Special attention shall be given to sharp edges such as ladder rungs, nuts, and bolts.
- (5) Tank bottoms shall be tested for metal loss and/or rust on the underside by use of ultrasonic testing where there is evidence of pitting or corrosion. Removal, visual inspection, and replacement of random floor coupons shall be an acceptable alternative to ultrasonic testing.
- (6) Tanks with flat bottoms shall be vacuum-box tested at bottom seams in accordance with test procedures found in NFPA 22.

{ DETAILED RESPONSE TO PROPOSED CHANGES FROM INITIAL PUBLIC INPUT PROVIDED IN ATTACHMENT }

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Sec._9.2.6_proposed_revisions_L_Scott_response_Rev.D_.pdf		

Statement of Problem and Substantiation for Public Comment

The changes proposed in the initial Public Input address situations unrelated to and outside of the scope of the testing required under Sec. 9.2.6 and the arguments are not persuasive. Detailed explanation of non-persuasive statements and issues not related to Sec.9.2.6 requirements, including an indexed markup of the original Public Input, are provided in the attachment.

Related Item

- Public Input No. 27

Submitter Information Verification

Submitter Full Name: Leslie Scott
Organization: Tank Industry Consultants
Street Address:
City:
State:
Zip:

Submittal Date:	Sun Apr 07 12:57:16 EDT 2024
Committee:	INM-AAA



Submitted by: Leslie Scott, Tank Industry Consultants

This document summarizes opposition to Public Input No. 27-NFPA 25-2023 and Committee response in First Draft Report.

Proposed Changes from Public Input

9.2.6 Tests During Interior Inspection.

Where a drained interior inspection of a steel tank is required by 9.2.5.4, the following tests shall be conducted:

1. NACE RP0288-2004 Inspection of Linings on Steel and Concrete shall be used when initial coating application or coating repair is being performed.
2. Evaluation of tank coatings shall be made in accordance with
the adhesion test of ASTM D3359, Standard Test Methods for Rating Adhesion by Tape Test, generally referred to as the "cross-hatch test."
3. ~~Dry film thickness measurements shall be taken at random locations to determine the overall coating thickness.~~
4. ~~Nondestructive ultrasonic readings shall be taken to evaluate the wall thickness where there is evidence of pitting or corrosion.~~
~~Interior surfaces shall be~~
5. ASTM D610-08 Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces. "This practice provides a standardized means for quantifying the amount and distribution of visible surface rust."
6. Evaluation of tank coatings shall be made in accordance with ASTM D714-02 Standard Test Method for evaluating Degree of Blistering of Paints. "This test method employs photographic reference standards to evaluate the degree of blistering that may develop when paint systems are subjected to conditions which will cause blistering."
7. Interior surfaces shall NO LONGER be spot wet-sponge tested to detect pinholes, cracks, or other compromises in the coating. Special attention shall be given to sharp edges such as ladder-rungs, nuts, and bolts. Refer to ASTM D5162 Section 4.7 and NACE SP0188 Section 1.4 for further information.
8. Destructive testing shall not be performed on in-service lining unless failure analysis is required by the owner. Refer to NACE RP0288-2004 Inspection of Linings on Steel and Concrete Section 3.3 for further information.
9. Nondestructive ultrasonic readings shall be taken to evaluate the wall thickness where there is evidence of pitting or corrosion.
10. Tank bottoms shall be tested for metal loss and/or rust on the underside by use of ultrasonic testing where there is evidence of pitting or corrosion. Removal, visual inspection, and replacement of random floor coupons shall be an acceptable alternative to ultrasonic testing.
11. Tanks with flat bottoms shall be vacuum-box tested at bottom seams in accordance with test procedures found in NFPA 22.

Leslie Scott Response to Public Input

Do not make proposed changes. The proponent's substantiation addresses situations unrelated to and outside of the scope of the testing required under Sec. 9.2.6 and the arguments are not persuasive. See detailed response notes below.



L. Scott Statement in Opposition of Proposed Changes

First, the provisions of 9.2.5.4 and the enacting statement in the first sentence of 9.2.6 are not properly coordinated. The conditions encountered during a 9.2.5.4 inspection require additional testing, even if they are identified during an underwater evaluation. Sec. 9.2.5.4 requires additional testing but does not explicitly require a '*drained interior inspection*' even though the testing procedures require the tank to be drained.

EXISTING LANGUAGE

9.2.5.4 Steel tanks exhibiting signs of interior pitting, corrosion, or failure of coating **shall be tested** in accordance with 9.2.6

9.2.6 Where a **drained** interior **inspection** of a steel tank is required by 9.2.5.4, the following tests shall be conducted

PROPOSED CHANGE

9.2.6 Where ~~a drained interior inspection~~ **additional interior testing** of a steel tank is required by 9.2.5.4, the following tests shall be conducted during **a drained interior inspection**:

The following comments provide explanation of the reason for recommendation to reject the proposed changes. The numbers refer to sections of the proponent's submittal that are underlined and numbered in Attachment A.

With one exception, I oppose the changes proposed in Public Input 27-NFPA 25-2023. As noted in my detailed comments, I would support deleting subparagraph (4) regarding wet-sponge testing for inspections required under Sec. 9.2.6. See my discussion below for explanation of opposition to other proposed changes. To provide context to my comments, Appendix A to this document contains index numbering related to the comments below.

1. The proponent's first claim is that the specified inspections are not designed for in-service inspections of an existing lining system. The scope of Sec. 9.2.6 is to identify the extent of failure of the coating system for areas of the tank that have been observed to show signs of interior pitting, corrosion, or coating failure. Therefore, the specified inspection and testing is specifically applicable to this situation and is not required to be performed on all tanks unless deterioration was observed during a routine interior inspection under 9.2.5.4.
2. The proponent indicates that NACE RP0288-2004 is intended for initial coating application. I believe this NACE standard is relevant to inspection of newly coated steel surfaces, whether that be at the time of initial construction of the tank or at a later time after the tank has been recoated. The proponent's statement is not relevant to testing required under Sec. 9.2.6 because NACE RP0288 provides guidelines for inspection of newly coated surfaces for the purposes of verifying compliance with a project specification. Therefore, the provisions or recommendations of that standard do not fall within the scope of Sec. 9.2.6 which requires testing of the condition of existing coatings to determine the extent of the surfaces that must be recoated.

3. The proponent instructs that NACE RP0288 states the following:

Inspection equipment that is destructive or detrimental to the integrity of an applied coating shall not be used for routine inspection.

The inspection of NFPA 22 Sec. 9.2.6 is intended to determine the extent of damaged, deteriorated, or inferior coatings, so the comment related to 'routine inspection' is not applicable. The only destructive inspection currently specified in Sec. 9.2.6 is the cross-hatch adhesion testing specified in sub-paragraph 1. In the region surrounding the areas that demonstrate visible signs of deterioration, this adhesion testing can determine if the coating system is compromised beyond the areas of deterioration even if it does not show visible signs of deterioration or degradation. In the context of an inspection under Sec. 9.2.6, this testing is recommended. Any areas where the coating has been damaged by the adhesion testing would be repaired at the same time as the areas exhibiting signs of deterioration.

4. The proponent states:

If a destructive test is necessary to verify degree of preparation, number of coats applied, adhesion, or total DFT achieved, ...

As noted previously, the only destructive test specified in Sec. 9.2.6 is the adhesion test and this test would be performed to determine the soundness of the coating system around areas that are observed to be deteriorated or corroded. The proponent states that if destructive testing is performed, the damaged area shall be repaired following procedures agreed upon during the pre-job conference. As previously stated in my comments, any areas where the coating has been damaged by the adhesion testing would be repaired at the same time as the other deteriorated or corroded areas. Repair procedures would conform to the coating manufacturer's specifications, so reference to a procedure agreed upon at the pre-job conference is not necessary and might not be appropriate.

5. The proponent states that the cross-hatch adhesion testing is a destructive testing method that is meant for new coating applications to determine if the coating applicator applied the coating products correctly. That is incorrect. As noted in my previous comments, with respect to testing required under Sec. 9.2.6, the purpose of this test is to determine the soundness of the coating system around areas that are observed to be deteriorated or corroded. The proponent's claim does not fall within the scope of the conditions that require testing under Sec. 9.2.6.

6. The proponent states:

To perform this test [cross-hatch adhesion test] on an in-service tank (such as "a drained interior" steel tank) without repairs, leaves the substrate exposed and a large potential for corrosion.

Nothing in this NFPA standard indicates a requirement to damage coatings and then leave them in an unrepaired state. As noted previously, coating repairs have already been determined to be necessary under

the Sec. 9.2.5.4 inspection that gave rise to perform testing under Sec. 9.2.6. Any damage resulting from the adhesion testing would be repaired at the same time as the other areas.

7. The proponent states:

A good rule of thumb is that if the coating has remained intact for a period of years, the adhesion of the coating is adequate.

This statement is not relevant to testing required under Sec. 9.2.6. The coating has already been determined to be deteriorated or compromised by the Sec. 9.2.5.4 inspection, thus the need for the additional Sec. 9.2.6 inspection. The proponent's statement does not address the testing required under Sec. 9.2.6.

8. The proponent states:

Performing such a test should be left to the discretion of the tank owner/operator.

Performing this test should not be discretionary if deteriorated conditions were identified under a Sec. 9.2.5.4 inspection that indicates the need for attention to the condition to preserve the integrity of the tank.

9. The proponent states:

At the very least adding an addendum that if 9.2.6 (1) is to be performed a recoat is required would be advisable.

This recommendation is not applicable under the purposes of the testing required under 9.2.6. The purpose for performing the specified test is to determine the extent of the area needing repair or recoating.

10. The proponent states:

There is little reason to perform dry film thickness (DFT) readings on an in-service tank as long as proper QC standards were maintained during the initial coating application.

DFT readings in areas around failed coatings or areas of corrosion could indicate inferior coating system integrity, that could result in future corrosion, that would not otherwise be apparent from a visual inspection, so this inspection is warranted to determine the extent of coatings that must be repaired.

11. The proponent states:

Erosion of the lining from water is not a concern.

Erosion of the lining might be a concern if coating deterioration or corrosion was identified under the 9.2.5.4 inspection. Also, insufficient film thickness can indicate other areas that could be vulnerable to future corrosion.

12. The proponent states:

A DFT survey should be performed by a QC inspector prior to in-service use of the lining to verify that the coatings meet manufacturer's recommendations at the time of application.

Inspection at the time of coating application does not apply to testing required under Sec. 9.2.6.

Therefore, this statement is irrelevant.

13. The proponent cites two entries in ASTM D5162 regarding low voltage testing. That ASTM standard provides requirements for high voltage testing of coating systems of over 20 mils dry-film thickness. For welded steel tanks, NFPA 22 requires that the coating system comply with AWWA D102 without any specific minimum dry-film thickness requirement, so the NFPA requirements should only expect interior coating systems with a total dry-film thickness of 8 mils to 12 mils. Therefore, the minor comments from the high voltage testing standard (ASTM D5162) regarding low voltage testing procedures do not seem appropriate.

However, it is my belief that if coating flaws were indicated by a low-voltage sponge test, those areas would likely exhibit obvious signs of deterioration during a visual inspection of the surface for tanks that have already been in service. Also, certain conditions for tanks that have already been in service can lead to false readings, I do not recommend sponge testing for tanks that have already been in service. Therefore, I would support deleting sub-paragraph 4 from Sec. 9.2.6 with the knowledge that it would be required for newly applied interior coatings below the maximum water level in accordance with AWWA D102.

14. The proponent advises that NACE SP0188 states:

Inspecting a coating previously exposed to an immersion condition could result in damage to the coating or could produce an erroneous detection of discontinuities due to permeation or moisture absorption of the coating.'

That standard provides requirements for both high-voltage and low-voltage testing of coating systems. The statement about possible coating damage is related to the use of high-voltage testing on coating systems less than 20 mils dry-film thickness, so that statement should be disregarded since Sec. 9.2.6 specifies low-voltage testing.

As noted above, I do not recommend sponge testing for tanks that have already been in service.

15. In relation to the sponge testing requirement, the proponent states:

The grounding of the tester requires removal of coatings to have proper connection to the substrate, requiring repairs.

This statement is not correct since there are already areas of bare steel due to coating failure or corrosion, so the grounding could be achieved at one of those locations. Additionally, as noted with respect to adhesion testing, the grounding location would be repaired at the same time as other areas or, if sponge

testing is needed for the repair coatings, the coating repairs at the grounding location can be completed after all other coating repairs are complete and tested.

However, as noted above, I do not recommend sponge testing for tanks that have already been in service.

16. The proponent states:

To perform a destructive test on a tank that is visually sound or in good condition is counterproductive and costly.

‘Visually sound or in good condition’ would not be the condition of the surfaces if the Sec. 9.2.6 testing is required as a result of the Sec. 9.2.5.4 inspection. Therefore, the proponent’s statement is unrelated to the required test.

17. The proponent states:

... as well this NFPA standard [NFPA 22] does not mention the requirement of a necessary recoat due to the destructive testing.

Sec. 4.1.5 indicates that the owner or designated representative shall correct or repair deficiencies or impairments.

Sec. 9.6.1 requires verification of integrity in accordance with NFPA 22 any time the tank components (exterior and interior) are adjusted, repaired, reconditioned, or replaced. This is true whether the conditions discovered during the Sec. 9.2.5.4 inspection or during the testing required under Sec. 9.2.6 are considered impairments or non-critical deficiencies.

The statement is inaccurate because a requirement to repair areas damaged during Sec. 9.2.6 adhesion testing would be included with the requirement to repair of other deteriorated or corroded areas that dictated the need for testing required under Sec. 9.2.6.

18. The proponent states:

The aforementioned paragraphs are examples that 1,2, and 4 of NFPA 25 9.2.6 are primarily meant for new coat application.

This statement is inaccurate since the specified testing requirements under Sec. 9.2.6 are explicitly only required when the results of a Sec. 9.2.5.4 interior inspection of existing tanks reveals conditions that need further testing as specified in Sec. 9.2.6.

However, as noted previously, I do not recommend sponge testing for tanks that have already been in service.

19. The proponent states:

In practice, for a drained interior inspection, following the standards listed below would provide a sufficient degree of non-destructive testing and visual inspection to determine the condition of the tank



lining.

Two of the testing standards proposed by the proponent, ASTM D610 and ASTM D714, can be used to evaluate certain conditions of an existing coating system based on visual observation. However, those tests cannot determine areas with insufficient adhesion that could lead to coating failure. Additionally, NACE RP0288 is intended for inspection of new coating applications rather than evaluation of the integrity of the existing coatings. Therefore, the proponent's statement is incorrect and is not persuasive.

20. The proponent states that NACE RP0288 should be followed if coating repairs are necessary. However, NFPA 22 requires coatings for steel tanks to be in accordance with AWWA D102. That AWWA standard includes provisions for coating systems, materials, surface preparation, application, testing, and inspection for the coatings, so there would no need to introduce a second standard that that does not contain complete requirements for the coating activities.

SEE ATTACHMENT A FOR MARKUP OF PUBLIC INPUT INDEXED TO THE ABOVE COMMENTS.

ATTACHMENT A
Detailed Discussion of L. Scott Response to Public Input

NOTE: Index numbers shown below correspond to discussion points in L. Scott response document.



Public Input No. 27-NFPA 25-2023 [Section No. 9.2.6]

Statement of Problem and Substantiation for Public Input

Current Sections 1, 2 and 4 are primarily designed for inspections during coating application and are not designed for in-service inspections of an existing lining system. NACE International Standard

Recommended Practice - Inspection of Linings on Steel and Concrete RP0288-2004 is intended for initial coating application. In that standard in section 3.3 it states: Inspection equipment that is destructive or detrimental to the integrity of an applied coating shall not be used for routine inspection. If a destructive test is necessary to verify degree of preparation, number of coats applied, adhesion, or total DFT achieved, the damaged area resulting from the test shall then be repaired following procedures agreed upon during the pre-job conference.

In the case of 9.2.6 (1)- Cross hatch test or adhesion test, this is a destructive testing method that is meant for new coat applications. The premise is to determine if the coating applicator applied the coating products correctly prior to job completion, thus allowing the coating applicator to rectify any issues while still being on site. To perform this test on an in-service tank (such as "a drained interior" steel tank) without repairs, leaves the substrate exposed and a large potential for corrosion. A good rule of thumb is that if the coating has remained intact for a period of years, the adhesion of the coating is adequate. Performing such a test should be left to the discretion of the tank owner/operator. See ASTM D3359 for a summary. At the very least adding an addendum that if 9.2.6 (1) is to be performed a recoat is required would be advisable.

In the case of 9.2.6 (2)- There is little reason to perform dry film thickness (DFT) readings on an in-service tank as long as proper QC standards were maintained during the initial coating application and can be referenced during re-inspection. Erosion of the lining from water is not a concern. A DFT survey should be performed by a QC inspector prior to in-service use of the lining to verify that the coatings meet manufacturer's recommendations at the time of application.

ATTACHMENT A
Detailed Discussion of L. Scott Response to Public Input



Public Input No. 27-NFPA 25-2023 [Section No. 9.2.6]

In the case of 9.2.6 (4)- Two standards advise against Wet Sponge testing on in-use linings.

13

ASTM D5162 section 4.7 states 'Although a low voltage tester can be used without damaging the lining it may also produce erroneous results.' It also states that 'Deposits may also be present on the surface causing telegraphing.'

14

NACE SP0188 section 1.4 states 'Inspecting a coating previously exposed to an immersion condition could result in damage to the coating or could produce an erroneous detection of discontinuities due to permeation or moisture absorption of the coating.'

Due to these factors, using the wet sponge method may cause an unnecessary recoat and/or repairs. It is advised not use Wet Sponge testing. In addition, the grounding of the **15** tester requires removal of coatings to have proper connection to the substrate, requiring repairs.

16

To perform a destructive test on a tank that is visually sound or in good condition is counterproductive and

17

costly, as well this NFPA standard does not mention the requirement of a necessary recoat due to the

18

destructive testing The aforementioned paragraphs are examples that 1.2. and 4 of NFPA 25 9.2.6 are primarily meant for new coat application.

In practice, for a drained interior inspection, following the standards listed below would provide a sufficient **19** degree of non-destructive testing and visual inspection to determine the condition of the tank lining.

ATTACHMENT A
Detailed Discussion of L. Scott Response to Public Input



Public Input No. 27-NFPA 25-2023 [Section No. 9.2.6]

ASTM D610-08 Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces

ASTM D714-02 Standard Test Method for Evaluating Degree of Blistering of Paints

19 NACE RP0288-2004 Inspection of Linings on Steel and Concrete

19 ASTM D610-08 is a very good standard for evaluating the level of coating breakdown which the owner can then estimate the level of repairs and costs.

ASTM D714-02 is a standard that should be followed since immersed linings can be susceptible to blistering.

20

NACE RP0288-2004 is the standard that should be followed if repairs are deemed necessary.

Please note that I have moved the statement concerning 'Nondestructive ultrasonic readings' further down so that the statements on coatings are grouped together and the statements concerning API tank inspections are grouped together.

Submitter Information Verification

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Submittal Date: Fri Feb 17 08:28:29 EST 2023
Committee: INM-AAA



Public Comment No. 64-NFPA 25-2024 [New Section after 13.2.3.7.1.1]

TITLE OF NEW CONTENT

13.2.3.7.1.2 _ *

Interruption of the signal sent by the vane-type waterflow alarm device is permitted in accordance with 13.2.3.7.1.3 and 13.2.3.7.1.4.

A. 13.2.3.7.1.2 Whenever the signal between the waterflow alarm device and the fire alarm control panel or bell is interrupted, there should be an indication either at the fire alarm control panel or the device, or both. Without some sort of indication, the signal can be left interrupted after the test to maintenance, essentially impairing the device itself. There are many ways to indicate signal interruption, including but not limited to initiation of audible and visual trouble condition or a light near the waterflow alarm device.

13.2.3.7.1.3

Interruption of the waterflow alarm circuit shall be accomplished using a device listed for the purpose.

13.2.3.7.1.4

Interruption of the waterflow alarm circuit shall result in an audible and visual trouble signal in accordance with NFPA 72 or the adopted fire code, or other approved indication at the switch signal in accordance with NFPA 72 or the adopted fire alarm code, or other approved indication at the switch.

Statement of Problem and Substantiation for Public Comment

In most cases especially when service is being completed such as repairs or modifications to the system the technician will prevent the flow switch from operating and in way to often this device is not removed rendering the flow switch ineffective. There should not be an allowance to block alarm devices from operating due to a lack of licensing or qualified personnel to do it correctly. Leaving a device in this manner is considered an impairment in NFPA 72 and a critical deficiency in NFPA 25.

Related Item

- FR-41

Submitter Information Verification

Submitter Full Name: Vincent Powers
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Submittal Date: Tue May 28 15:28:10 EDT 2024
Committee: INM-AAA



Public Comment No. 91-NFPA 25-2024 [New Section after 13.2.3.7.1.1]

13.2.3.7.1.2

Waterflow alarm circuits shall remain in service and not be interrupted or disabled except as permitted by NFPA 72 or other adopted fire alarm code.

Statement of Problem and Substantiation for Public Comment

For the 2023 edition, language was added to NFPA 25 prohibiting the interruption of waterflow fire alarm circuits except by listed means installed in accordance with the fire alarm code. FR 41 deleted that language with the justification that the wording was confusing. This PC proposes to restore the prohibition, but with more concise language hopefully addressing the committees concerns. The intent is simply to prevent wires from being removed from flow switches during testing of other system components. This happens often and sometimes leads to them not being replaced, replaced incorrectly, or causing other detrimental issues.

Related Item

- PI 126

Submitter Information Verification

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Submittal Date: Thu May 30 17:04:11 EDT 2024

Committee: INM-AAA



Public Comment No. 81-NFPA 25-2024 [Section No. 13.2.4.2]

13.2.4.2*

Gauges shall be replaced every 5 years after ~~the~~ their date of installation or tested by comparison with a calibrated gauge every 5 years.

Statement of Problem and Substantiation for Public Comment

Keep the prose direct and remove ambiguity, the curse of knowledge reminds us that we're more likely to overestimate the average reader's familiarity with NFPA and its codes, than to underestimate it (Pinker, 2014, p. 69).

Removing the determiner "every" may cause the reader to believe that the gauge(s) shall only be replaced once after the date of its installation.

Reference

S. Pinker (2014). The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century. Penguin Books Limited.

Related Item

- FR-42

Submitter Information Verification

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Submittal Date: Thu May 30 11:02:58 EDT 2024

Committee: INM-AAA



Public Comment No. 21-NFPA 25-2024 [Section No. 13.4.1]

13.4.1 Inspection of Alarm Valves.

~~Alarm valves shall be inspected as described in~~

13.4.1.1

~~and 13.4.1.2. 13.4.1.1~~

~~*~~
~~--~~

Alarm valves and system riser check valves shall be externally inspected quarterly and shall verify the following:

- (1) The gauges indicate normal supply water pressure is being maintained.
- (2) The valves and trim are free of physical damage.
- (3) All valves are in the appropriate open or closed position.
- (4) The retarding chamber or alarm drains are not leaking.
- (5) Where applicable, the valve in the connection to the pressure-type contacts or water motor-operated alarm devices are either sealed, locked, or electrically supervised in the open position.

13.4.1.2

~~*~~

~~Alarm~~

~~--~~

~~Maintenance:~~

~~13.4.1.2.1 Alarm valves and their associated strainers, filters, and restriction orifices shall be~~

~~inspected internally every 5 years~~

~~examined internally every 5 years unless tests indicate a greater frequency is necessary.~~

~~13.4.1:~~

~~3 Maintenance: 13.4.1.3.1~~

~~2.2 --~~

~~Internal components shall be cleaned/repared as necessary in accordance with the manufacturer's instructions.~~

~~13.4.1: 2: 3~~

~~.2--~~

~~-~~

~~The system shall be returned to service in accordance with the manufacturer's instructions.~~

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Work that involves system components that have to be physically disassembled to perform the prescribed work is not an “Inspection” (ie. “A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.”) Work such as draining down a system, opening up a water control valve, removing their associated strainers, filters, and restriction orifices so that it can be determined if cleans or component replacements are needed is actually “maintenance”, not “inspection”. Therefore, the provisions for the “interior inspection” of alarm valves should be moved to be part of the adjacent maintenance requirements.

Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

Submitter Information Verification

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Submittal Date: Tue Apr 02 17:43:40 EDT 2024

Committee: INM-AAA



Public Comment No. 23-NFPA 25-2024 [Section No. 13.4.2]

13.4.2 Check Valves.

13.4.2.1 ~~Inspection~~ Maintenance .

Valves shall be ~~inspected~~ examined internally every 5 years to verify that all of the valve's components operate correctly.

13.4.2.2 ~~Maintenance~~:

Internal components shall be cleaned, repaired, or replaced as necessary in accordance with the manufacturer's instructions.

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Work that involves system components that have to be physically disassembled to perform the prescribed work is not an "Inspection" (ie. "A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.") Work such as draining down a system, opening up a check valve, so that it can be determined if needs to be cleaned or if gasket replacement is needed, etc. is actually "maintenance", not "inspection". Therefore, the provisions for the "interior inspection" of check valves valves should be revised to be part of the adjacent maintenance requirements. Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

Submitter Information Verification

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Submittal Date: Tue Apr 02 17:57:29 EDT 2024

Committee: INM-AAA



Public Comment No. 24-NFPA 25-2024 [Section No. 13.4.3.1]

13.4.3.1 Inspection.

13.4.3.1.1

The preaction valve shall be externally inspected monthly to verify the following:

- (1) The valve is free from physical damage.
- (2) All trim valves are in the appropriate open or closed position.
- (3) The valve seat is not leaking.
- (4) Electrical components are in service.
- (5) Where applicable, the valve in the connection to the pressure-type contacts or water motor-operated alarm devices are either sealed, locked, or electrically supervised in the open position.

13.4.3.1.2

~~The interior of the preaction valve and the condition of~~ The condition of detection devices shall be inspected annually when the trip test is conducted.

13.4.3.1.3

—

~~Strainers, filters, and restricted orifices shall be inspected internally every 5 years unless tests indicate a greater frequency is necessary.~~

~~13.4.3.1.4~~ —

-

Precision systems with auxiliary drains shall require a sign at the valve indicating the number of auxiliary drains and the location of each individual drain.

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Tasks that involves system components that have to be physically disassembled to perform the prescribed work is not an “Inspection” (ie. “A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.”) Work such as draining down a system, opening up a water control valve, removing their associated strainers, filters, and restriction orifices so that it can be determined if cleans or component replacements are needed is actually “maintenance”, not “inspection”. Therefore, the provisions for the “interior inspection” of strainers, filters, and restricted orifices should be moved to be part of the adjacent maintenance requirements. Also, the instruction to inspect the interior of preaction valves is redundant, since the Maintenance requirement 13.4.3.3.2 already covers the work.

Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

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Submittal Date: Tue Apr 02 18:03:33 EDT 2024

Committee: INM-AAA



Public Comment No. 66-NFPA 25-2024 [New Section after 13.4.3.1.2]

13.4.3.1.2.1

Internal inspection of valves that can be reset without the removal of the face plate shall be permitted to be conducted every 3 years.

Statement of Problem and Substantiation for Public Comment

This PC aligns with the full flow test requirements for preaction systems. Also conducting this inspection annually can add significant costs to the owner due to the time that it can take to disassemble the trim as well as possible leaks and/or damage to diaphragm type preaction valves.

Related Public Comments for This Document

Related Comment

Relationship

Public Comment No. 68-NFPA 25-2024 [New Section after 13.4.4.1.2]

Public Comment No. 69-NFPA 25-2024 [Section No. 13.4.4.3.2.2]

Related Item

- FR-43

Submitter Information Verification

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Submittal Date: Wed May 29 10:05:41 EDT 2024
Committee: INM-AAA



Public Comment No. 8-NFPA 25-2024 [New Section after 13.4.3.1.2]

Inspection of Preaction Valves

13.4.3.1.2.1 - Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every 5 years.

Statement of Problem and Substantiation for Public Comment

13.4.3.1.2.1 (Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every 5 years.) should be restored. There was no substantiation or data to justify removing the 5 year allowance for preaction valves that can be reset without the removal of the faceplate. Until substantiation or data is available to support a more stringent frequency, the original language should be restored.

Related Item

- FR 43

Submitter Information Verification

Submitter Full Name: Bret Martin
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Submittal Date: Mon Mar 25 16:54:55 EDT 2024
Committee: INM-AAA



Public Comment No. 60-NFPA 25-2024 [New Section after 13.4.3.2.11]

13.4.3.2.12

A solenoid supervisory switch monitoring the position of a coil shall be tested quarterly.

Statement of Problem and Substantiation for Public Comment

This is to align with the testing of coil supervision on deluge systems. This requirement was added in the first draft, but testing of the solenoid switch for preaction was overlooked.

Related Item

- FR-46

Submitter Information Verification

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Submittal Date: Tue May 28 14:06:50 EDT 2024
Committee: INM-AAA



Public Comment No. 59-NFPA 25-2024 [Section No. 13.4.3.2.11]

13.4.3.2.11

Low and high air pressure alarms, if provided, shall be tested quarterly in accordance with the manufacturer's instructions.

Statement of Problem and Substantiation for Public Comment

low and high air pressures are required by NFPA 13. high air pressure was added to dry system testing requirements in first draft and the requirement for preaction systems was overlooked. This PC is to align testing requirements

Related Item

- PI 86

Submitter Information Verification

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Submittal Date: Tue May 28 13:54:14 EDT 2024
Committee: INM-AAA



Public Comment No. 25-NFPA 25-2024 [Section No. 13.4.3.3]

13.4.3.3 Maintenance.

13.4.3.3.1

Leaks causing drops in supervisory pressure sufficient to sound warning alarms and electrical malfunctions causing alarms to sound shall be located and repaired.

13.4.3.3.2

During the annual trip test, the interior of the preaction valve shall be cleaned thoroughly and the parts replaced or repaired as necessary.

13.4.3.3.2.1 The valve's internal and external trim parts and components shall be replaced or repaired as necessary.

13.4.3.3.2.2 Strainers, filters, restricted orifices, and diaphragm chambers shall be inspected internally every 5 years unless tests indicate a greater frequency is necessary.

13.4.3.3.3 *

Auxiliary drains in preaction systems shall be operated after each system operation, toward the beginning of the heating season prior to the onset of freezing conditions where applicable, and thereafter as needed.

13.4.3.3.4

Additional maintenance as required by the manufacturer's instructions shall be provided.

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Tasks that involve system components that have to be physically disassembled to perform the prescribed work is not an "Inspection" (ie. "A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.") Work such as draining down a system, opening up a water control valve, removing their associated strainers, filters, and restriction orifices so that it can be determined if cleaning or component replacements are needed is actually "maintenance", not "inspection". Therefore, the provisions for the "interior inspection" of strainers, filters, and restricted orifices should be moved to be part of the adjacent 13.4.4.3 maintenance requirements.

Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

Submitter Information Verification

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Submittal Date: Tue Apr 02 18:13:28 EDT 2024

Committee: INM-AAA



Public Comment No. 67-NFPA 25-2024 [New Section after 13.4.3.3.2]

13.4.3.3.2.1

Interior cleaning and parts replacement shall be permitted every 3 years for valves that can be reset without the removal of the faceplate.

Statement of Problem and Substantiation for Public Comment

This PC aligns with the full flow test requirements for preaction systems. Also conducting this cleaning and parts replacement annually can add significant costs to the owner due to the time that it can take to disassemble the trim as well as possible damage to diaphragm type preaction valves.

Related Public Comments for This Document

Related Comment

Relationship

Public Comment No. 68-NFPA 25-2024 [New Section after 13.4.4.1.2]

Public Comment No. 69-NFPA 25-2024 [Section No. 13.4.4.3.2.2]

Related Item

- FR-44

Submitter Information Verification

Submitter Full Name: Vincent Powers
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Submittal Date: Wed May 29 10:13:43 EDT 2024
Committee: INM-AAA



Public Comment No. 9-NFPA 25-2024 [New Section after 13.4.3.3.2]

13.4.3 Preaction Valves

13.4.3.3.2.1

Interior cleaning and parts replacement or repair shall be permitted every 5 years for valves that can be reset without removal of a faceplate.

Statement of Problem and Substantiation for Public Comment

13.4.3.3.2.1 (Interior cleaning and parts replacement or repair shall be permitted every 5 years for valves that can be reset without removal of a faceplate.) should be restored. There was no substantiation or data to justify removing the 5 year allowance for Preaction valves that can be reset without the removal of the faceplate. Until substantiation or data is available to support a more stringent frequency, the original language should be restored.

Related Item

- FR 44

Submitter Information Verification

Submitter Full Name: Bret Martin
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Submittal Date: Mon Mar 25 17:15:47 EDT 2024
Committee: INM-AAA



Public Comment No. 26-NFPA 25-2024 [Section No. 13.4.4.1]

13.4.4.1 Inspection.

13.4.4.1.1

The deluge valve shall be externally inspected monthly to verify the following:

- (1) The valve is free from physical damage.
- (2) All trim valves are in the appropriate open or closed position.
- (3) The valve seat is not leaking.
- (4) Electrical components are in service.
- (5) Where applicable, the valve in the connection to the pressure-type contacts or water motor-operated alarm devices are either sealed, locked, or electrically supervised in the open position.

13.4.4.1.2

The interior of the deluge valve and the condition of detection devices shall be inspected annually when the trip test is conducted.

~~13.4.4.1.3 –~~

~~Strainers, filters, restricted orifices, and diaphragm chambers shall be inspected internally every 5 years unless tests indicate a greater frequency is necessary.~~

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Tasks that involves system components that have to be physically disassembled to perform the prescribed work is not an “Inspection” (ie. “A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.”) Work such as draining down a system, opening up a water control valve, removing their associated strainers, filters, and restriction orifices so that it can be determined if cleans or component replacements are needed is actually “maintenance”, not “inspection”. Therefore, the provisions for the 13.4.4.1.3 “interior inspection” of strainers, filters, and restricted orifices should be moved to be part of the adjacent maintenance requirements as 13.4.4.3.2.2. Also, the instruction to inspect the interior of deluge valves is redundant, since the Maintenance requirement 13.4.4.3.2 already covers the work. Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

Submitter Information Verification

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Submittal Date: Tue Apr 02 21:37:43 EDT 2024

Committee: INM-AAA



Public Comment No. 10-NFPA 25-2024 [New Section after 13.4.4.1.2]

13.4.4.1 Inspection

13.4.4.1.2.1

Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every 5 years.)

Statement of Problem and Substantiation for Public Comment

13.4.4.1.2.1 (Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every 5 years.) should be restored. There was no substantiation or data to justify removing the 5 year allowance for Preaction valves that can be reset without the removal of the faceplate. Until substantiation or data is available to support a more stringent frequency, the original language should be restored.

Related Item

- FR 45

Submitter Information Verification

Submitter Full Name: Bret Martin
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Zip:
Submittal Date: Mon Mar 25 17:25:45 EDT 2024
Committee: INM-AAA



Public Comment No. 68-NFPA 25-2024 [New Section after 13.4.4.1.2]

13.4.4.1.2.1

Internal inspection of valves that can be reset without the removal of the faceplate shall be permitted to be conducted every 3 years

Statement of Problem and Substantiation for Public Comment

This PC aligns with other PC submissions to conduct the internal inspection every 3 years for preaction systems. Also conducting this inspection annually can add significant costs to the owner due to the time that it can take to disassemble the trim as well as possible leaks and damage to diaphragm type preaction valves.

Related Public Comments for This Document

Related Comment

Relationship

Public Comment No. 67-NFPA 25-2024 [New Section after 13.4.3.3.2]

Public Comment No. 66-NFPA 25-2024 [New Section after 13.4.3.1.2]

Public Comment No. 69-NFPA 25-2024 [Section No. 13.4.4.3.2.2]

Public Comment No. 69-NFPA 25-2024 [Section No. 13.4.4.3.2.2]

Related Item

- FR-45

Submitter Information Verification

Submitter Full Name: Vincent Powers

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Affiliation: National Fire Sprinkler Association Engineering and Standards Committee

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Submittal Date: Wed May 29 10:18:01 EDT 2024

Committee: INM-AAA



Public Comment No. 27-NFPA 25-2024 [Section No. 13.4.4.3]

13.4.4.3 Maintenance.

13.4.4.3.1

Leaks causing drops in supervisory pressure sufficient to sound warning alarms and electrical malfunctions causing alarms to sound shall be located and repaired.

13.4.4.3.2

During the annual trip test, the interior of the deluge valve shall be cleaned thoroughly.

13.4.4.3.2.1

The valve's internal and external trim parts and components shall be replaced or repaired as necessary.

13.4.4.3.2.2

~~Interior cleaning .~~ Strainers, filters, restricted orifices, and diaphragm chambers shall be permitted inspected internally every 5 years for valves that can be reset without removal of a faceplate unless tests indicate a greater frequency is necessary .

13.4.4.3.3*

Auxiliary drains in deluge systems shall be operated after each system operation, toward the beginning of the heating season prior to the onset of freezing conditions, and thereafter as needed.

13.4.4.3.4

Additional maintenance as required by the manufacturer's instructions shall be provided.

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Tasks that involve system components that have to be physically disassembled to perform the prescribed work is not an "Inspection" (ie. "A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.) Work such as draining down a system, opening up a water control valve, removing their associated strainers, filters, and restriction orifices so that it can be determined if cleaning or component replacements are needed is actually "maintenance", not "inspection". Therefore, the 13.4.4.1.3 provisions for the "interior inspection" of strainers, filters, and restricted orifices should be moved to be part of the adjacent 13.4.4.3 maintenance requirements. The existing 13.4.4.3.2.2 was deleted, to parallel the provisions for preaction valves. Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

Submitter Information Verification

Submitter Full Name: Larry Keeping

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Submittal Date: Tue Apr 02 21:40:20 EDT 2024

Committee: INM-AAA



Public Comment No. 69-NFPA 25-2024 [Section No. 13.4.4.3.2.2]

13.4.4.3.2.2

Interior cleaning shall be permitted every ~~5~~ 3 years for valves that can be reset without removal of a faceplate.

Statement of Problem and Substantiation for Public Comment

This PC aligns with other PC submissions to conduct internal valve requirements at 3 year intervals. Also conducting this inspection annually can add significant costs to the owner due to the time that it can take to disassemble the trim as well as possible leakage and damage to diaphragm type preaction valves.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 68-NFPA 25-2024 [New Section after 13.4.4.1.2]	
Public Comment No. 66-NFPA 25-2024 [New Section after 13.4.3.1.2]	
Public Comment No. 67-NFPA 25-2024 [New Section after 13.4.3.3.2]	
Public Comment No. 68-NFPA 25-2024 [New Section after 13.4.4.1.2]	

Related Item

- FR-45

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: National Fire Sprinkler Association Engineering and Standards Committee

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City:

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Submittal Date: Wed May 29 10:26:45 EDT 2024

Committee: INM-AAA



Public Comment No. 28-NFPA 25-2024 [Section No. 13.4.5.1]

13.4.5.1 Inspection.

13.4.5.1.1

Systems with auxiliary drains shall require a sign at the dry valve indicating the number of auxiliary drains and the location of each individual drain.

13.4.5.1.2

The dry pipe valve shall be externally inspected monthly to verify the following:

- (1) The valve is free of physical damage.
- (2) All trim valves are in the appropriate open or closed position.
- (3) Where applicable, the valve between the riser and the quick-opening device is either sealed, locked, or electrically supervised in the open position.
- (4) The intermediate chamber is not leaking.
- (5) Where applicable, the valve in the connection to the pressure-type contractors or water motor-operated alarm devices are either sealed, locked, or electrically supervised in the open position.

~~13.4.5.1.3 –~~

~~The interior of the dry pipe valve shall be inspected annually when the trip test is conducted.~~

~~13.4.5.1.4 –~~

~~Strainers, filters, and restricted orifices shall be inspected internally every 5 years unless tests indicate a greater frequency is necessary.~~

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Tasks that involve system components that have to be physically disassembled to perform the prescribed work is not an “Inspection” (ie. “A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.”) Work such as draining down a system, opening up a water control valve, removing their associated strainers, filters, and restriction orifices so that it can be determined if cleaning or component replacements are needed is actually “maintenance”, not “inspection”. Therefore, the provisions for the 13.4.5.1.3 “interior inspection” of strainers, filters, and restricted orifices should be moved to be part of the adjacent maintenance requirements as 13.4.5.3.2.2. Also, the 13.4.5.1.3 instruction to inspect the interior of dry pipe valves is redundant, since the Maintenance requirement 13.4.5.3.1 already covers the work. Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

Submitter Information Verification

Submitter Full Name: Larry Keeping

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Submittal Date: Tue Apr 02 21:43:21 EDT 2024

Committee: INM-AAA



Public Comment No. 29-NFPA 25-2024 [Section No. 13.4.5.3]

13.4.5.3 Maintenance.

13.4.5.3.1

During the annual trip test, the interior of the dry pipe valve shall be cleaned thoroughly.

13.4.5.3.1.1

The valve's internal and external trim parts and components shall be replaced or repaired as necessary.

13.4.5.3.1.2 Strainers, filters, and restricted orifices shall be inspected internally every 5 years unless tests indicate a greater frequency is necessary.

13.4.5.3.2

Quick-opening devices shall be maintained in working order in accordance with manufacturer's requirements.

13.4.5.3.3*

Auxiliary drains in dry pipe sprinkler systems shall be drained after each system operation, toward the beginning of the heating season prior to the onset of freezing conditions, and thereafter as needed.

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Tasks that involve system components that have to be physically disassembled to perform the prescribed work is not an "Inspection" (ie. "A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.") Work such as draining down a system, opening up a water control valve, removing their associated strainers, filters, and restriction orifices so that it can be determined if cleaning or component replacements are needed is actually "maintenance", not "inspection". Therefore, the 13.4.5.1.4 provisions for the "interior inspection" of strainers, filters, and restricted orifices should be moved to be part of the adjacent 13.4.5.3 maintenance requirements. Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

Submitter Information Verification

Submitter Full Name: Larry Keeping

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Submittal Date: Tue Apr 02 21:45:24 EDT 2024

Committee: INM-AAA



Public Comment No. 36-NFPA 25-2024 [Section No. 13.5.5]

13.5.5 ~~Main~~ Pressure Relief Valve.

13.5.5.1

—

~~Where installed, main~~

-

The pressure relief

valves

valve shall be inspected

during any fire pump test

and tested annually to be correctly adjusted and set to relieve at the correct pressure and to close below that pressure setting.

13.5.5.2

The inspection shall verify the following conditions:

- (1) Devices and associated trim components are free of physical damage and are not leaking.
- (2) The pressure downstream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated.

~~13.5.5.3~~ —

~~The pressure relief valve shall be verified annually to be correctly adjusted and set to relieve at the correct pressure and to close below that pressure setting.~~

Statement of Problem and Substantiation for Public Comment

This section is specific to fire pump assemblies and would be more appropriate to include in Chapter 8. This section should be modified to require inspection of all relief valves which are installed on wet sprinkler systems and downstream of pressure-regulating devices. See related PC-35

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 35-NFPA 25-2024 [New Section after 8.2.3]	
<u>Related Item</u>	
• FR-76	

Submitter Information Verification

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Submittal Date: Wed Apr 03 10:50:35 EDT 2024

Committee: INM-AAA



Public Comment No. 55-NFPA 25-2024 [Section No. 13.6.1]

13.6.1 Inspection.

13.6.1.1

Hose valves shall be inspected annually to verify the following conditions:

- (1) Hose caps are in place and not damaged.
- (2) Hose threads are not damaged.
- (3) Valve handles are present and not damaged.
- (4) Gaskets are not damaged or showing signs of deterioration.
- (5) No leaks are present.
- (6) Valves are not obstructed or otherwise not capable of normal operation.

~~13.6.1.2 –~~

~~Hose valves shall be inspected to ensure that hose caps are in place and not damaged.~~

~~13.6.1.3 –~~

~~Hose threads shall be inspected for damage.~~

~~13.6.1.4 –~~

~~Valve handles shall be present and not damaged.~~

~~13.6.1.5 –~~

~~Gaskets shall be inspected for damage or deterioration.~~

~~13.6.1.6 –~~

~~Hose valves shall be inspected for leaks.~~

~~13.6.1.7 –~~

~~Hose valves shall be inspected to ensure no obstructions are present.~~

~~13.6.1.8 *~~

Hose valves shall be inspected to ensure that restricting devices are present, where required.

13.6.1.9 3

Where approved by the authority having jurisdiction, existing hose valve restricting devices shall be permitted to be removed and not be recorded as a deficiency.

Statement of Problem and Substantiation for Public Comment

The redundant sections should be deleted as they are already addressed in 13.6.1.1

Related Item

- FR-80

Submitter Information Verification

Submitter Full Name: Kevin Hall

Organization: American Fire Sprinkler Association

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City:

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Submittal Date: Wed May 22 11:35:31 EDT 2024

Committee: INM-AAA



Public Comment No. 47-NFPA 25-2024 [Section No. 13.6.1.1]

13.6.1.1

Hose valves shall be inspected ~~annually~~ quarterly to verify the following conditions:

- (1) Hose caps are in place and not damaged.
- (2) Hose threads are not damaged.
- (3) Valve handles are present and not damaged.
- (4) Gaskets are not damaged or showing signs of deterioration.
- (5) No leaks are present.
- (6) Valves are not obstructed or otherwise not capable of normal operation.

Statement of Problem and Substantiation for Public Comment

Hose valves are not secondary devices to the end users -- fire fighters. Hose valves on standpipe systems are prone to tampering from the public and the frequency should not have been stretched out in the first draft report. Additionally, the change in frequency from the first draft report lacks any technical substantiation to merit the change.

Related Item

- FR-80

Submitter Information Verification

Submitter Full Name: Kevin Hall

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Submittal Date: Mon May 13 18:15:11 EDT 2024

Committee: INM-AAA



Public Comment No. 54-NFPA 25-2024 [Section No. 13.6.1.1]

13.6.1.1

Hose valves shall be inspected annually to verify the following conditions:

- (1) ~~Hose caps are~~ Thread protection is in place ~~and not damaged~~ .
- (2) Hose threads are not damaged.
- (3) Valve handles are present and not damaged.
- (4) ~~Gaskets are not damaged or showing signs of deterioration.~~
- (5) No leaks are present.
- (6) Valves are not obstructed or otherwise not capable of normal operation.

Statement of Problem and Substantiation for Public Comment

Installation standards only require hose valves to be provided with thread protection. This can be achieved through means and methods other than caps. Additionally gaskets are not an integral component of the hose valve. Those caps and gaskets are not a part of the listed assembly and are not necessarily designed to withstand system pressure.

Related Item

- FR-80

Submitter Information Verification

Submitter Full Name: Kevin Hall

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Submittal Date: Wed May 22 11:31:25 EDT 2024

Committee: INM-AAA



Public Comment No. 62-NFPA 25-2024 [Section No. 13.6.1.1]

13.6.1.1

Hose valves shall be inspected annually to verify the following conditions:

- (1) ~~Hose caps are~~ connection thread protection is in place ~~and not damaged.~~ .
- (2) Hose connection caps not listed for pressures have an opening of at least 1/8 in. in diameter.
- (3) Hose threads are not damaged.
- (4) Valve handles are present and not damaged.
- (5) Gaskets are not damaged or showing signs of deterioration.
- (6) No leaks are present.
- (7) Valves are not obstructed or otherwise not capable of normal operation.

A.13.6.1.1 The hole required by 13.6.1.1 is to prevent rupture of hose valve caps that are not listed for pressure. There are situations where a non-listed cap has ruptured.

Statement of Problem and Substantiation for Public Comment

The requirement for a hose cap in Section 13.6.1.1 was modified to align with NFPA 14. NFPA 14 requires thread protection and not threaded caps on hose connections since threaded caps are not tested in the listed assembly. The annex note was to provide additional information as to why the hole is required.

Related Item

- FR-79

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: National Fire Sprinkler Association Engineering and Standards Committee
Street Address:
City:
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Submittal Date: Tue May 28 14:37:43 EDT 2024
Committee: INM-AAA



Public Comment No. 30-NFPA 25-2024 [Section No. 13.8.5.2]

13.8.5.2

Where the length of the piping from the fire department connection to the fire department check valve is ~~48 in. (1.2~~ 12 ft (3.6 m) or less and can be visually inspected internally and externally, the 5-year hydrostatic test shall not be required.

Statement of Problem and Substantiation for Public Comment

I agree with Mr. Stanley that short runs of pipe should not have to be pressure tested when they can be visually inspected for corrosion and the integrity of the pipe, and I agree with the Committee Statement that it has proven to be difficult to conduct hydrostatic testing on short lengths of piping. However, I would respectfully suggest that the proposed 4 ft (1.2 m) length is a bit too short. A somewhat greater length, such as 12 ft (3.6 m) is recommended

Related Item

- FR-48, PI-163

Submitter Information Verification

Submitter Full Name: Larry Keeping

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State:

Zip:

Submittal Date: Tue Apr 02 21:48:01 EDT 2024

Committee: INM-AAA



Public Comment No. 75-NFPA 25-2024 [Section No. 13.8.5.2]

13.8.5.2

Where the length of the piping from the fire department connection to the fire department check valve is ~~48 in. (1.2 m)~~ 10 Feet (3.048m) or less and can be visually inspected internally and externally, the 5-year hydrostatic test shall not be required.

A.13.8.5.2

It could be difficult to properly hydrostatically test the FDC piping. This is intended to allow inspection of accessible piping up to 10Ft in length. This inspection could be accomplished when using a push style video camera to inspect the pipe internally. This allowance should not replace the requirements for external inspections required by 13.8.5.2

Statement of Problem and Substantiation for Public Comment

Hydrostatically testing the FDC piping is not always an easy task and in some cases can require the system to be drained and altered several time which could lead to leaks or damage, this is one of the reasons that NFPA 13 added language to not require the inspector to modify the system to conduct a forward flow test. Allowing longer lengths of pipe that can be properly inspected without destructive means should be a viable alternative to the hydrostatic test requirement. This inspection could be accomplished when using a push style video camera to inspect the pipe internally.

Related Item

- FR-48

Submitter Information Verification

Submitter Full Name:	Vincent Powers
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Submittal Date:	Wed May 29 11:50:03 EDT 2024
Committee:	INM-AAA



Public Comment No. 82-NFPA 25-2024 [Section No. 13.8.5.2]

13.8.5.2

Where the length of the piping from the fire department connection to the fire department check valve is 48 in. (1.2 m) or less and can be visually inspected internally and externally, the 5-year hydrostatic test shall not be required.

Statement of Problem and Substantiation for Public Comment

According to the NFSA (2020), the purpose of hydrostatic testing is to “verify the integrity of a system.” Our understanding of the code and its requirements is that we must ensure the integrity of all pipes, regardless of size. To allow not testing this section of pipe for convenience is at the cost of confidence in performance and is not acceptable.

References:

NFSA. (2020). HYDROSTATIC TESTING: CHANGES TO NFPA 25 OVER THE DECADES. Retrieved 5/20/2024 from <https://nfsa.org/2020/02/03/hydrostatic-testing-of-standpipe-systems/>

Related Item

- FR-48

Submitter Information Verification

Submitter Full Name: Eric Ricker

Organization: Johnson Controls

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Submittal Date: Thu May 30 11:21:06 EDT 2024

Committee: INM-AAA



Public Comment No. 84-NFPA 25-2024 [Section No. 13.10.2]

13.10.2 Inspection.

Air compressors and nitrogen generators dedicated to water-based fire protection systems shall be inspected monthly to verify the following:

- (1) Air compressor or nitrogen generator is free of physical damage.
- (2) Power wiring to the air compressor is intact and free of physical damage.
- (3) Piping from the air compressor or nitrogen generator to the fire protection system is intact and free of physical damage.
- (4) The means of anchoring the air compressor or nitrogen generator to the structure or to the system piping is secure, tight, and free of physical damage.
- (5) Air compressors requiring oil have the required amount of oil in the oil reservoir

13.11 Corrosion Inhibiting Systems

13.11.1 inspection

Corrosion-inhibiting equipment is intact and free of physical damage.

13.11.2 Testing

Corrosion-inhibiting equipment shall be tested in accordance with the manufacturer's instructions

13.11.3 maintenance

Where required for corrosion mitigation, corrosion-inhibiting equipment and products shall be maintained in accordance with the manufacturer's instructions.

Statement of Problem and Substantiation for Public Comment

during first draft there were several concerns that corrosion inhibiting equipment is not the same as compressors and nitrogen generators, this pc is to separate the two and make corrosion inhibitors its own section.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
<u>Public Comment No. 85-NFPA 25-2024 [Section No. 13.10.4.3]</u>	
<u>Public Comment No. 85-NFPA 25-2024 [Section No. 13.10.4.3]</u>	

Related Item

- FR-50

Submitter Information Verification

Submitter Full Name: Vincent Powers
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Submittal Date: Thu May 30 12:19:46 EDT 2024

Committee: INM-AAA



Public Comment No. 85-NFPA 25-2024 [Section No. 13.10.4.3]

13.10.4.3 –

~~Where required for corrosion mitigation, corrosion-inhibiting equipment and products shall be maintained in accordance with the manufacturer's instructions.~~

Statement of Problem and Substantiation for Public Comment

during first draft there were several concerns that corrosion inhibiting equipment is not the same as compressors and nitrogen generators, this pc is to separate the two and make corrosion inhibitors its own section.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 84-NFPA 25-2024 [Section No. 13.10.2]	
Public Comment No. 84-NFPA 25-2024 [Section No. 13.10.2]	
<u>Related Item</u>	
• FR-50	

Submitter Information Verification

Submitter Full Name: Vincent Powers
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Submittal Date: Thu May 30 12:25:44 EDT 2024
Committee: INM-AAA



Public Comment No. 65-NFPA 25-2024 [Section No. 14.3.1]

14.3.1*

An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist:

- (1) Defective intake for fire pumps taking suction from open bodies of water
- (2) Discharge of obstructive material during routine water tests
- (3) Foreign materials in fire pumps, dry pipe valves, or check valves
- (4) Foreign material in water during drain tests or plugging of inspector's test connection(s)
- (5) Unknown materials heard in the system piping during draining, refilling, or otherwise flowing water through the system
- (6) Plugged sprinklers
- (7) Foreign organic or inorganic material with the potential to obstruct pipe or sprinklers found in the pipe
- (8) Failure to flush yard piping or surrounding public mains following new installations or repairs
- (9) Record of broken public mains in the vicinity
- (10) Abnormally frequent false tripping of a dry pipe valve(s)
- (11) System returned to service after an extended shutdown (i.e., greater than 1 year)
- (12) Reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems
- (13) System supplied with raw water via the fire department connection
- (14) Pinhole leaks or leakage caused by internal corrosion
- (15) A 25 percent increase or a 5-second increase for portions of systems protecting dwelling units in the total water delivery time for dry pipe systems and double interlock preaction systems, with normal air pressure on the system and starting at the time of fully opened inspection test connection, when compared to the original system acceptance test
- (16) Failure to maintain a nitrogen supply, except in instances of preplanned impairments, installed in accordance with NFPA 13 when a Hazen-Williams C value of 120 is used for dry and preaction systems.

A.14.3.1(16)

Where nitrogen is used to allow for an increased C value in accordance with NFPA 13, the nitrogen supply should be from a listed nitrogen generator permanently installed, should be capable of supplying and maintaining at least 98 percent nitrogen concentration throughout the system at a minimum leakage rate of 1.5 psi (0.1 bar) per hour, should be provided with a means of verifying nitrogen concentration provided for each system where an increased C value is used, should be installed per the manufacturer's instruction, and should be maintained in accordance with this standard.

Nitrogen systems are equipped with an air compressor capable of restoring system air pressure within 30 or 60 minutes. It is not the intent of this section to require a 98 percent concentration of nitrogen within the 30 or 60 minutes as required by this standard.

Statement of Problem and Substantiation for Public Comment

We know that many dry systems start to show signs of corrosion within the first few weeks of being installed. If we wait several trip cycles for these systems they could have significant internal corrosion

before it is caught. There is data to prove that nitrogen systems are not performing as well as the industry thinks that it does, taking much longer to achieve 98% concentration which could lead to more corrosion.

This requirement will help significantly in ensuring that nitrogen systems will be maintained properly. A reason NFPA 13 allowed a increased C factor was that nitrogen was to be maintained in the system in accordance with 16.10.3.4.

Below are Substantiations from NFPA 13 to approve the allowance of a an increased C factor, one of which was NFPA 25 properly maintaining nitrogen in systems with this allowance.

Problems have been observed in hot and humid areas and when compressors generate heating after being run for long periods. Water condensation caused by this process has been identified as a contributing factor to corrosion in dry pipe and preaction sprinkler systems.

During the first draft, the technical committee brought up several concerns with the original proposal. Each have each been addressed in Public Comments to chapters 16 and 28. In addition, Public Inputs to the next edition of NFPA 25 have been submitted to address the ongoing maintenance of both the nitrogen generator and the nitrogen concentration in the system.

The purpose of the values in the Hazen-Williams C Values table is to account for internal pipe conditions expected in the future under various circumstances. Numerous independent studies have come to the same conclusion regarding the benefits of using nitrogen as a supervisory gas to slow corrosion in dry and preaction sprinkler systems. The table should reflect the most current data available, and that is that the use of nitrogen as a supervisory gas will dramatically reduce the amount of corrosion and improve pipe wall integrity, therefore justifying a c-value higher than when it is not used. Other design standards such as the DoD's Unified Facilities Criteria already recognize a higher c-value for nitrogen. FM has stated that they will be including a higher c-value in the next edition of their data sheets based on their research.

Related Item

- FR-87

Submitter Information Verification

Submitter Full Name:	Vincent Powers
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Street Address:	
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Submittal Date:	Tue May 28 15:48:41 EDT 2024
Committee:	INM-AAA



Public Comment No. 90-NFPA 25-2024 [Section No. 14.4]

14.4 Ice Obstruction.

14.4.1

Dry pipe or preaction sprinkler system piping that protects or passes through refrigerated spaces maintained at temperatures below 32°F (0°C) shall be inspected internally on an annual basis for ice obstructions at the point where the piping enters the refrigerated area.

14.4.2

Following two successive ice obstruction inspections with no ice noted, and where nitrogen has been maintained in the piping at 98% or greater concentration since the last ice plug inspection, the frequency of subsequent internal internal inspections is permitted to be increased to three years.

14.4.3

Alternative nondestructive examinations shall be permitted.

14.4.3.4

All penetrations into the refrigerated spaces shall be inspected.

14.4.3.4.1

If an ice obstruction is found, additional pipe shall be examined to ensure that no additional ice obstructions or ice blockages exist.

Statement of Problem and Substantiation for Public Comment

The dew point of nitrogen is such that it not only prevents ice from forming, but (much like ice on a winter roadway) any ice that would form in the piping will evaporate. Therefore, as long as the piping has been inspected, is free of notable ice obstructions, and is maintained with 98% nitrogen, there is almost no likelihood of ice plugs forming and no need to inspect for them. Conversely, opening up the system to perform ice plug inspections releases the nitrogen already there and preventing ice formation, increasing the risk. Increasing the frequency of ice plug inspections to 3 years is warranted where nitrogen is used.

This proposal is also consistent with recent changes to FM Data sheet 2-81 which does the same thing.

Related Item

- Public Input 14

Submitter Information Verification

Submitter Full Name: Jason Webb

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Submittal Date: Thu May 30 16:24:32 EDT 2024

Committee: INM-AAA



Public Comment No. 12-NFPA 25-2024 [Section No. A.1.4]

A.1.4



The liter and bar units, which are not part of but are recognized by SI, commonly are used in international fire protection. These units are provided in Table A.1.4 with their conversion factors.

~~Note: For additional conversions and information, see~~

~~Table A~~

Table A .1.

~~4 Metric Conversions~~

4 Conversion Factors

	<u>Name of Unit</u>	<u>Unit Symbol</u>	<u>Conversion Factor</u>
--	---------------------	--------------------	--------------------------

liter L 1 gal = 3.785 L liter per minute per square meter L/min-m² 1 gpm/ft² =
40.746 L/min-m² cubic decimeter dm³ 1 gal = 3.785 dm³ pascal Pa 1 psi =

6894.757 Pa bar bar 1 psi = 0.0689 bar bar bar 1 bar = 10^5 Pa

Length	Millimeter	mm	~~1 in = 25 mm~~
	Meter	m	~~1 ft = 0.3048 m~~
Area	Square millimeters	mm ²	~~1 in² = 645.2 mm²~~
	Square meter	m ²	~~1 ft² = 0.0929 m²~~
Volume	Cubic millimeter	mm ³	~~1 in.³ = 163387.1 mm³~~
	Cubic meter	m ³	~~1 ft³ = 0.02832 m³~~
Fluid capacity	Liter	L	~~1 gal = 3.785 L~~
	Liter	L	~~1 Cup = 0.236588 L~~
	Cubic Decimeter	dm ³	~~1 gallon = 3.785 dm³~~
Flow	Liter per minute	L/min	~~1 gpm = 3.785 L/min~~
	Liter per second	L/s	~~1 gal/sec = 3.785 L/s~~
	Cubic meters per minute	m ³ /min	~~1 ft³/min = 0.0283168 m³/min~~
Pressure	Bar	bar	~~1 psi = 0.0689476 bar~~
	Kilopascal	kPa	~~1 psi = 6.89476 kPa~~
Discharge density	Millimeter/minute	mm/min	~~1 gpm/ft² = 40.746 mm/min~~
	Liter/minute/m ²	(L/min)/m ²	~~1 gpm/ft² = 40.746 (L/min)/m²~~
K-factor	K-factor	L/min/(bar) ^{1/2}	~~1 gpm/(psi)^{1/2} = 14.285 L/min/(bar)^{1/2}~~
Temperature	Fahrenheit	°F	~~F° = 9/5 × C° + 32~~
	Celsius	°C	~~C° = 5/9 (F° - 32)~~
Velocity	Meters per second	m/s	~~1 ft/sec = 0.3048 m/s~~
Energy	Watts	W	~~1 B.t.u./hr = 0.293071 W~~
	Kilowatts (1000 watts)	kW	~~1 hp = 0.7457 kW~~
	Megawatts (1000 kW)	MW	~~1 hp = 0.0007457 MW~~

~~Note: For additional conversions and information, see ASTM SI 10, IEEE/ASTM SI 10, American National Standard for~~

~~===== Metric Practice =====~~

Additional Proposed Changes

File Name	Description	Approved
NFPA_25_Table_A.1.4.docx	New Version of Table A.1.4	

Statement of Problem and Substantiation for Public Comment

This PC is offered to better follow the Manual of Style and to provide similar information on metric conversions as is found in NFPA 13-2019, following discussion on the matter during the NFPA 25 First Draft Technical Committee Meeting.

The current Table A.1.4 is of little value to users of NFPA 25, because some of the units such as those for the “pascal” are not used in the standard, in lieu of larger units such as the “bar” or the “kilopascal”. Additionally, many units called up in the standard are not referenced in the Current Table. The proposed table provides conversion factors for units which are actually used throughout NFPA 25.

Related Item

- FR-19, PI-172

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

Street Address:

City:

State:

Zip:

Submittal Date: Tue Apr 02 16:44:57 EDT 2024

Committee: INM-AAA

Table A.1. 4 Conversion Factors

	Name of Unit	Unit Symbol	Conversion Factor
Length	Millimeter	mm	1 in = 25 mm
	Meter	m	1 ft = 0.3048 m
Area	Square millimeters	mm ²	1 in ² = 645.2 mm ²
	Square meter	m ²	1 ft ² = 0.0929 m ²
Volume	Cubic millimeter	mm ³	1 in. ³ = 163387.1 mm ³
	Cubic meter	m ³	1 ft ³ = 0.02832 m ³
Fluid capacity	Liter	L	1 gal = 3.785 L
	Liter	L	1 Cup = 0.236588 L
	Cubic Decimeter	dm ³	1 gallon = 3.785 dm ³
Flow	Liter per minute	L/min	1 gpm = 3.785 L/min
	Liter per second	L/s	1 gal/sec = 3.785 L/s
	Cubic meters per minute	m ³ /min	1 ft ³ /min = 0.0283168 m ³ /min
Pressure	Bar	bar	1 psi = 0.0689476 bar
	Kilopascal	kPa	1 psi = 6.89476 kPa
Discharge density	Millimeter/minute	mm/min	1 gpm/ft ² = 40.746 mm/min
	Liter/minute/m ²	(L/min)/m ²	1 gpm/ft ² = 40.746 (L/min)/m ²
K-factor	K-factor	L/min/(bar) ^{1/2}	1 gpm/(psi) ^{1/2} = 14.285 L/min/(bar) ^{1/2}
Temperature	Fahrenheit	°F	F° = 9/5 × C° + 32
	Celsius	°C	C° = 5/9 (F° – 32)
Velocity	Meters per second	m/s	1 ft/sec = 0.3048 m/s
Energy	Watts	W	1 B.t.u./hr = 0.293071 W
	Kilowatts (1000 watts)	kW	1 hp = 0.7457 kW
	Megawatts (1000 kW)	MW	1 hp = 0.0007457 MW

Note: For additional conversions and information, see ASTM SI 10, IEEE/ASTM SI 10, *American National Standard for Metric Practice*.



Public Comment No. 33-NFPA 25-2024 [Section No. A.3.3.23]

A.3.3.23 – Inspection: – [🔗](#)

~~The definition of the term *inspection* does not preclude the need to have system components (e.g., internal conditions of check valves) disassembled to perform the required inspection and should not be considered maintenance work.~~

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner. Work that involves system components that have to be physically disassembled to perform the prescribed work is not an “Inspection” (ie. “A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.) Work such as opening up water control valves, check valves, etc. is actually “maintenance”.

See associated Comments concerning interior inspections and strainers, filters ,orifices.

Related Item

- FR-4, PI-2

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

Street Address:

City:

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Submittal Date: Tue Apr 02 22:15:24 EDT 2024

Committee: INM-AAA



Public Comment No. 17-NFPA 25-2024 [Section No. A.4.1.11.1]

A.4.1.11.1 — [🔗](#)

~~Systems installed in accordance with the 2007 and subsequent editions of NFPA 13 are required by NFPA 13 to have an antifreeze system placard. It is not the intent of the technical committee for a system to have both the antifreeze sign required by this standard and the antifreeze placard required by NFPA 13. The antifreeze sign required by this standard is intended to be provided for systems installed prior to the 2007 edition of NFPA 13.~~

Statement of Problem and Substantiation for Public Comment

A.4.1.11.1 is incorrect. As currently proposed, there are now two paragraphs which call for antifreeze signs. The new paragraph 4.1.11.2 calls for a sign when listed antifreeze solutions are utilized as per 5.3.4.4, and the exiting paragraph 4.1.11.1 discusses the signage requirements for existing antifreeze solutions that are permitted to remain in a system as per 5.3.4.4.2 and 5.3.4.4.3. Therefore, the annex text should be deleted as is not relevant.

Related Item

- FR-16, PI-26

Submitter Information Verification

Submitter Full Name: Larry Keeping

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Street Address:

City:

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Submittal Date: Tue Apr 02 17:23:43 EDT 2024

Committee: INM-AAA



Public Comment No. 31-NFPA 25-2024 [Section No. A.5.2.1.1.6]

A.5.2.1.1.6 [🔗](#)

~~Flat~~ Metallic flat and adjustable escutcheons, also known as beauty rings, trim plates, or extension skirts that are aesthetic for nonrecessed or nonconcealed sprinklers and do not affect the response or spray pattern, are not required to be listed.

Statement of Problem and Substantiation for Public Comment

As per NFPA 13 in 7.2.6.1, plates, escutcheons, or other devices used to cover the annular space around a sprinkler shall be metallic. Therefore, before adopting this text into NFPA 25, the text needs to be revised to add the requirement that the devices must be metal.

Related Item

- FR-22, PI-48

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

Street Address:

City:

State:

Zip:

Submittal Date: Tue Apr 02 21:52:25 EDT 2024

Committee: INM-AAA



Public Comment No. 42-NFPA 25-2024 [Section No. A.5.2.1.1.6]

A.5.2.1.1.6

Flat and adjustable escutcheons, also known as beauty rings, trim plates, or extension skirts ~~that~~ are aesthetic for nonrecessed or nonconcealed sprinklers and do not affect the response or spray pattern, ~~are not required to be listed~~ .

Statement of Problem and Substantiation for Public Comment

Non-metallic escutcheons are required to be listed. Deleting the last statement makes the annex section true.

Related Item

- FR-22

Submitter Information Verification

Submitter Full Name: Kevin Hall

Organization: American Fire Sprinkler Association

Affiliation: AFSA Technical Advisory Council

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Submittal Date: Mon May 13 17:58:09 EDT 2024

Committee: INM-AAA



Public Comment No. 78-NFPA 25-2024 [Section No. A.5.2.1.1.6]

A.5.2.1.1.6 —

~~Flat and adjustable escutcheons, also known as beauty rings, trim plates, or extension skirts that are aesthetic for nonrecessed or nonconcealed sprinklers and do not affect the response or spray pattern, are not required to be listed.~~

Statement of Problem and Substantiation for Public Comment

related to PC 77 and 76 to require cup and skirt escutcheons to be replaced if found missing. This annex note modified and relocated to Section A.5.2.1.1.5

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
<u>Public Comment No. 76-NFPA 25-2024 [Section No. 5.2.1.1.6]</u>	
<u>Public Comment No. 77-NFPA 25-2024 [Section No. 5.2.1.1.5 [Excluding any Sub-Sections]]</u>	
<u>Related Item</u>	
• FR-21	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: National Fire Sprinkler Association Engineering and Standards Committee

Street Address:

City:

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Submittal Date: Wed May 29 14:35:58 EDT 2024

Committee: INM-AAA



Public Comment No. 79-NFPA 25-2024 [Section No. A.5.4.1.6.5]

A.5.4.1.6.5

One sprinkler wrench design can be appropriate for many types of sprinklers, and multiple wrenches of the same design should not be required. Some sprinklers do not require wrenches, such as sprinklers that only require hand tight installation, use couplings or alignment tools. Unless sprinklers are being removed for testing, the sprinkler wrench should not be required for the removal of sprinklers, but could be beneficial for the removal of concealed or other special sprinklers._

Statement of Problem and Substantiation for Public Comment

This PC just clarifies that not all sprinkler installation requires a sprinkler wrench.

Related Item

- FR-31

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: National Fire Sprinkler Association Engineering and Standards Committee
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City:
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Submittal Date: Wed May 29 14:43:45 EDT 2024
Committee: INM-AAA



Public Comment No. 19-NFPA 25-2024 [Section No. A.5.4.1.6.6.1]

A.5.4.1.6.6.1



The minimum information in the list contained in the spare sprinkler cabinet should be marked with the

sprinkler identification described in 5.4.1.6.6.1 ; a general
following:

(1) General description of the sprinkler, including upright, pendent, residential, ESFR, and so forth

; the quantity of each type of sprinkler installed in the property; the quantity of sprinklers that is

(2) Quantity of sprinklers to be maintained in the spare sprinkler cabinet

; and a sprinkler wrench type.

An example of the list is shown in Figure A.5.4.1.6.6.1. [13:A.16.2.7.7.1]

Figure A.5.4.1.6.6.1 Sample List.- [13:Figure A.16.2.7.7.1]

Sprinklers Contained in this Cabinet					
Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained	Sprinkler Wrench Type	Sprinkler Quantity in the Property
TY9128	Extended coverage, K-25, upright	165	6	W-Type 1 sprinkler wrench	20
VK494	Residential concealed pendent	155	6	Standard sprinkler wrench 21475MB	20

Sprinklers Contained in this Cabinet			
Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained
TY9128	Extended Coverage, K-25, upright	155	6
VK425	Concealed pendent residential	145	6
Issued: 10/3/05		Revised:	

Additional Proposed Changes

File Name

Figure_A.5.4.1.1.6.1_Sample_List.png

Description

Figure A.5.4.1.1.6.1 Sample List

Approved

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballots of Mr. Larrimer and Mr. Bellamy. The proposed changes to 5.4.1.6.6.1 makes the new NFPA 13 criteria retroactive, which is overly burdensome. The additional information called for was only introduced into NFPA 13-2025, which has not even been published yet. It will take many years before the Building Codes catch up and start to reference the 2025 edition of NFPA 13, so NFPA 25-2026 should not be mandating information such as the quantity of each type of sprinkler installed in the property. A value which serves little purpose in any case, and if needed, should be available from the as-built drawings which are required to be maintained on site.

Related Item

- FR-56

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

Street Address:

City:

State:

Zip:

Submittal Date: Tue Apr 02 17:31:52 EDT 2024

Committee: INM-AAA

Sprinklers Contained in this Cabinet			
Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained
TY9128	Extended Coverage, K-25, upright	155	6
VK425	Concealed pendent residential	145	6
Issued: 10/3/05		Revised:	



Public Comment No. 22-NFPA 25-2024 [Section No. A.13.4.1.2]

A.13.4.1.2

The system should be drained for internal ~~inspection~~ examination of valve components as follows:

- (1) Close the control valve
- (2) Open the main drain valve
- (3) Open the inspector's test connection
- (4) Wait for the sound of draining water to cease and for all gauges to indicate 0 psi (0 bar) before removing the handhole cover or dismantling any component

Statement of Problem and Substantiation for Public Comment

I agree with the negative ballot comment from Mr. Ketner concerning FR-4. Work that involves system components that have to be physically disassembled to perform the prescribed work is not an "Inspection" (ie. "A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.") Work such as draining down a system, opening up a water control valve, removing their associated strainers, filters, and restriction orifices so that it can be determined if cleans or component replacements are needed is actually "maintenance", not "inspection". Therefore, the provisions for the "interior inspection" of alarm valves should be moved to be part of the adjacent maintenance requirements.
Table 13.1.1.2 also needs to be revised accordingly.

Related Item

- FR-4, PI-2

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

Street Address:

City:

State:

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Submittal Date: Tue Apr 02 17:53:45 EDT 2024

Committee: INM-AAA



Public Comment No. 32-NFPA 25-2024 [Section No. A.15.6.3.2]

A.15.6.3.2

Frozen water-based fire protection system piping could occur in unexpected freezing weather conditions, especially in regions that are not considered cold climates. Once a frozen system or a partially frozen system is discovered, the system is considered impaired and impairment procedures need to be implemented immediately.

The following steps should be taken to restore the system to service:

- (1) The frozen system piping should be completely thawed out. Thawing out piping can involve either totally heating the building, including all blind and concealed spaces containing frozen piping, or disassembling the pipes, taking them into a heated area, and using a safe heat source to thaw the pipes. It's necessary to make sure no potential ice plugs remain in the system.
- (2) The affected pipe, fittings, and components should be visually inspected to determine if there is any breakage or deformities. Depending on the length and severity of the freezing event, damage to the system can be extensive. Once the piping is thawed out completely, check for damage. Typical damage to frozen sprinkler system piping can include cracked or broken valves and fittings, split piping, damaged sprinklers, and damage to any other system component subjected to system water pressure. Access to as much of the system piping as possible for this examination is recommended, even if cutting open drywall ceilings and walls is necessary.
- (3) All sprinklers should be visually inspected to determine if the operating element is still intact or if there is any evidence of stress at the seat.
- (4) Once all broken or deformed pipe, fittings, components, and sprinklers have been replaced, it's necessary to perform an air test to identify system parts that might not have appeared visibly damaged and replace them before performing a hydrostatic test.
- (5) An air pressure test should be conducted to ensure the entire system is intact, as follows:
 - (6) For metallic piping systems, an air pressure test at 40 psi (

3

(a) 2 .

2

(a) 8 bar) for 2 hours is recommended. The system should be permitted to lose up to 3 psi (0.2 bar) during the duration of the test. The source of air leaks should be identified and repaired if the system loses more than 3 psi (0.2 bar) during this test. An odorant such as peppermint extract can be used to find the general area of the air leak, and spraying fittings and joints with a soapy solution can find the exact source of the air leak.
 - (b) For nonmetallic piping systems, an air pressure test should be performed in accordance with the manufacturer's instructions.
- (7) Once the system is fully repaired and passes the air test, a hydrostatic test complying with the appropriate installation standard is needed before restoring the system to service.
- (8) Complete restoration of service procedures provided in Section 15.7.

Editorial, correction of metric equivalent. 40 psi = 2.8 bar.

Related Item

- FR-19, PI-172

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Engineering

Street Address:

City:

State:

Zip:

Submittal Date: Tue Apr 02 21:58:02 EDT 2024

Committee: INM-AAA

Attachment #3: Task Group Reports

Section	PC	PAGE	DISPOSITION
1.1.3.1	13		MOTION TO REJECT PC 13
Proposed Text (PC)	1.1.3.1*		<u>~~This standard does not require the inspector to verify the adequacy of the design of the system.~~</u> A.1.1.3.1 The requirement to evaluate the adequacy or accuracy of the design or installation of the system or the capability of the fire protection system to protect the building or its contents is not a part of the periodic inspection, testing, and maintenance requirements of this standard. While this standard does not require an inspector to evaluate the adequacy or accuracy of a system, it does not prohibit the inspector or inspection organization from making recommendations or observations to the owner of a system related to the need for evaluations or modifications in the interest of fire and life safety. Recommendations and observations should not be a part of the inspection report. Examples of items not covered by this standard include the evaluation of unsprinklered areas and the spacing of sprinklers. However, such evaluation is the responsibility of the property owner or designated representative as indicated in 4.1.7 and 4.1.8. An example of a hazard evaluation form can be found in Annex E. <u>1.1.3.2</u> Unless otherwise stated in this standard, the inspector is not required to verify the adequacy of the ~~design or~~ installation of the system.
Committee Text (SR)			<u>~~This standard does not require the inspector to verify the adequacy of the design of the system.~~</u>
Statement			Chapter 10 specifically requires verification and adequacy of the design. First Draft additional language of "Unless otherwise stated in the standard was added to provide additional clarity.

Commented [CD1]: If the task group decides to recommend these changes the new text in 1.1.3.1 will need to be written with a "shall" statement. Additionally, the annex needs to be reviewed and it needs to be determined if it would still stay with 1.1.3.1 or if it would need to move to 1.1.3.2.

Section	PC	PAGE	DISPOSITION
New 3.3.11	88		MOTION TO CREATE A SECOND REVISION BASED ON PC 88
Proposed Text (PC)	<u>3.3.12 Dwelling Unit</u> <u>One or more rooms arranged for the use of one or more individuals living together, as in a single housekeeping unit normally having cooking, living, sanitary, and sleeping facilities that include, but are not limited to, hotel rooms, dormitory rooms, apartments, condominiums, sleeping rooms in nursing homes, and similar living units.</u>		
Committee Text (SR)	<u>3.3.12 Dwelling Unit</u> <u>One or more rooms arranged for the use of one or more individuals living together, as in a single housekeeping unit normally having cooking, living, sanitary, and sleeping facilities that include, but are not limited to, hotel rooms, dormitory rooms, apartments, condominiums, sleeping rooms in nursing homes, and similar living units. [13: 2025]</u>		
Statement	The term Dwelling Unit is used in the document and therefore appropriate to have a defined term for Dwelling Unit.		

Commented [CD2]: If the task group decides to recommend this change review the NFPA glossary of terms and determine if this is an extract.

Commented [CD3]: If the task group decides to recommend this change review the NFPA glossary of terms and determine if this is an extract.

Section	PC	PAGE	DISPOSITION
3.3.24	39		MOTION TO REJECT PC 39
Proposed Text (PC)	3.3.24* Inspection, Testing, and Maintenance Service. A service provided by ~~qualified~~ knowledgeable and trained personnel through which specific system components are inspected and tested at required frequencies and are maintained as necessary. <u>A.3.3.24</u> Inspection, Testing, and Maintenance Service. This program includes logging and retention of relevant records. Any portion or all of the inspection, testing, and maintenance can be		

Commented [CD4]: If the task group decides to recommend this change review the annex and decide if it also needs to have "qualified personnel" changed to "knowledgeable and trained."

	contracted with an inspection, testing, and maintenance service. Similarly, any portion or all of the inspection, testing, and maintenance can be performed by qualified personnel employed by the property owner or designated representative.
Committee Text (SR)	
Statement	The definition of qualified personnel was removed and there is no need to modify this section.

Section	PC	PAGE	DISPOSITION
4.1.1.3	38		MOTION TO CREATE A SECOND REVISION BASED ON PC 38 AND PC 73
Proposed Text (PC)	~~4.1.1.3~~ Inspection, testing, and maintenance shall be performed by ~~qualified knowledgeable and trained personnel for the specific tasks performed in accordance with this standard.~~ ~~4.1.1.3.1*~~ ~~Qualified personnel shall meet at least one of the following qualifications:~~ ~~1. Meets the requirements and training for a given field acceptable to the authority having jurisdiction~~ ~~2. Is certified by a nationally recognized fire protection certification organization acceptable to the authority having jurisdiction~~ ~~3. Is registered, licensed, or certified by a state or local authority to perform inspection, testing, and maintenance of water-based fire protection systems~~ ~~A.4.1.1.3.1~~		

Commented [CD5]: PCs 38 and 73 should be reviewed at the same time to determine what action will be taken on 4.1.1.3 and 4.1.1.3.1 as only a single SR can be created on any one section.

Commented [CD6]: If the task group decides to recommend this change the annex to 4.1.1.3.1 will need to be reviewed as the default would be to delete it with the parent section even though it is not captured in the PC. If the task group wants to recommend the annex language be retained it would need to determine where it would go in the standard.

Many required ITM frequencies, such as daily, weekly, and monthly inspections to verify proper valve position or required air and water pressure maintenance, can be performed by building maintenance personnel, while other required functions should be performed by personnel with specialized knowledge and training. Examples of ITMs that would typically require more qualified personnel include but are not limited to conducting and evaluating annual fire pump tests, trip testing valves, and foam systems tests. Many locations might not have municipal AHJ interaction/oversight (or contact with insurance company risk consultants acting as AHJs, etc.). In these cases, ITM tasks that could adversely affect system performance should be completed by qualified personnel with specialized knowledge and training that is acceptable to the AHJ. This could include personnel that are registered, licensed, or certified by a nationally recognized fire protection certification organization, state, or local authority. Such qualified personnel typically have the competency to not only complete the ITM task but also understand the intended system performance criteria and potential impact of the work being completed.

Committee
Text (SR)

4.1.1.3

Inspection, testing, and maintenance shall be performed by qualified personnel for the specific tasks performed in accordance with this standard.

~~4.1.1.3.1*~~

~~Qualified personnel shall meet at least one of the following qualifications:~~

- ~~4. Meets the requirements and training for a given field acceptable to the authority having jurisdiction~~
- ~~5. Is certified by a nationally recognized fire protection certification organization acceptable to the authority having jurisdiction~~
- ~~6. Is registered, licensed, or certified by a state or local authority to perform inspection, testing, and maintenance of water-based fire protection systems~~

A.4.1.1.3+

The following are examples of qualified personnel:

Commented [CD7]: PCs 38 and 73 should be reviewed at the same time to determine what action will be taken on 4.1.1.3 and 4.1.1.3.1 as only a single SR can be created on any one section.

Commented [CD8]: If the task group decides to recommend this change the annex to 4.1.1.3.1 will need to be reviewed as the default would be to delete it with the parent section even though it is not captured in the PC. If the task group wants to recommend the annex language be retained it would need to determine where it would go in the standard.

	<u>(1) certified by a nationally recognized fire protection certification organization acceptable to the authority having jurisdiction</u> <u>(2) registered, licensed, or certified by a state or local authority to perform inspection, testing, and maintenance of water-based fire protection systems</u> Many required ITM frequencies, such as daily, weekly, and monthly inspections to verify proper valve position or required air and water pressure maintenance, can be performed by building maintenance personnel, while other required functions should be performed by personnel with specialized knowledge and training. Examples of ITMs that would typically require more qualified personnel include but are not limited to conducting and evaluating annual fire pump tests, trip testing valves, and foam systems tests. Many locations might not have municipal AHJ interaction/oversight (or contact with insurance company risk consultants acting as AHJs, etc.). In these cases, ITM tasks that could adversely affect system performance should be completed by qualified personnel with specialized knowledge and training that is acceptable to the AHJ. This could include personnel that are registered, licensed, or certified by a nationally recognized fire protection certification organization, state, or local authority. Such qualified personnel typically have the competency to not only complete the ITM task but also understand the intended system performance criteria and potential impact of the work being completed.
Statement	The prescriptive requirements for qualified personnel are not appropriate for inspection test maintenance documents and should be left to the local jurisdictions to apply through the legislative process. However, the existing language are good examples of qualifications and moved to the annex.

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Section	PC	PAGE	DISPOSITION
4.1.1.3.1	73		SEE ACTION ON PC 38.
Proposed Text (PC)	4.1.1.3.1* Qualified personnel shall meet ~~at least one of the following qualifications: the requirements and training for a given field acceptable to the authority having jurisdiction.~~ ~~(1) Meets the requirements and training for a given field acceptable to the authority having jurisdiction~~		

A.4.1.1.3.1

The following are examples that could meet the definition of qualified:

(21) ~~is~~ certified by a nationally recognized fire protection certification organization acceptable to the authority having jurisdiction

(32) ~~is~~ registered, licensed, or certified by a state or local authority to perform inspection, testing, and maintenance of water-based fire protection systems

A.4.1.1.3.1

Many required ITM frequencies, such as daily, weekly, and monthly inspections to verify proper valve position or required air and water pressure maintenance, can be performed by building maintenance personnel, while other required functions should be performed by personnel with specialized knowledge and training. Examples of ITMs that would typically require more qualified personnel include but are not limited to conducting and evaluating annual fire pump tests, trip testing valves, and foam systems tests. Many locations might not have municipal AHJ interaction/oversight (or contact with insurance company risk consultants acting as AHJs, etc.). In these cases, ITM tasks that could adversely affect system performance should be completed by qualified personnel with specialized knowledge and training that is acceptable to the AHJ. This could include personnel that are registered, licensed, or certified by a nationally recognized fire protection certification organization, state, or local authority. Such qualified personnel typically have the competency to not only complete the ITM task but also understand the intended system performance criteria and potential impact of the work being completed.

Commented [CD9]: This proposed changed recommended adding a new annex to 4.1.1.3.1 except 4.1.1.3.1 already has an annex. If the task group is going to recommend this change they will need to figure out how to make the recommended annex text part of the existing.

Committee
Text (SR)

Statement

Section

PC

PAGE

DISPOSITION

4.1.4	51		MOTION TO CREATE A SECOND REVISION BASED ON PC 51
Proposed Text (PC)	4.1.4 Notification of <u>Impairment</u>, System Shutdown, or Testing. The property owner or designated representative shall notify the authority having jurisdiction, the fire department, if required, and the alarm-receiving facility <u>when an impairment is identified and</u> before testing or shutting down a system or its supply. <u>4.1.4.1</u> <u>The notification of an impairment shall be required for both pre-planned and emergency impairments.</u> <u>4.1.4.1.1</u> <u>Additional information required by 15.5.2 as applicable shall be included in the notification.</u> <u>4.1.4.4-2</u> The notification of system shutdown or test shall include the purpose for the shutdown or test, the system or component involved, the estimated time of shutdown or test, and the expected duration of the shutdown or test. <u>4.1.4.2-3</u> The authority having jurisdiction, the fire department, and the alarm-receiving facility shall be notified when the system, supply, or component is returned to service or when the test is complete.		
Committee Text (SR)	4.1.4 Notification of <u>Impairment</u>, System Shutdown, or Testing. The property owner or designated representative shall notify the authority having jurisdiction, the fire department, <u>if-where</u> required, and the alarm-receiving facility <u>when an impairment is identified and/or</u> before testing or shutting down a system or its supply. <u>4.1.4.1</u>		

	<u>The notification of an impairment shall be required for both pre-planned and emergency impairments.</u> <u>4.1.4.1.1</u> <u>Additional information required by 15.5.2 as applicable shall be included in the notification.</u> <u>4.1.4.1-2</u> The notification of system shutdown or test shall include the purpose for the shutdown or test, the system or component involved, the estimated time of shutdown or test, and the expected duration of the shutdown or test. <u>4.1.4.2-3</u> The authority having jurisdiction, the fire department, and the alarm-receiving facility shall be notified when the system, supply, or component is returned to service or when the test is complete.
Statement	Notification of systems that are impaired are critical and should include the local fire service, to reduce the possibility of loss due to a fire event during the shutdown period.

Section	PC	PAGE	DISPOSITION
New 4.1.5.2	72		MOTION TO CREATE A SECOND REVISION BASED ON PC 72
Proposed Text (PC)	<u>4.1.5.2*</u> <u>Whenever impairments, critical deficiencies, or not-critical deficiencies are identified in water-based fire protection systems maintained in accordance with NFPA 25, both of the following shall apply:</u> <u>(1) Deficiencies shall be repaired in a time frame approved by the AHJ.</u> <u>(2) Until impairments are repaired, an approved impairment program shall be implemented in accordance with Chapter 15.</u>		

	<u>A.4.1.5.2</u> <u>A generally accepted practice is for critical deficiencies to be corrected or repaired within 30 days, non-critical deficiencies should be corrected or repaired within 90 days, and impairments should be corrected as soon as practical. [1, A.13.1.9]</u>
Committee Text (SR)	<u>4.1.5.2*</u> <u>Whenever impairments, critical deficiencies, or not-critical deficiencies are identified in water-based fire protection systems maintained in accordance with NFPA 25, both of the following shall apply:</u> <u>(3) Deficiencies shall be repaired in a time frame approved by the AHJ.</u> <u>(4) Until impairments are repaired, an approved impairment program shall be implemented in accordance with Chapter 15.</u> <u>A.4.1.5.2</u> <u>A generally accepted practice is for critical deficiencies to be corrected or repaired within 30 days, non-critical deficiencies should be corrected or repaired within 90 days, and impairments should be corrected as soon as practical. [1, A.13.1.9]</u>
Statement	Provides language to assist the owner in understanding the time frames to make necessary repairs.

Section	PC	PAGE	DISPOSITION
4.1.10.1	14		SEE ACTION ON PC 74
Proposed Text (PC)	4.1.10.1		A permanently marked metal or rigid plastic information sign shall be placed at ~~the first control valve after the water supply main enters the protected structure or at an approved location~~<u>each system riser, antifreeze loop, or auxiliary system control valve.</u>
Committee Text (SR)			

Commented [DC10]: PCs 14 and 74 should be reviewed at the same time to determine what action will be taken on 4.1.10.1 as only a single SR can be created on any one section.

Statement	
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Section	PC	PAGE	DISPOSITION
4.1.10.1	74		MOTION TO CREATE A SECOND REVISION BASED ON PC 74 AND 14
Proposed Text (PC)	4.1.10.1 A permanently marked metal or rigid plastic information sign shall be placed at ~~the first control valve after the water supply main enters the protected structure or at an approved location~~<u>each system riser.</u>		
Committee Text (SR)	4.1.10.1 A permanently marked metal or rigid plastic information sign shall be placed at ~~the first control valve after the water supply main enters the protected structure or at an approved location~~<u>each system riser.</u>		
Statement	The general information sign is required by NFPA 13 and includes more data than what is required by the NFPA 25 information sign, which is required at all system risers. The information sign required by NFPA 25 should be installed at the same locations.		

Section	PC	PAGE	DISPOSITION
4.1.11.1, 4.1.11.2	15		MOTION TO CREATE A SECOND REVISION BASED ON PC 15
Proposed Text (PC)	4.1.11.1* <u>For existing antifreeze solutions that are permitted to remain in a system, as per 5.3.4.4.2 and 5.3.4.4.3, An-an</u> antifreeze information sign shall be placed on the antifreeze system control valve indicating the manufacture type and brand of the antifreeze solution, the concentration by volume of the antifreeze solution used, and the volume of the antifreeze solution used in the system.		

	4.1.11.2 An antifreeze information sign for listed solutions shall be placed on the antifreeze system main valve indicating the manufacture type and brand of the antifreeze solution, the minimum use temperature of the antifreeze solution used, and the volume of the antifreeze solution used in the system.
Committee Text (SR)	4.1.11.1[*] <u>For existing non-listed premixed antifreeze solutions that are permitted to remain in a system, as per 5.3.4.4.2 and 5.3.4.4.3, An-an</u> antifreeze information sign shall be placed on the antifreeze system control valve indicating the manufacture type and brand of the antifreeze solution, the concentration by volume of the antifreeze solution used, and the volume of the antifreeze solution used in the system. A.4.1.11.4 Systems installed in accordance with the 2007 and subsequent editions of NFPA 13 are required by NFPA 13 to have an antifreeze system placard. It is not the intent of the technical committee for a system to have both the antifreeze sign required by this standard and the antifreeze placard required by NFPA 13. <u>The antifreeze sign required by this standard is intended to be provided for systems installed prior to the 2007 edition of NFPA 13.</u>
Statement	As currently proposed, there are now two paragraphs which call for antifreeze signs. The new paragraph 4.1.11.2 calls for a sign when listed antifreeze solutions are utilized as per 5.3.4.4, and the exiting paragraph 4.1.11.1 discusses the signage requirements for existing antifreeze solutions that are permitted to remain in a system as per 5.3.4.4.2 and 5.3.4.4.3. Therefore, the annex text was relocated to apply to both sections.

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Section	PC	PAGE	DISPOSITION
4.1.11.2	48		MOTION TO CREATE A SECOND REVISION BASED ON PC 48

Proposed Text (PC)	4.1.11.2 An antifreeze information sign for listed solutions shall be placed on the antifreeze system main valve indicating the manufacture type and brand of the antifreeze solution, the minimum ~~use~~-design temperature of the antifreeze solution used, and the volume of the antifreeze solution used in the system.
Committee Text (SR)	4.1.11.2 An antifreeze information sign for listed solutions shall be placed on the antifreeze system main valve indicating the manufacture type and brand of the antifreeze solution, the minimum ~~use~~-design temperature of the antifreeze solution used, and the volume of the antifreeze solution used in the system.
Statement	The design temperature is the pertinent data used when considering viscosity and other temperature-dependent characteristics of the antifreeze solution. The sign needs to identify the temperature that the system was designed to.

Section	PC	PAGE	DISPOSITION
4.3.6	6		SEE ACTION ON PC 52
Proposed Text (PC)	4.3.6		All records shall be maintained ~~in a documentation cabinet~~ and be <u>readily available</u> , where required.
Committee Text (SR)			
Statement			

Commented [DC11]: PCs 6, 52, and 61 should be reviewed at the same time to determine what action will be taken on 4.3.6 as only a single SR can be created on any one section.

Section	PC	PAGE	DISPOSITION
4.3.6	52		MOTION TO REJECT PC 52
Proposed Text (PC)	~~4.3.6~~ ~~All records shall be maintained in a documentation cabinet, where required.~~		
Committee Text (SR)			
Statement	The requirements to maintain the records is already covered in 4.3 and the addition of the documentation cabinet is not necessary since 4.3 provides different options on how to maintain the records.		

Section	PC	PAGE	DISPOSITION
4.3.6	61		MOTION TO CREATE A SECOND REVISION BASED ON PC 61
Proposed Text (PC)	~~4.3.6~~ All records shall be maintained in a documentation cabinet, where required. <u>A.4.3.6</u> <u>The document cabinet required by 4.3.6 of NFPA 25 and Section 16.11.1.3 of NFPA 13 was introduced in the 2025 edition of NFPA 13 and, as such, should not be expected to be present on systems installed prior. The documents that could be maintained in the cabinet include hard or electronic copies of as-built drawings, original acceptance tests, manufacturers data sheets, hydraulic data plates and any other documents related to the fire sprinkler system that could be of importance.</u>		

Committee Text (SR)	A.4.3.1.1 Records required to be maintained should be transferred to the new property owner when a property changes ownership. ~~The A document cabinet required by 4.3.6 of NFPA 25 and Section 16.11.1.3 of NFPA 13~~ was introduced in the 2025 edition of NFPA 13 and, as such, should not be expected to be present on systems installed prior. The documents that ~~could~~ should be maintained by the owner ~~in the cabinet~~ include hard or electronic copies of as-built drawings, original acceptance tests, manufacturers data sheets, owners certificate, hydraulic data plates and any other documents related to the fire sprinkler system that could be of importance.
Statement	Technology continues to advance providing alternative means of maintaining system records.

Section	PC	PAGE	DISPOSITION																		
A.1.4	12		MOTION TO CREATE A SECOND REVISION BASED ON PC 12																		
Proposed Text (PC)	A.1.4 The liter and bar units, which are not part of but are recognized by SI, commonly are used in international fire protection. These units are provided in Table A.1.4 with their conversion factors. <u>Table A.1. 4 Conversion Factors</u> <table><tr><th></th><th><u>Name of Unit</u></th><th><u>Unit Symbol</u></th><th><u>Conversion Factor</u></th></tr><tr><td rowspan="2"><u>Length</u></td><td><u>Millimeter</u></td><td><u>mm</u></td><td><u>1 in = 25 mm</u></td></tr><tr><td><u>Meter</u></td><td><u>m</u></td><td><u>1 ft = 0.3048 m</u></td></tr><tr><td rowspan="2"><u>Area</u></td><td><u>Square millimeters</u></td><td><u>mm²</u></td><td><u>1 in² = 645.2 mm²</u></td></tr><tr><td><u>Square meter</u></td><td><u>m²</u></td><td><u>1 ft² = 0.0929 m²</u></td></tr></table>				<u>Name of Unit</u>	<u>Unit Symbol</u>	<u>Conversion Factor</u>	<u>Length</u>	<u>Millimeter</u>	<u>mm</u>	<u>1 in = 25 mm</u>	<u>Meter</u>	<u>m</u>	<u>1 ft = 0.3048 m</u>	<u>Area</u>	<u>Square millimeters</u>	<u>mm²</u>	<u>1 in² = 645.2 mm²</u>	<u>Square meter</u>	<u>m²</u>	<u>1 ft² = 0.0929 m²</u>
	<u>Name of Unit</u>	<u>Unit Symbol</u>	<u>Conversion Factor</u>																		
<u>Length</u>	<u>Millimeter</u>	<u>mm</u>	<u>1 in = 25 mm</u>																		
	<u>Meter</u>	<u>m</u>	<u>1 ft = 0.3048 m</u>																		
<u>Area</u>	<u>Square millimeters</u>	<u>mm²</u>	<u>1 in² = 645.2 mm²</u>																		
	<u>Square meter</u>	<u>m²</u>	<u>1 ft² = 0.0929 m²</u>																		

<u>Volume</u>	<u>Cubic millimeter</u>	<u>mm³</u>	<u>1 in.³ = 163387.1 mm³</u>
	<u>Cubic meter</u>	<u>m³</u>	<u>1 ft³ = 0.02832 m³</u>
<u>Fluid capacity</u>	<u>Liter</u>	<u>L</u>	<u>1 gal = 3.785 L</u>
	<u>Liter</u>	<u>L</u>	<u>1 Cup = 0.236588 L</u>
	<u>Cubic Decimeter</u>	<u>dm³</u>	<u>1 gallon = 3.785 dm³</u>
<u>Flow</u>	<u>Liter per minute</u>	<u>L/min</u>	<u>1 gpm = 3.785 L/min</u>
	<u>Liter per second</u>	<u>L/s</u>	<u>1 gal/sec = 3.785 L/s</u>
	<u>Cubic meters per minute</u>	<u>m³/min</u>	<u>1 ft³/min = 0.0283168 m³/min</u>
<u>Pressure</u>	<u>Bar</u>	<u>bar</u>	<u>1 psi = 0.0689476 bar</u>
	<u>Kilopascal</u>	<u>kPa</u>	<u>1 psi = 6.89476 kPa</u>
<u>Discharge density</u>	<u>Millimeter/minute</u>	<u>mm/min</u>	<u>1 gpm/ft² = 40.746 mm/min</u>
	<u>Liter/minute/m²</u>	<u>(L/min)/m²</u>	<u>1 gpm/ft² = 40.746 (L/min)/m²</u>
<u>K-factor</u>	<u>K-factor</u>	<u>L/min/(bar)^{1/2}</u>	<u>1 gpm/(psi)^{1/2} = 14.285 L/min/(bar)^{1/2}</u>
<u>Temperature</u>	<u>Fahrenheit</u>	<u>°F</u>	<u>F° = 9/5 × C° + 32</u>
	<u>Celsius</u>	<u>°C</u>	<u>C° = 5/9 (F° - 32)</u>
<u>Velocity</u>	<u>Meters per second</u>	<u>m/s</u>	<u>1 ft/sec = 0.3048 m/s</u>
<u>Energy</u>	<u>Watts</u>	<u>W</u>	<u>1 B.t.u./hr = 0.293071 W</u>
	<u>Kilowatts (1000 watts)</u>	<u>kW</u>	<u>1 hp = 0.7457 kW</u>
	<u>Megawatts (1000 kW)</u>	<u>MW</u>	<u>1 hp = 0.0007457 MW</u>

Note: For additional conversions and information, see ASTM SI 10, IEEE/ASTM SI 10, *American National Standard for Metric Practice*.

	~~Table A.1.4 Metric Conversions~~		
	~~Name of Unit~~	~~Unit Symbol~~	~~Conversion Factor~~
	~~liter~~	~~L~~	~~1 gal = 3.785 L~~
	~~liter per minute per square meter~~	~~L/min·m²~~	~~1 gpm/ft² = 40.746 L/min·m²~~
	~~cubic decimeter~~	~~dm³~~	~~1 gal = 3.785 dm³~~
	~~pascal~~	~~Pa~~	~~1 psi = 6894.757 Pa~~
	~~bar~~	~~bar~~	~~1 psi = 0.0689 bar~~
	~~bar~~	~~bar~~	~~1 bar = 10⁵ Pa~~
	~~Note: For additional conversions and information, see IEEE/ASTM SI 10, American National Standard for Metric Practice.~~		
Committee Text (SR)			
Statement			

Section	PC	PAGE	DISPOSITION
A.3.3.23	33		MOTION TO REJECT PC 33
Proposed Text (PC)	3.3.23* Inspection. A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage. [820, 2024] ~~A.3.3.23 Inspection.—~~ ~~The definition of the term <i>inspection</i> does not preclude the need to have system components (e.g., internal conditions of check valves) disassembled to perform the required inspection and should not be considered maintenance work.~~		

Committee Text (SR)	
Statement	The need to remove a face plate to perform an internal inspection does not impact the definition of an inspection.

Section	PC	PAGE	DISPOSITION
			MOTION TO CREATE A SECOND REVISION 3.3.33
Proposed Text (PC)			
Committee Text (SR)	3.3.33* Qualified Personnel. Competent and capable individual(s) having met the requirements and training for a given field acceptable to the AHJ. A.3.3.33 Qualified Personnel.— See 4.1.1.3.1 for more information on qualified personnel.		
Statement	Definition in dictionary is sufficient to convey the intent of a qualified person. Reference to AHJ results in inconsistent enforcement.		

Section	PC	PAGE	DISPOSITION
5.2.1.1.1	44		Move to reject PC# 44
Proposed Text (PC)	5.2.1.1.1* Any sprinkler that shows signs of any of the following shall be replaced: (1) Leakage (2) Corrosion ~~detrimental to sprinkler performance~~ (3) Physical damage (4) Loss of fluid in the glass bulb heat-responsive element (5) Loading ~~detrimental to sprinkler performance~~ (6) Paint, other than that applied by the sprinkler manufacturer, ~~detrimental to sprinkler performance~~		
Committee Text (SR)			
Statement	A large percentage of sprinklers installed in the field have some level of corrosion or loading but operate normally when representative samples are subjected to sensitivity and operational testing.		

Section	PC	PAGE	DISPOSITION
5.2.1.1.5	16		Move to create a Second Revision based on PC# 16, 50, & 77
Proposed Text (PC)	5.2.1.1.5 Where ~~Escutcheons~~ <u>escutcheons</u> and coverplates for recessed, ~~flush~~ , and concealed sprinklers ~~that are~~ <u>found to be</u> missing or that show signs of any of the following <u>deficiencies</u> shall be replaced with ~~their~~		

Commented [CD1]: PCs 16, 50, 45, and 77 should be reviewed at the same time to determine what action will be taken on 5.2.1.1.5 as only a single SR can be created on any one section.

Commented [JVR2R1]: The task group thought it was best to reject PC# 45 independently since no part of the proposed language was going to be used. Parts of PC 16, 50, and 77 were used to create the suggested committee text found here.

	listed escutcheons or coverplates <u>that are part of the listed sprinkler assembly:</u> (1) Physical damage (2) Corrosion detrimental to sprinkler performance (3) Loading detrimental to sprinkler performance (4) Paint, other than that applied by the sprinkler manufacturer, detrimental to sprinkler performance 5.2.1.1.5.1 Where the listed escutcheon or coverplate from a listed assembly is required to be replaced in accordance with 5.2.1.1.5 and is no longer commercially available, the sprinkler shall be replaced.
Committee Text (SR)	5.2.1.1.5 <u>Where ~~Escutcheons~~ escutcheons</u> and coverplates for recessed; <u>flush</u>, <u>flush</u>, and concealed sprinklers ~~that are~~ <u>found to be</u> missing or that show signs of any of the following <u>deficiencies</u>, <u>they</u> shall be replaced with ~~their~~ listed escutcheons or coverplates <u>that are part of the listed sprinkler assembly:</u> (1) Physical damage (2) Corrosion detrimental to sprinkler performance (3) Loading detrimental to sprinkler performance (4) Paint, other than that applied by the sprinkler manufacturer, detrimental to sprinkler performance <u>5.2.1.1.5.1</u> <u>Coverplates for concealed sprinklers found to be glued or caulked to the ceiling shall be replaced.</u> <u>5.2.1.1.5.2</u> Where the listed escutcheon or coverplate from a listed <u>sprinkler assembly</u> is required to be replaced in accordance with 5.2.1.1.5 <u>or</u>

Commented [JVR3]: This portion originated from PC# 16

Commented [JVR4]: This portion originated from PC# 50

	<u>5.2.1.1.5.1</u> and is no longer commercially available, the sprinkler assembly shall be replaced. <u>A.5.2.1.1.5</u> <u>Flat and adjustable escutcheons that do not affect the response or spray pattern are not required to be listed and should not require replacement.</u>
Statement	The addition of the new section in the standard addresses coverplates or escutcheons that are glued or caulked to the ceiling and makes it a requirement to have them replaced which aligns with the deficiencies found in Table A.3.3.8. The annex note was moved and changed from A.5.2.1.1.6 due to the action taken on PC 76 and 78. This clarifies that not all escutcheons are required to be replaced.

Commented [JVR5]: This combined portions of PC# 16 & 50

Commented [JVR6]: This portion originated from PC# 77 which was necessary to relocate the annex language to this section from A.5.2.1.1.6 based on the actions taken on PC# 76 & 78

Section	PC	PAGE	DISPOSITION
5.2.1.1.5	50		Move to make a Second Revision based on PC# 16, 50, & 77
Proposed Text (PC)	5.2.1.1.5 Escutcheons and coverplates for recessed, flush, and concealed sprinklers that are missing or that show signs of any of the following shall be replaced with their listed escutcheons or coverplates: (1) Physical damage (2) Corrosion detrimental to sprinkler performance (3) Loading detrimental to sprinkler performance (4) Paint, other than that applied by the sprinkler manufacturer, detrimental to sprinkler performance <u>5.2.1.1.5.1</u>		

	<u>Coverplates for concealed sprinklers found to be glued or caulked to the ceiling shall be replaced.</u> 5.2.1.1.5. ~~1-2~~ Where the listed escutcheon or coverplate from a listed assembly is required to be replaced in accordance with 5.2.1.1.5 <u>or 5.2.1.1.5.1</u> and is no longer commercially available, the sprinkler shall be replaced.
Committee Text (SR)	
Statement	See action and statement taken on PC# 16

Section	PC	PAGE	DISPOSITION
5.2.1.1.5	45		Move to reject PC# 45
Proposed Text (PC)	5.2.1.1.5 Escutcheons and coverplates for recessed, flush, and concealed sprinklers that are missing or that show signs of any of the following shall be replaced with their listed escutcheons or coverplates: (1) Physical damage (2) Corrosion ~~detrimental to sprinkler performance~~ (3) Loading ~~detrimental to sprinkler performance~~ (4) Paint, other than that applied by the sprinkler manufacturer, ~~detrimental to sprinkler performance~~		
Committee Text (SR)			
Statement	A large percentage of sprinklers installed in the field have some level of corrosion or loading but operate normally when representative samples are subjected to sensitivity and operational testing.		

Section	PC	PAGE	DISPOSITION
5.2.1.1.5	77		Move to make a Second Revision based on PC# 16, 50, & 77
Proposed Text (PC)	5.2.1.1.5* Escutcheons and coverplates ~~for recessed, flush, and concealed sprinklers~~ that are missing or that show signs of any of the following shall be replaced with their listed escutcheons or coverplates: (5) Physical damage (6) Corrosion detrimental to sprinkler performance (7) Loading detrimental to sprinkler performance ~~(8)~~ Paint, other than that applied by the sprinkler manufacturer, detrimental to sprinkler performance ~~(8)(9)~~ <u>Coverplates plates caulked or glued to the ceiling or wall</u> <u>A.5.2.1.1.5</u> <u>flat and adjustable escutcheons that do not affect the response or spray pattern are not required to be listed and should not require replacement.</u>		
Committee Text (SR)			
Statement	See action and statement taken on PC# 16		

Section	PC	PAGE	DISPOSITION
5.2.1.1.6	76 78		Move to create a Second Revision based on PC# 76 & 78
Proposed Text (PC)	~~5.2.1.1.6*~~		

Commented [CD7]: Note that PC 76 and 78 are recommending to delete section 5.2.1.1.6 and its annex but there are two other PCs on the annex for 5.2.1.1.6. PCs 31 and 42 should be reviewed at the same time as PCs 76 and 78 to determine what actions will be taken.

Commented [JVR8R7]: Since the task group decided to create a second revision based on PC # 76 & 78, it seemed like the appropriate action was to reject PC# 31 & 42

	~~Escutcheons for pendent sprinklers that are not recessed, flush, or concealed shall not be required to be replaced if found missing during the inspection.~~ ~~A.5.2.1.1.6 —~~ ~~Flat and adjustable escutcheons, also known as beauty rings, trim plates, or extension skirts that are aesthetic for nonrecessed or nonconcealed sprinklers and do not affect the response or spray pattern, are not required to be listed.~~
Committee Text (SR)	~~5.2.1.1.6*~~ ~~Escutcheons for pendent sprinklers that are not recessed, flush, or concealed shall not be required to be replaced if found missing during the inspection.~~ ~~A.5.2.1.1.6 —~~ ~~Flat and adjustable escutcheons, also known as beauty rings, trim plates, or extension skirts that are aesthetic for nonrecessed or nonconcealed sprinklers and do not affect the response or spray pattern, are not required to be listed.~~
Statement	In some situations, piping that penetrates membranes require escutcheons to be installed which would include cup and skirt style escutcheons. This style is currently not required to be replaced if found missing. Deleting this text makes it a requirement to install extended cup and skirt style escutcheons where found missing. The annex material for this section was relocated and changed to align with the requirements in 5.2.1.1.5 per the actions taken on PC# 77.

Section	PC	PAGE	DISPOSITION
A.5.2.1.1.6	31		Move to reject PC# 31 and 42

Proposed Text (PC)	A.5.2.1.1.6 ~~Metallic Flat-flat~~ and adjustable escutcheons, also known as beauty rings, trim plates, or extension skirts that are aesthetic for nonrecessed or nonconcealed sprinklers and do not affect the response or spray pattern, are not required to be listed.
Committee Text (SR)	
Statement	The actions taken on PC 76 & 77 deleted the language from the standard. The subsequent actions taken on PC 16, 50, & 77 relocated and changed this language to be incorporated as new A.5.2.1.1.5 language.

Section	PC	PAGE	DISPOSITION
A.5.2.1.1.6	42		Move to reject PC# 31 and 42
Proposed Text (PC)	A.5.2.1.1.6 Flat and adjustable escutcheons, also known as beauty rings, trim plates, or extension skirts ~~that~~ are aesthetic for nonrecessed or nonconcealed sprinklers and do not affect the response or spray pattern, ~~are not required to be listed.~~		
Committee Text (SR)			
Statement	The actions taken on PC 76 & 77 deleted the language from the standard. The subsequent actions taken on PC 16, 50, & 77 relocated and changed this language to be incorporated as new A.5.2.1.1.5 language.		

Section	PC	PAGE	DISPOSITION
5.2.1.1.7	40		Move to create a Second Revision using PC# 40

Proposed Text (PC)	5.2.1.1.7 Sprinkler Guards. 5.2.1.1.7.1 Where installed, a sprinkler guard<u>s</u> shall be inspected from the floor level annually. 5.2.1.1.7.2 ~~A-d~~Damaged sprinkler guard<u>s</u> shall be replaced with a guard listed for the sprinkler.
Committee Text (SR)	5.2.1.1.7 Sprinkler Guards. 5.2.1.1.7.1 Where installed, ~~a~~ sprinkler guard<u>s</u> shall be inspected from the floor level annually. 5.2.1.1.7.2 ~~A-d~~Damaged sprinkler guard<u>s</u> shall be replaced with a guard listed for the sprinkler.
Statement	This change corrects the language from being a singular phrase to a plural phrase to clarify that this requirement applies to any sprinkler equipped with a guard located in an accessible space must be inspected for damage that could cause an obstruction to the sprinkler discharge pattern.

Section	PC	PAGE	DISPOSITION
5.2.5	46		Move to create a Second Revision based on PC# 46
Proposed Text (PC)	5.2.5* Hydraulic Design Information Sign. The hydraulic design information sign shall be inspected annually to verify that it is provided, attached securely to the sprinkler riser, and is legible.		

	<u>5.2.5.1</u> <u>The hydraulic design information sign shall not be required to be inspected where the occupancy does not contain any high-piled storage.</u> <u>5.2.5.4-2</u> A hydraulic design information sign that is missing or illegible shall be replaced. <u>5.2.5.2-3</u> A pipe schedule system shall have a hydraulic design information sign that reads "Pipe Schedule System."
Committee Text (SR)	~~5.2.5* Hydraulic Design Information Sign.~~ ~~The hydraulic design information sign shall be inspected annually to verify that it is provided, attached securely to the sprinkler riser, and is legible.~~ <u>5.2.5.1</u> ~~The hydraulic design information sign shall not be required to be inspected where the occupancy does not contain any high-piled storage.~~ ~~5.2.5.1-2~~ ~~A hydraulic design information sign that is missing or illegible shall be replaced.~~ ~~5.2.5.2-3~~ ~~A pipe schedule system shall have a hydraulic design information sign that reads "Pipe Schedule System."~~
Statement	It is not necessary to inspect for the hydraulic information sign per Chapter 5. The owner is already required to provide and maintain the hydraulic information sign per the requirements found in Chapter 4.

Section	PC	PAGE	DISPOSITION
5.2.7/5.2.8	2		Create a Second Revision Using PC# 2
Proposed Text (PC)	Sections 5.2.7, 5.2.8 ~~5.2.7 Information Sign.~~ ~~The information sign required by 4.1.10 shall be inspected annually to verify that it is provided, securely attached, and legible.~~ 5.2.8* General Information Sign. ~~The general information sign~~<u>Where</u> required by NFPA 13, <u>the general information sign</u> shall be inspected annually to verify that it is provided, securely attached, and legible. 5.2.8.1 Such general information shall be provided with a permanently marked weatherproof metal or rigid plastic sign, secured with corrosion-resistant wire, chain, or other acceptable means. [13:29.6.1.1] 5.2.8.2 Such signs shall be placed at each system riser. [13:29.6.1.2] <u>5.2.8.3</u> <u>Where the general information sign was not required at the time of system acceptance, only the information sign required by 4.1.10 shall be inspected annually to verify that it is provided, securely attached, and legible.</u>		
Committee Text (SR)	~~5.2.7 Information Sign.~~ ~~The information sign required by 4.1.10 shall be inspected annually to verify that it is provided, securely attached, and legible.~~ 5.2.8* General Information Sign. ~~The general information sign~~<u>Where</u> required by NFPA 13, <u>the general information sign</u> shall be inspected annually to verify that it is provided, securely attached, and legible.		

	5.2.8.1 Such general information shall be provided with a permanently marked weatherproof metal or rigid plastic sign, secured with corrosion-resistant wire, chain, or other acceptable means. [13:29.6.1.1] 5.2.8.2 Such signs shall be placed at each system riser. [13:29.6.1.2] <u>5.2.8.3</u> <u>Where the general information sign was not required at the time of system acceptance, only the information sign required by 4.1.10 shall be inspected annually to verify that it is provided, securely attached, and legible.</u>
Statement	This change clarifies that the owner does not have to maintain both signs.

Section	PC	PAGE	DISPOSITION
New 5.3.1.1.1.7	89		No action was taken by the task group since there was no data provided
Proposed Text (PC)	<u>5.3.1.1.1.7 Sprinklers in Dwelling Units</u> <u>Where sprinklers have been installed for 50 years in dwelling units, one of the following shall occur:</u> <u>(1) The sprinklers shall be replaced with fast response sprinklers.</u> <u>(2) Representative samples of the sprinklers shall be tested and the thermal sensitivity shall be such that the RTI does not exceed 65 (meters-seconds)1/2.</u>		
Committee Text (SR)			
Statement			

Commented [DC9]: If this text is recommended, note that it should not have a head at this level in accordance with the MOS.

Commented [JVR10R9]: The task group did not take action on this as data is supposed to be submitted for consideration to the TC prior to the second draft meeting.

Section	PC	PAGE	DISPOSITION
5.3.4.4.1	49		Create a Second Revision based on PC# 49 & 83
Proposed Text (PC)	5.3.4.4.1 ~~Where acceptable to the AHJ, I~~ listed antifreeze solutions used to replace nonlisted antifreeze solutions shall be permitted to be used outside their system volume and hydraulic calculations requirements if the temperature range limitations are not exceeded.		
Committee Text (SR)	5.3.4.4.1 ~~Where acceptable to the AHJ, I~~ listed antifreeze solutions used to replace nonlisted antifreeze solutions shall be permitted to be used outside their system volume and hydraulic calculations requirements if the temperature range limitations are not exceeded.		
Statement	It is determined that the new listed solution performs better than the legacy solutions and should not require additional approval from the AHJ where used to replace nonlisted antifreeze solutions.		

Commented [DC11]: PCs 49 and 83 should be reviewed at the same time to determine what action will be taken on 5.3.4.4.1 as only a single SR can be created on any one section.

Section	PC	PAGE	DISPOSITION
5.3.4.4.1	83		Create a Second Revision based on PC# 49 & 83
Proposed Text (PC)	5.3.4.4.1 ~~Where acceptable to the AHJ, I~~ listed antifreeze solutions used to replace nonlisted antifreeze solutions shall be permitted to be used outside their system volume and hydraulic calculations requirements if the temperature range limitations are not exceeded.		
Committee Text (SR)			
Statement	See action and statement taken on PC# 49		

Section	PC	PAGE	DISPOSITION
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5.4.1.6.6.1	18/19		Move to reject PC# 18, 19, & 53
Proposed Text (PC)	<u>5.4.1.6.6.1*</u> The list shall include the following: (1) Sprinkler identification number (SIN), if equipped, <u>or</u> the manufacturer, model, ~~K-factor orifice~~, deflector type, thermal sensitivity, <u>and</u> pressure rating, ~~and temperature rating~~ (2) Manufacturer's sprinkler wrench model number for each sprinkler type (3) General description ~~(4) Quantity of each type of sprinkler installed in the property~~ ~~(5)~~<u>(4)</u> Quantity of each type ~~of sprinkler~~ to be contained in the cabinet ~~(6)~~<u>(5)</u> Issue or revision date of the list ~~[13:16.2.7.7.1]~~ A.5.4.1.6.6.1 The minimum information in the list contained in the spare sprinkler cabinet should be marked with the <u>following: sprinkler identification described in 5.4.1.6.6.1; a</u> <u>(1)</u> general description of the sprinkler, including upright, pendent, residential, ESFR, and so forth; ~~the quantity of each type of sprinkler installed in the property; the~~ ~~(4)~~<u>(2)</u> quantity of sprinklers ~~that is~~ to be maintained in the spare sprinkler cabinet; ~~and a sprinkler wrench type.~~ An example of the list is shown in Figure A.5.4.1.6.6.1. ~~[13:A.16.2.7.7.1]~~ Figure A.5.4.1.6.6.1 Sample List. ~~[13:Figure A.16.2.7.7.1]~~		

Commented [DC12]: PCs 18 and 53 should be reviewed at the same time to determine what action will be taken on 5.4.1.6.6.1 as only a single SR can be created on any one section.

Commented [JVR13R12]: PC# 19 was wrapped into this same action

	<table><tr><th colspan="6">Sprinklers Contained in this Cabinet</th></tr><tr><th>~~Sprinkler Identification~~ SIN</th><th>~~General~~ Description</th><th>~~Temperature~~ Rating, °F</th><th>~~Sprinkler Quantity~~ Maintained</th><th>Sprinkler Wrench Type</th><th>Sprinkler Quantity in the Property</th></tr><tr><td>TY9128</td><td>Extended coverage, K-25, upright</td><td>165</td><td>6</td><td>W-Type 1 sprinkler wrench</td><td>20</td></tr><tr><td>VK494</td><td>Residential concealed pendent</td><td>155</td><td>6</td><td>Standard sprinkler wrench 21475MB</td><td>20</td></tr></table> <table><tr><th colspan="4">Sprinklers Contained in this Cabinet</th></tr><tr><th>Sprinkler Identification, SIN</th><th>General Description</th><th>Temperature Rating, °F</th><th>Sprinkler Quantity Maintained</th></tr><tr><td>TY9128</td><td>Extended Coverage, K-25, upright</td><td>155</td><td>6</td></tr><tr><td>VK425</td><td>Concealed pendent residential</td><td>145</td><td>6</td></tr><tr><td colspan="2">Issued: 10/3/05</td><td colspan="2">Revised:</td></tr></table>	Sprinklers Contained in this Cabinet						~~Sprinkler Identification~~ SIN	~~General~~ Description	~~Temperature~~ Rating, °F	~~Sprinkler Quantity~~ Maintained	Sprinkler Wrench Type	Sprinkler Quantity in the Property	TY9128	Extended coverage, K-25, upright	165	6	W-Type 1 sprinkler wrench	20	VK494	Residential concealed pendent	155	6	Standard sprinkler wrench 21475MB	20	Sprinklers Contained in this Cabinet				Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained	TY9128	Extended Coverage, K-25, upright	155	6	VK425	Concealed pendent residential	145	6	Issued: 10/3/05		Revised:	
Sprinklers Contained in this Cabinet																																													
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Issued: 10/3/05		Revised:																																											
Committee Text (SR)																																													
Statement	Requiring this additional information should not be burdensome to the owner as they are required to maintain the documents that contains this information for the life of the system per Chapter 4.																																												

Section	PC	PAGE	DISPOSITION
5.4.1.6.6.1	53		Move to reject PC# 18, 19, & 53
Proposed Text (PC)	5.4.1.6.6.1* The list shall include the following:		

	(1) Sprinkler identification number (SIN), if equipped, the manufacturer, model, K-factor, deflector type, thermal sensitivity, <u>and</u> pressure rating, ~~and temperature rating~~ (2) Manufacturer's sprinkler wrench model number for each sprinkler type (3) General description ~~(4) Quantity of each type of sprinkler installed in the property~~ ~~(5)~~(4) Quantity of each type of sprinkler to be contained in the cabinet ~~(6)~~(5) Issue or revision date of the list ~~{13:16.2.7.7.1}~~
Committee Text (SR)	
Statement	See statement on PC# 18/19

Section	PC	PAGE	DISPOSITION
A.5.4.1.6.5	79		Create a Second Revision using PC# 79
Proposed Text (PC)	A.5.4.1.6.5 One sprinkler wrench design can be appropriate for many types of sprinklers, and multiple wrenches of the same design should not be required. <u>Some sprinklers do not require wrenches, such as sprinklers that only require hand tight installation, use couplings or alignment tool.</u> Unless sprinklers are being removed for testing, the sprinkler wrench should not be required for the removal of sprinklers, but could be beneficial for the removal of concealed or other special sprinklers.		
Committee Text (SR)	A.5.4.1.6.5		

	One sprinkler wrench design can be appropriate for many types of sprinklers, and multiple wrenches of the same design should not be required. <u>Some sprinklers do not require wrenches, such as sprinklers that only require hand tight installation, use couplings or alignment tools.</u> Unless sprinklers are being removed for testing, the sprinkler wrench should not be required for the removal of sprinklers, but could be beneficial for the removal of concealed or other special sprinklers.
Statement	There are listed sprinklers available that do not require a sprinkler wrench for install. Some sprinklers have different tools or methods of installation that do not require wrenches.

Section	PC	PAGE	DISPOSITION
Proposed Text (PC)			
Committee Text (SR)			
Statement			

Section	PC	PAGE	DISPOSITION
Proposed Text (PC)			
Committee Text (SR)			
Statement			

Section	PC	PAGE	DISPOSITION
6.2.4.1	57		Motion to create a second revision based on PC 57
Proposed Text (PC)	6.2.4.1 Piping shall be inspected annually for the following conditions: (1) Damaged piping ~~(2) Damaged control valves~~ ~~(3)~~(2) Missing or damaged pipe support device (i.e., missing or damaged hanger or seismic brace) ~~(4) Damaged supervisory signal initiating device~~ ~~(5)~~(3)		
Committee Text (SR)	6.2.4* <u>Pipe and Fittings</u>ing- <u>Pipe and fittings shall be inspected annually from the floor level.</u> 6.2.4.1* <u>Pipe and fittings shall be free of mechanical damage, leakage, and corrosion.</u> 6.2.4.2 <u>Piping shall not be used to support nonsystem components.</u> 6.2.4.3* <u>Pipe and fittings installed in concealed spaces such as above suspended ceilings shall not require inspection.</u> 6.2.4.4 <u>Pipe and fittings installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shutdown.</u> <u>A.6.2.4 The conditions described in 6.2.4 can have a detrimental effect on the performance and life of pipe by affecting corrosion rates or pipe integrity or otherwise rendering the pipe ineffectual.</u> <u>A.6.2.4.1 Surface corrosion not impacting the integrity of the piping strength or raising concern of potential leakage should not warrant the replacement of piping. A degree of judgment should be applied in determining the extent of corrosion that necessitates replacement.</u>		

A.6.2.4.3 Examples include some floor/ceiling or roof/ceiling assemblies, areas under theater stages, pipe chases, and other inaccessible areas.

6.2.5* Hangers, Braces, and Supports

Pipe hangers, braces, and supports shall be inspected annually from the floor level.

6.2.5.1 Hangers, braces, and supports shall not be damaged, loose, or unattached.

6.2.5.2 Hangers, braces, and supports that are damaged, loose, or unattached shall be replaced or refastened.

6.2.5.3* Hangers, braces, and supports installed in concealed spaces such as above suspended ceilings shall not require inspection.

6.2.5.4 Hangers, braces, and supports installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shutdown.

A.6.2.5 The conditions described in 6.2.5 can have a detrimental effect on the performance of hangers and braces by allowing failures if the components become loose.

A.6.2.5.3 Examples of hangers and seismic braces installed in concealed areas include some floor/ceiling or roof/ceiling assemblies, areas under theater stages, pipe chases, and other inaccessible areas.

~~Piping shall be inspected annually for the following conditions:~~

- ~~(1) Damaged piping~~
- ~~(2) Damaged control valves~~
- ~~(3) Missing or damaged pipe support device (i.e., missing or damaged hanger or seismic brace)~~
- ~~(4) Damaged supervisory signal initiating device~~

Statement	Control valves and supervisory signal initiating devices are covered in Chapter 13. Language from Chapter 5 for inspection of piping and hangers was pulled into Chapter 6 for consistency and clarity.
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Section	PC	PAGE	DISPOSITION
6.2.5	58		Motion to create a second revision based on PC 58
Proposed Text (PC)	6.2.5 Hose. 6.2.5.1 Hose shall be inspected annually for the following conditions as required by NFPA 1930: (1) Mildew, cuts, abrasions, and deterioration (2) Couplings hose threads damaged (3) Gaskets missing or deteriorated (4) Incompatible threads on coupling (5) Hose not connected to hose rack nipple or valve ~~(6) Hose test outdated~~ 6.2.5.2 Where any deficiency is noted, the appropriate corrective action shall be taken.		
Committee Text (SR)	6.2.5 Hose. 6.2.5.1 Hose shall be inspected annually for the following conditions as required by NFPA 1930: (1) Mildew, cuts, abrasions, and deterioration		

	(2) Couplings hose threads damaged (3) Gaskets missing or deteriorated (4) Incompatible threads on coupling (5) Hose not connected to hose rack nipple or valve ~~(6) Hose test outdated~~ 6.2.5.2 Where any deficiency is noted, the appropriate corrective action shall be taken.
Statement	As determined by the technical committee on similar issues, past due inspections and tests are not deficiencies and are addressed through the enforcement of the fire code. The party inspecting the hose do not have the power to police conformance with the standard for tasks that they might not be contracted to perform. Additionally, NFPA 1930 addresses testing requirements for hose.

Section	PC	PAGE	DISPOSITION
6.3.1.2.1	63		Motion to create a second revision based on PC 63
Proposed Text (PC)	6.3.1.2.1 Where a horizontal standpipe on a Class I or Class III system is present and supplies three or more hose connections, system demand shall include 750 gpm (2840 L/min) for the most remote standpipe and 250 gpm (946 L/min) for each additional standpipe until the total system demand is simultaneously flowing. <u>A.6.3.1.2.1</u> <u>Section 6.3.1.2.1 is not intended to flow test both vertical and horizontal standpipe systems if installed in the same building, but only to flow test the most demanding system of the two. All other hose valve and pressure regulating valve testing required by chapter 13 is not changed by this testing.</u>		

Committee Text (SR)	6.3.1.2.1* Where a horizontal standpipe on a Class I or Class III system is present and supplies three or more hose connections, system demand shall include 750 gpm (2840 L/min) for the most remote standpipe and 250 gpm (946 L/min) for each additional standpipe until the total system demand is simultaneously flowing. <u>A.6.3.1.2.1</u> <u>Section 6.3.1.2.1 is not intended to flow test both vertical and horizontal standpipe systems if installed in the same building, but only to flow test the most demanding system of the two. All other hose valve and pressure regulating valve testing required by chapter 13 is not changed by this testing.</u>
Statement	~~This PC was added to clarify that if~~ a horizontal and vertical standpipe system is installed in the same building, only the more demanding system would be required to be flow tested. To conduct a flow test on both systems is costly and not needed. Also, language was added to clarify that this does not change the flow testing existing requirements for hose valves and pressure reducing valves in chapter 13.

Section	PC	PAGE	DISPOSITION
8.1.1.2.7	43		Motion to create a second revision based on PC 43
Proposed Text (PC)	8.1.1.2.7 Fuel tanks <u>s level</u>, float switches, and supervisory signals for interstitial space shall be tested quarterly ~~for liquid intrusion~~.		
Committee Text (SR)	8.1.1.2.7 Fuel tanks <u>s level detection</u>, <u>float</u> switches, and supervisory signals <u>for interstitial space</u> shall be tested quarterly ~~for liquid intrusion~~.		

Statement	Water intrusion is covered in 8.1.1.2.9. The proposed change cleans up the language as liquid intrusion is not applicable for float switches and supervisory signals. The modifications generically reference level detection to accommodate other devices that may be used.

Section	PC	PAGE	DISPOSITION
8.2.3.3	20		Motion to create a second revision based on PC 20
Proposed Text (PC)	8.2.3.3 Upon completion of any fire pump test, the ~~closure of the~~ circulation relief valve shall be verified <u>to have closed automatically with discharge stopped when exposed to the normal supply pressure.</u>		
Committee Text (SR)	8.2.3.3 ~~Upon completion of any~~When the fire pump test ~~is completed~~, <u>verify the ~~closure of the~~ circulation relief valve ~~has~~ shall be verified automatically closed.</u>		
Statement	The proposed text clarifies the intent of the requirement.		

Section	PC	PAGE	DISPOSITION
New 8.2.4	35		Motion to create a second revision based on PC 35
Proposed Text (PC)	<u>8.2.4 Main Pressure Relief Valve.</u> <u>8.2.4.1</u> <u>Where installed, main pressure relief valves shall be inspected during any fire pump test.</u> <u>8.2.4.2</u>		

	<u>The inspection shall verify the following conditions:</u> <u>(1) Devices and associated trim components are free of physical damage and are not leaking.</u> <u>(2) The pressure downstream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated.</u> <u>8.2.4.3</u> <u>The pressure relief valve shall be verified annually to be correctly adjusted and set to relieve at the correct pressure and to close below that pressure setting.</u>
Committee Text (SR)	<u>8.2.4 Main Pressure Relief Valve.</u> <u>8.2.4.1</u> <u>Where installed, main pressure relief valves shall be inspected during any fire pump test.</u> <u>8.2.4.2</u> <u>The inspection shall verify the following conditions:</u> <u>(1) Devices and associated trim components are free of physical damage and are not leaking.</u> <u>(2) The pressure downstream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated.</u> <u>8.2.4.3</u> <u>The pressure relief valve shall be verified annually to be correctly adjusted and set to relieve at the correct pressure and to close below that pressure setting.</u>

Statement	This language was previously located in Chapter 13, but is specific to fire pumps, so it is more appropriate in Chapter 8. The circulation relief valve was already moved to Chapter 8 in the First Draft.
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Section	PC	PAGE	DISPOSITION
8.3.2.1.3	1		Motion to create a second revision based on PC 1
Proposed Text (PC)	8.3.2.1.3 For positive displacement pumps, the pressure relief valve shall <u>be permitted to</u> operate <u>as designed</u> during a no-flow test.		
Committee Text (SR)	8.3.2.1.3 For positive displacement pumps, the pressure relief valve shall operate <u>as designed</u> ~~during a no-flow test.~~		
Statement	The proposed language uses the same language from 8.3.2.1.2 to maintain consistency, avoid conflict with the retroactivity sections of the applicable design standard, and to permit legacy installation testing to operate as originally designed.		

Section	PC	PAGE	DISPOSITION
8.3.3.5.3	7		Motion to create a second revision based on PC 7
Proposed Text (PC)	8.3.3.5.3* Flow meters shall be calibrated <u>annually to every 3 years to</u> an accuracy level of ± 3 percent.		
Committee Text (SR)	8.3.3.5.3* Flow meters shall be calibrated <u>annually to every 3 years to</u> an accuracy level of ± 3 percent.		
Statement	Task Group was split on this. Since the flow meter gauge is generally only used once a year and not in use the rest of the year the requirement for an every year recalibration seems excessive and not practical.		

Section	PC	PAGE	DISPOSITION
8.3.7.1.2	41		Motion to Reject PC 41
Proposed Text (PC)	8.3.7.1.3 Where applicable, speed ~~and velocity pressure~~ adjustments shall be applied to the net pressure and flow data obtained to determine compliance with 8.3.7.2.3(3).		
Committee Text (SR)			
Statement	There may be scenarios where there is a need for velocity pressure adjustments, such as a greater imbalance between suction and discharge flange sizes or low head pump applications. The clause indicates "where applicable" and therefore it is not required on every evaluation.		

Section	PC	PAGE	DISPOSITION
8.3.7.2.3.1	86		Motion to create a second revision based on PC 86
Proposed Text (PC)	8.3.7.2.3.1* ~~The fire pump assembly shall be considered acceptable where the water supply is not capable of providing flow rates beyond rated flow of the fire pump, requirements of 8.3.3.1 shall not be required if the fire pump assembly can provide system demand and at least 95 percent of 8.3.7.2.3(3)(a), 8.3.7.2.3(3)(b), or 8.3.7.2.3(3)(c) at rated flow.~~ <u>When the suction supply does not provide enough volume to test the fire pump beyond 100 percent of its rated capacity the test shall be considered acceptable provided the fire pump assembly meets all other requirements of 8.3.7.2.3</u> <u>A.8.3.7.2.3.1</u> <u>This section is not intended to no conduct flow testing of the fire pump beyond 100 percent of rated capacity. In cases where water supplies</u>		

	<u>do not permit flow testing beyond rated capacity it should not be considered a failure of the fire pump. To provide a graph of the test results, the pump could be tested at churn, system demand and 100 percent of it's rated capacity.</u>
Committee Text (SR)	8.3.7.2.3.1* ~~The fire pump assembly shall be considered acceptable where the water supply is not capable of providing flow rates beyond rated flow of the fire pump, requirements of 8.3.3.1 shall not be required if the fire pump assembly can provide system demand and at least 95 percent of 8.3.7.2.3(3)(a), 8.3.7.2.3(3)(b), or 8.3.7.2.3(3)(c) at rated flow.~~ <u>When the suction supply does not provide enough volume to test the fire pump beyond 100 percent of its rated capacity the test shall be considered acceptable provided the fire pump assembly meets all other requirements of 8.3.7.2.3</u> <u>A.8.3.7.2.3.1</u> <u>In cases where water supplies do not permit flow testing beyond rated capacity it should not be considered a failure of the fire pump. To provide a graph of the test results, the pump is permitted to be tested at churn, system demand and 100 percent of its rated capacity.</u>
Statement	The proposed language provides clarification and adds annex language to expand on the intent of this section.

Section	PC	PAGE	DISPOSITION
9.2.6	37		No Action
Proposed Text (PC)	See PDF "Sec._9.2.6_proposed_revisions_L_Scott_response_Rev.D"		
Committee Text (SR)			
Statement	The Task Group feels expert input is needed for evaluation of this PC and is not prepared to make a recommendation. Consider requesting an expert in this field to attend the meeting and present a recommendation on this proposal or presenting to the task group.		

Section	PC	PAGE	DISPOSITION
Proposed Text (PC)			
Committee Text (SR)			
Statement			

Section	PC	PAGE	DISPOSITION
Proposed Text (PC)			
Committee Text (SR)			
Statement			

Section	PC	PAGE	DISPOSITION
Proposed Text (PC)			
Committee Text (SR)			
Statement			

Attachment #4: Presentation(s)

A Comparison of Old Standard Response and New Fast Response Sprinklers in Non-Standardized Fire Tests

Joshua Reichert, PE, Associate Professor
Department of Fire Protection and Paramedicine Sciences, Eastern Kentucky University

Mike Joanis, PE, Chief Engineer
National Fire Sprinkler Association

Jacob Lusthaus, Student
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This project was conducted as a collaboration between the National Fire Sprinkler Association (NFSA) and Eastern Kentucky University (EKU), Department of Fire Protection and Paramedicine Sciences.



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Abstract

In the fall of 2022, the National Fire Sprinkler Association conducted a series of room burns at Eastern Kentucky University in partnership with the Department of Fire Protection and Paramedicine Sciences. In total, 23 identical rooms were burned with 17 being equipped with old (50+ years old) standard response sprinklers and 6 with new fast response sprinklers. To determine layer temperatures throughout the compartment, a series of thermocouple trees were installed at different locations within the room.

To compare the effectiveness of the old standard response and new fast response sprinklers, Two analyses were conducted using temperature data:

1. The first analysis was to determine if the rooms would pass or fail the UL 199 test criteria for sprinklers seeking listing for residential use.
2. The second analysis was a statistical analysis comparing the results from the old standard response and new fast response sprinklers.

The results from the tests, and accompanying analysis, demonstrated that old standard response sprinklers would not pass the UL 199 test while the fast response sprinklers would. In addition, the results from the second analysis concluded that at a height between 3 feet AFF to the ceiling the averaged maximum temperatures in the rooms with old standard response sprinklers were less tenable than the averaged maximum temperatures in rooms with new fast response sprinklers.

Introduction

Automatic sprinklers have been used to mitigate and reduce damage from fire for over 125 years. During this time, sprinkler technology has evolved. Sprinkler characteristics including orientation, response time, temperature rating, spray pattern, droplet size, materials, finish, orifice size, thread size, and thread type have changed to improve the sprinkler's performance and ability to achieve fire control. Most notably, improved sprinkler response time has significantly contributed to sprinkler performance.

The purpose of this report is to compare two different sprinkler technologies; older style standard response sprinklers and newer fast (quick) response sprinklers. This report is written as the result of a series of non-standardized fire tests using each of these technologies. The efficiency of each is characterized in this report in terms of two categories.

The first category of comparison between these two sprinkler technologies is in regard to testing standards in which sprinklers must undergo to become listed. UL 199, *Automatic Sprinklers for Fire-Protection Service*, is the required test standard a sprinkler must undergo to become listed by Underwriters Laboratories. While the testing conducted for this report does not directly follow any specific test configuration of UL 199, the criteria for failure of a sprinkler in a residential space will be considered. Each sprinkler was used in a series of identical fire tests and the results of these tests will be compared to the UL 199 test failure criteria for a residential space.

The second category of comparison between the two sprinkler technologies will be a direct comparison of the environment that is created as a result of a fire in each scenario. Using thermocouples within the compartments from each test, a comparison can be made at differing height (or layers) temperatures within the compartment. Using results from each older standard response sprinkler and each new fast response sprinkler, a statistical analysis can be conducted to determine if the temperature differences between each type of sprinkler at each layer can be considered statistically significant.

The intent of this report is to document the above stated full scale non-standardized fire testing to support proposed changes to NFPA 13 and NFPA 25. The purpose of these changes is to close the gaps in the standards and address the use of fast response sprinklers in existing light hazard dwelling units and provide improved life safety performance of the sprinkler systems for existing installations.

Background

Prior to the 1960's, building codes focused on providing fire protection via passive systems using fire-rated assemblies. Sprinkler installations were driven by insurance company requirements for property protection. In 1973, America Burning focused on improving building and fire codes to include sprinkler protection for high-rise buildings, assembly occupancies, and nursing homes. The 1970's also started the concept of trade ups that allowed for a reduction in fire-rated passive material when active fire sprinkler protection was provided. In the 1980's, recognizing the life safety value of sprinklers, fast response sprinklers were developed. These sprinklers are designed with a thermal sensitivity [response time index (RTI) less than 50 meters-seconds^{1/2}] that allows faster operation than a standard response sprinkler when used in a similar fire scenario. This reduced operating time produces additional life safety benefits.

The 1996 edition of NFPA 13, *Standard for the Installation of Sprinklers Systems*, first introduced this concept by requiring all new light hazard occupancies to be equipped with fast response sprinklers. Light hazard occupancies include dwelling units such as those found in hospitals, nursing homes, institutional occupancies, and residential buildings. Dwelling units are defined as:

one or more rooms arranged for the use of one or more individuals living together, as in a single housekeeping unit normally having cooking, living, sanitary, and sleeping facilities that include, but are not limited to, hotel rooms, dormitory rooms, apartments, condominiums, sleeping rooms in nursing homes, and similar living units. [1]

NFPA 13, since the 1996 edition, and including the 2022 edition, permits modifications or additions to existing light hazard systems equipped with standard response sprinklers to continue to use standard response sprinklers.

NFPA 25, *Standard for the Inspection, testing, and Maintenance of Water-Based Fire Protection Systems*, Chapter 5, provides the requirements for testing existing sprinklers that have been in service for 50 years. It requires the sprinkler to be replaced or samples sent to a testing laboratory to be tested. The NFPA 25 annex explains the thermal sensitivity should be such that the RTI does not exceed 350 (meters-seconds)^{1/2} for standard-response sprinklers. [2]

RTI is a measure of thermal responsiveness based on several variables including operating time, operating temperature, air temperature in the test oven, and the conductivity factor of the sprinkler. The procedure for the test is commonly called the plunge test. The sprinkler is placed into the testing equipment and exposed to a controller airflow with a temperature higher than the sprinkler's operating temperature. The time for the sprinkler to activate is recorded.

History of NFPA 25

The focus of this paper is based around a section of NFPA 25. However, NFPA 25 has not always been a standard, but it was once a recommended practice by the identifier of NFPA 13A. This change from NFPA 13A, *Recommended Practice for the Inspection, Testing, and Maintenance of Sprinkler Systems* was changed to NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems* occurred in 1992.

Today, the current NFPA 25 is the 2023 edition. This standard has a series of sections related to testing 50-year-old sprinklers. This includes Section 5.3.1.1.1, "Where sprinklers have been installed for 50 years, they shall be replaced or representative samples from one or more areas shall be tested", 5.3.1.1.1.1, "Test procedures shall be repeated at 10-year intervals", and 5.3.1.1.1.2, "Sprinklers manufactured prior to 1920 shall be replaced". [2]

This language has changed over time when comparing it to previous editions of NFPA 13A and NFPA 25. For example, the 1981 edition of NFPA 13A was the first time a representative sample of 50-year-old sprinklers could be sent for testing. This section of the NFPA 13A stated, "When sprinklers have been in service for 50 years, representative samples should be tested". The previous edition of NFPA 13A, released in 1978, required all automatic sprinklers being fifty years old to be replaced. Also, the 1981 edition of NFPA 13A was the first time the recommended practice stated that all sprinklers made before 1920 should be replaced.

The replacement of 50-year-old sprinklers was not new in the 1978 edition of NFPA 13A. This requirement had been within NFPA 13A since the 1969 edition. Between 1969 and 1978, no change in verbiage occurred and the recommended practice stated, "All automatic sprinklers should be replaced when they become fifty years old and other sprinklers when they are painted, loaded, corroded or damaged".

Evolution of Sprinklers

Fire sprinkler technology has evolved from simple gadgets to unique and groundbreaking technology that saves millions of lives. Fire sprinkler technology continues to evolve with the modern fire environment, new hazards, and other building technologies. When the section on testing of 50-year-old sprinklers was included in NFPA 13A and 25, there were fewer types of sprinklers with wider applications for each and using less advanced technology.

Sir William Congreve had the idea to install a fire sprinkler system and, "This system was operated manually and only used on high-value properties like warehouses and factories" [3]. There are obvious issues with a manually activated system including detection, activation, and the need for a human to be willing and able to activate the system. Henry S. Parmelee "...improved on the existing designs by creating an automatic sprinkler system that was activated by the heat radiating from the fire" [3]. This was the father of the modern-day fire sprinkler and laid the groundwork with what is now an ubiquitous design for fire sprinklers all around the world.

It was not until late in the 20th Century that fire sprinklers would be used to protect lives and property. With new applications came new needs in technology, chief among them a faster response to fire conditions. In addition to the fusible link sprinklers created by Parmalee and others are glass bulb fire sprinklers which each contain a glass bulb filled with fluid engineered to activate at a specific temperature. The advent of glass bulb sprinklers, "...improved the accuracy as well as reduced the risk of false activations". In addition to activation means, the orientations in which sprinklers are installed have also evolved and today manufacturers produce sidewall, pendent, and upright sprinklers to protect an ever widening array of building types and hazards.

Standard response and fast response are classified by their response time index (RTI). The RTI for a fire sprinkler is derived from a "plunge test," "...when a sprinkler is placed into a heated laminar test oven. Then the operating time of the sprinkler, the operating temperature of the sprinkler's heat-responsive element, the air temperature of the test oven, the air velocity of the test oven, and the sprinkler's conductivity factor are used to calculate the RTI" [4]. In common language the RTI helps distinguish the speed at which a fire sprinkler will activate during a fire and is broken up into different thresholds, with one being "fast response."

UL 199 Test Standard

UL 199: *Automatic Sprinklers for Fire-Protection Service* is a test standard developed by Underwriters Laboratories (UL). UL 199 is considered a test standard and is the test a sprinkler undergoes to gain a UL Listing. This test standard outlines many tests that can be run for a multitude of different things, including variations to the tests for diverse types of sprinklers. Of specific interest for this report is the test for sprinklers in residential occupancies.

Section 55.5 of UL 199 outlines the test standard for residential sprinklers under fire testing. For the residential test, the size of the room, when using pendent sprinklers, is to have a width equal to the sprinkler's coverage width and the length of the compartment is twice that of the sprinkler's coverage length. The height of the compartment is 8 feet. The ceiling is to be constructed of either gypsum board or acoustical panels. The compartment has two doors in the open configuration on either end of the test room. Each door is 7ft 4in in height providing an 8-inch lintel above.

The fire in the residential test is constructed of wood cribbing and simulated furniture. The wood crib is constructed weighing between 5.5 to 7 lb. The dimensions of the wood crib are 12 in. by 12 in. by 6 in. high. Either layer is constructed using 2 in. by 2 in. kiln-dried spruce or fir. The wood cribbing is ignited using a pan of heptane. The simulated furniture is constructed with two 3 in. thick uncovered polypropylene oxide polyol, polyether foam cushions having a density of 1.7 to 1.1lb/ft³ and measuring 32 by 30 in. The simulated furniture is ignited with two 6 in. long by ¼ in. diameter cotton wicks soaked in heptane.

Temperature measurements are taken within the compartment at four locations. Temperature is measured using thermocouples at the following locations:

1. Center of the room, located 3 inches below the ceiling

2. Halfway between center of room and wood crib in corner of room, located 3 inches below the ceiling
3. Halfway between center of room and wood crib in corner of room, located 5-1/4 feet above the floor
4. In the corner of the room, directly above the wood crib fire, located above the ceiling

During the fire test, in order for the sprinkler to pass, the sprinkler must limit the room temperature to:

1. Less than 316 C (600 F) 3 in. below the ceiling
2. Less than 93 C (200 F) 5-1/4 ft. (1.6m) above the floor
3. Never more than 54 C (130F) for more than any continuous 2 minutes period at 5-1/4 ft. (1.6m) above the floor
4. Never more than 260 C (500F) 1/4 in. behind the finished ceiling surface

Methodology

This report documents a series of full-scale non-standard fire tests conducted in March and April of 2022 at the Ashland Fire Protection and Safety Laboratory at Eastern Kentucky University. Behind the Ashland Fire Protection and Safety Laboratory are four burn cells (see Figure 1) used for these non-standard fire tests. Each burn cell contains a 12 ft. by 12 ft. room with a ceiling height of 8 ft. Each burn cell sits on a concrete slab and has a single door 36 in. wide and 80 in. tall. The exterior of the burn cells consists of corrugated metal panel walls and roof.



Figure 1. Four Burn Cells used at Eastern Kentucky University

Fire Test Room

Four burn cells were used to conduct 23 residential living room fire tests. For each burn, the walls and ceilings were constructed of $\frac{1}{2}$ in. drywall on wood studs. The drywall of the walls and ceilings were adequately taped and painted using latex paint. The floor had carpet directly on top of the concrete slab.

The furnishings included modern day furniture and a waste basket located between a couch and chair was ignited to start the fire.

The floor is a concrete slab and was furnished with wall-to-wall carpet. Carpet was medium pile of synthetic fiber. The carpet was laid on the concrete floor and it did not include any carpet padding or adhesives.

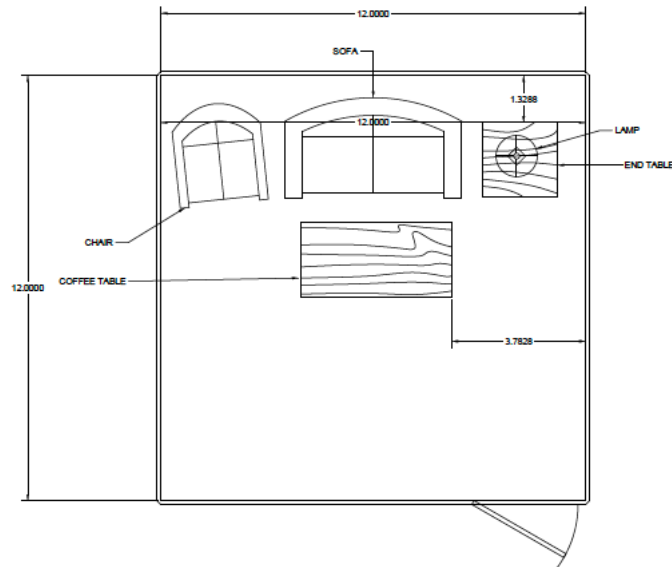


Figure 2. Layout of Test Cells

Instrumentation included six thermocouple trees with thermocouples located at 1 ft. increments from the ceiling to the floor as well as lighting and video cameras.

The room was protected with a single pendent sprinkler located centered in the room at the ceiling. Six of the tests were conducted using fast response sprinklers. The remaining 17 tests were conducted using 50-year-old standard response sprinklers.



Figure 3. Picture of Burn Cell before Burn

Furnishings

The furnishings include a polyester fabric covered polyurethane foam filled loveseat and chair, engineered wood coffee table and end table. The sofa has a polyester throw placed on its left side adjacent to the point of fire origin.

To the left of the loveseat, between the loveseat and the chair, is a wicker basket at floor level made of woven seagrass filled with loosely packed newspaper.



Figure 4. Picture of Burn Cell from outside before Burn

The furnishings were selected to match those used in the UL FSRI (Fire Safety Research Institute) Research Report titled *New Comparison of Natural and Synthetic Home Furnishings* [5]. This report demonstrated in four tests that rooms with natural fiber furnishings had a greater than 29-minute time to flashover and rooms with synthetic fiber furnishings had a 3:20 to 4:45 minute time to flashover.

Instrumentation

The fire room was equipped with six (6) thermocouple trees. One located in the center of the room under the location of the sprinkler. One located 12 in. from and centered inside the door. The remaining four were located at the midpoint of each of the four walls of the room and 6 in. inside each of the walls. Each thermocouple tree was equipped with thermocouples at the ceiling (8 ft. AFF) and at one-foot increments to 1 ft. AFF.

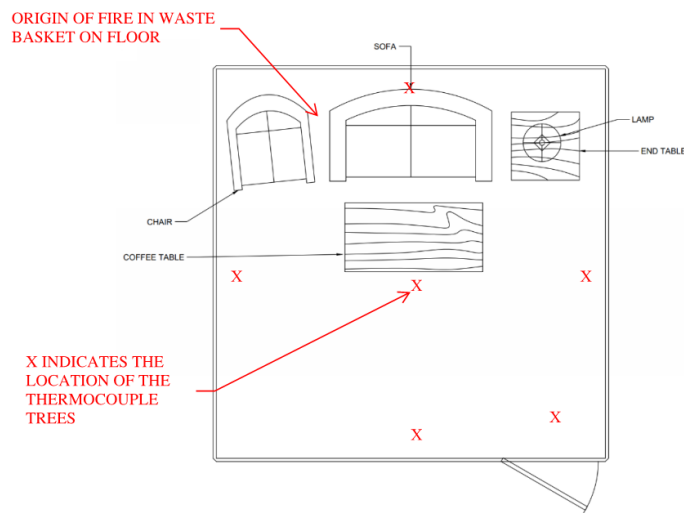


Figure 5. Plan View of Room Layout

Fire Sprinklers

The fire test room was equipped with a single pendent sprinkler. The sprinkler was located at the ceiling with a one-piece escutcheon and less than 4 in. from the ceiling. The sprinkler was located in the center of the room 6 ft. from each of the four walls. Four of the tests (tests 1, 6, 15, and 20) utilized a modern-day fast response sprinkler. The remaining 14 tests utilized a 50-year-old (1973) standard response sprinkler.



Figure 7. New Fast Response Sprinkler Used



Figure 6. Older Standard Response Sprinkler Used

The new fast response sprinklers used for tests 1, 6, 15, 20, 22, and 23 were all produced by Reliable. The sprinkler is a Model F1RES Series Glass Bulb Residential Sprinkler with an identification number of SIN R3615. This sprinkler is listed as a fast response residential sprinkler with an RTI of less than 50 meters-seconds^{1/2}. The sprinkler has a 3 mm glass bulb that is rated as ordinary temperature (68 C, 155 F). The sprinkler has a k-factor of 5.6 and has a ½ in. thread.

The old standard response sprinklers used for the remaining tests were produced in 1975 and classified as a standard response with an RTI less than 350 meters-seconds^{1/2}. The sprinklers had a 5 mm glass bulb with an ordinary temperature rating of 68 C (155 F). The sprinklers had a K-factor of 5.6 and a ½ in. thread.

Testing of four samples of the 50-year-old 1973 standard response sprinklers by Dyne Fire Protection Labs indicated an RTI value of 186, 209, 240 and 276 for an average RTI of 223 (meters-seconds)^{1/2}. Results from this Dyne Fire Protection Labs test can be seen in the Appendix.

Data from UL indicates for testing of standard response sprinklers conducted from mid 2020 to end of 2021 that 70% tested with an RTI<150, and 30% tested with an RTI between 150 and

350. Since UL started reporting RTI values for our testing of sprinklers sampled from field installations in mid-2020, the following statistics have been generated based upon our testing conducted from mid-2020 to the end of October 2021. This data includes all standard response sprinkler samples having a temperature rating ranging from 150-165 °F that were reported to have ‘normal’ operation. Sprinkler samples incorporating dynamic O-rings seals, field painting, physical damage, or a wax coating were generally excluded from this data analysis.

<u>Metric RTI</u>	<u>Nominal Percent Normal</u>
<u>Operation</u>	
≤100	14
>100 to ≤150	56
>150 to ≤200	20
>200 to ≤250	7
>250 to ≤300	2.5
>300 to ≤350	0.6

Each sprinkler type was connected to 1 in. schedule 40 threaded black steel pipe and connection to the city water supply. The city water pressure was approximately 50 psi.

Date and Time

The National Fire Sprinkler Association (NFSA) traveled to ECU on two separate occasions to conduct these burns. Nine full scale tests were conducted on March 31st, 2022, eleven full scale tests were conducted on April 21st, 2022, and an additional three were conducted on April 22nd, 2022. Table 1 lists the dates, times, and type of sprinkler used for each test.

Test	Date	Time	Type of Sprinkler
1	03/31/2022	0956	Fast Response
2		1036	Standard Response
3		1117	Standard Response
4		1157	Standard Response
5		1426	Standard Response
6		1457	Fast Response
7		1530	Standard Response
8		1550	Standard Response
9		1622	Standard Response
10	04/21/2022	1032	Standard Response
11		1104	Standard Response
12		1123	Standard Response
13		1134	Standard Response
14		1314	Standard Response
15		1333	Fast Response
16		1408	Standard Response
17		1425	Standard Response
18		1443	Standard Response

19	04/22/2022	1503	Standard Response
20		1524	Fast Response
21		0921	Standard Response
22		0942	Fast Response
23		1005	Fast Response

Table 1. Dates, Times, and Sprinkler Type for each Test

Test Procedure

Each of the 23 full scale fire tests were conducted in the following manner:

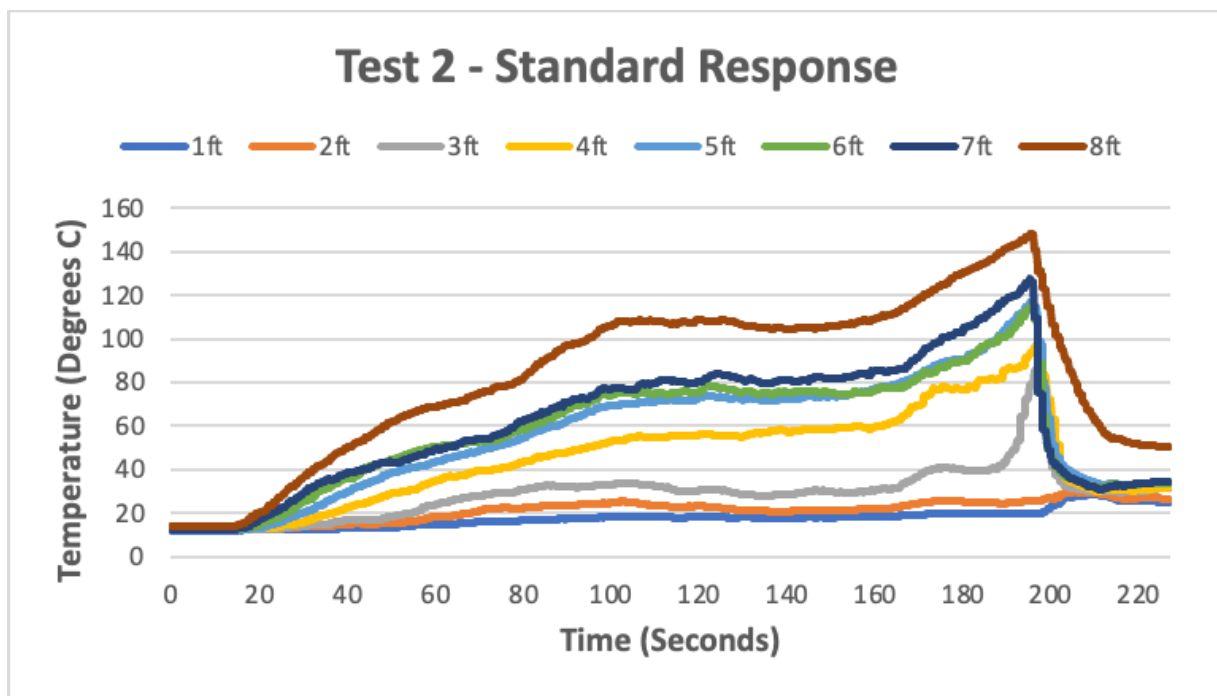
1. The living room is set up with gypsum board walls and ceiling, carpeted floor, modern day furnishing to include couch, end table, upholstered chair, waste basket as noted above.
2. Living room is equipped with thermocouples as noted above.
3. The fire sprinkler in the living room is placed in service and provided with water supply.
4. Pre-fire interior video documentation of the conditions.
5. Start the data recording of the thermocouples.
6. Fire is manually started with a lighter applied to the newspaper in the waste basket immediately next to the loveseat and between the loveseat and chair.
7. Fire is allowed to progress with ventilation from the open door as noted above until the sprinkler is activated.
8. The sprinkler was allowed to operate for approximately 30 seconds and then the water supply to the sprinkler was manually turned off.
9. The fire department manually extinguishes the remaining fire.
10. Data recording of the thermocouple data is stopped.
11. Interior video documentation of post fire.
12. The fire room is deconstructed and reconstructed for the next test.

Compartment Temperature Characterization

For each test conducted, six thermocouple trees were utilized measuring temperature at one foot from the ground and each foot above that until the ceiling (8 foot). This equates to 48 points of thermocouple temperature measurement within the compartment. Each point collected data every 0.2 seconds.

Average Layer Temperature Characterization

For the analysis of temperature within the compartment during the tests, an excel spreadsheet was used and the average temperature was calculated for each height at each given time step. This developed an assumption of a uniform averaged temperature across the compartment at each of these heights. This compartment temperature characterization is not an uncommon practice as the McCaffrey Upper Layer equation makes the same assumption [6]. Below, is a graph of one of the tests in which the temperature at each height was averaged. Graphs for each test can be found in Appendix A.



Maximum Average Temperature Characterization

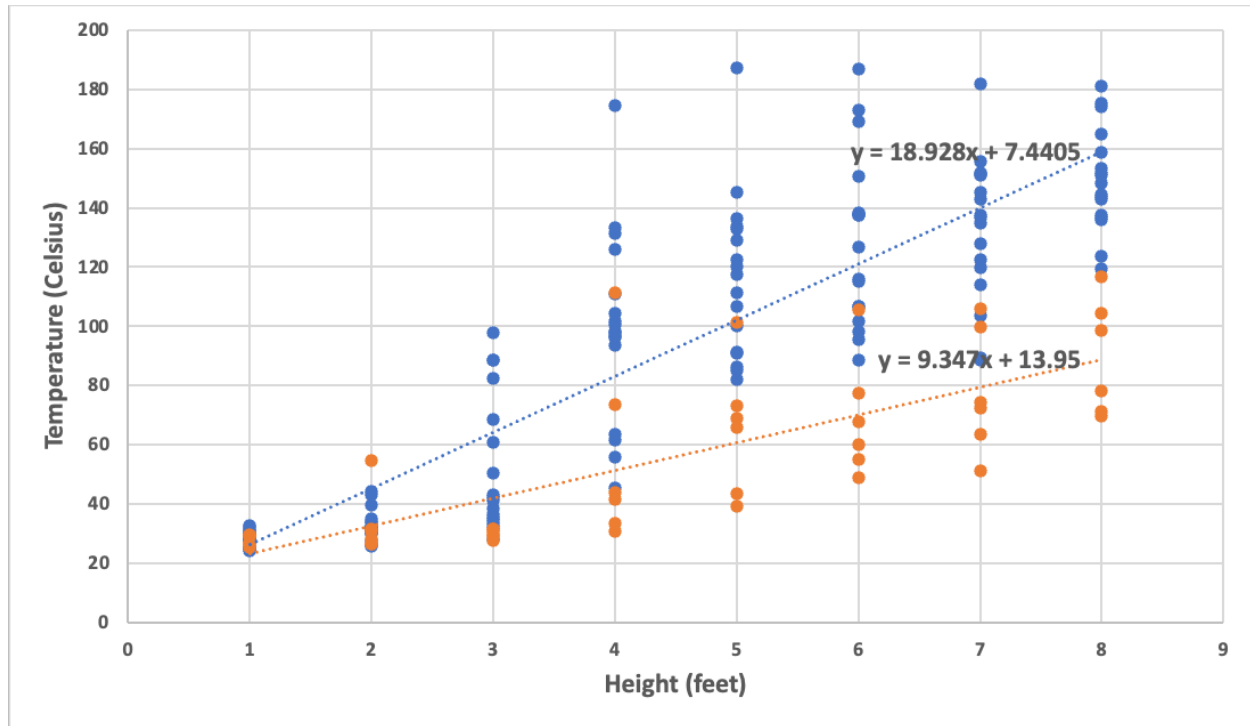
Further characterization of the layer temperatures was conducted in which each of the average layer temperatures explained above were sought out to determine the maximum of these temperatures for each height within the compartment. These maximums typically occurred directly before sprinkler activation. These are henceforth known as the maximum average

temperatures. The maximum average temperatures for each test and eight heights can be seen in the table below.

Fast Response -Maximum Average Temperature by Height								
	1ft	2ft	3ft	4ft	5ft	6ft	7ft	8ft
Test 1	26.61	26.49	31.43	111.15	101.30	105.45	105.73	104.26
Test 6	29.27	54.74	28.96	73.53	68.69	77.46	72.29	98.73
Test 15	25.10	26.30	27.68	33.32	43.38	54.90	63.56	71.00
Test 20	29.48	31.63	30.68	30.75	39.10	48.82	51.26	69.68
Test 22	26.87	27.81	29.37	43.67	65.71	59.96	74.16	78.28
Test 23	29.10	30.82	31.56	41.35	73.07	67.78	99.68	116.58

Standard Response - Maximum Temperature by Height								
	1ft	2ft	3ft	4ft	5ft	6ft	7ft	8ft
Test 2	28.60	30.03	88.43	96.31	117.54	115.16	127.83	148.34
Test 3	29.64	30.70	38.22	97.74	111.30	115.74	136.78	153.22
Test 4	27.61	32.28	82.21	104.26	99.98	106.66	119.93	137.65
Test 5	32.49	39.69	68.62	110.90	120.21	126.89	143.05	142.78
Test 7	24.30	25.56	42.32	131.34	132.86	138.05	122.61	151.71
Test 8	25.75	42.97	42.90	133.33	133.82	173.13	150.99	174.21
Test 9	32.14	44.36	60.57	93.51	129.01	169.01	151.36	181.21
Test 10	29.25	31.98	97.74	174.67	187.11	186.76	181.95	175.46
Test 11	24.81	27.49	40.92	100.53	136.54	137.49	145.08	150.98
Test 12	27.59	30.35	33.50	55.75	90.85	106.47	134.96	136.02
Test 13	28.40	32.39	34.46	101.49	106.80	138.41	155.55	164.72
Test 14	30.09	31.40	88.51	126.09	145.07	150.67	151.65	144.30
Test 16	24.72	26.00	28.04	45.20	81.77	98.34	88.43	123.77
Test 17	27.99	30.17	32.40	98.09	85.21	88.35	89.29	119.56
Test 18	29.96	33.60	36.56	61.64	91.39	95.47	103.71	158.54
Test 19	31.17	33.70	35.31	63.32	86.16	101.55	114.07	136.63
Test 21	30.88	34.93	50.28	96.47	122.54	137.60	137.45	143.81

Using Microsoft Excel, the above data was plotted on to a scatterplot differentiating between tests using an older standard response sprinkler and a newer fast response sprinkler. Once plotted, a trendline was created for each of these scenarios. This plot can be seen in the following graph.



As can be seen in the graph above, an equation can be developed using the slope the trendline of the fast response (orange) maximum average temperatures and a separate equation using the slope of the trendline of the standard response (blue) maximum average temperature. These equations can be used to help to estimate maximum average temperatures at heights in the compartment in which data was not recorded as long as it is within the confines of this test set up. These questions can be seen below.

$$T_{Max,SR} = 18.928H + 7.4405$$

$$T_{Max,QR} = 9.347H + 13.95$$

Where: $T_{Max,SR}$ = Maximum temperature with Standard Response sprinkler (Celsius)

$T_{Max,QR}$ = Maximum temperature with Fast Response sprinkler (Celsius)

H = Height of the room (ft)

UL 199 Test Criteria Evaluation

In order for a sprinkler manufacturer to sell a sprinkler that is listed by Underwriters Laboratories (UL) the sprinkler is tested by their UL 199 test standard. UL 199 is the *Standard for Safety: Automatic Sprinklers for Fire-Protection Service*. This testing standard does contain many different tests that will be selected based on what the sprinkler manufacturer wants the sprinkler listed for. One such test is specifically for residential sprinklers previously discussed. During the test, the sprinklers used as required to limited temperatures as follows:

- a) The maximum temperature 3 in. below the ceiling at either location shall not exceed 316 C (600 F)
- b) The maximum temperature 5-¼ ft. above the floor shall not exceed 93 C (200 F)
- c) The temperature at the location described in b shall not exceed 54 C (130 F) for more than any continuous 2-min period

These three criteria will be compared here with the test experience of our older standard response sprinklers and newer fast response sprinklers. Two comparisons will be analyzed for each of these criteria. The first will be comparing the average layer temperatures recorded to the test criteria. In each of these cases, thermocouples were not at the exact height. For this reason, the next layer above and below the UL 199 criteria height will be used and compared. The second comparison will be using the characterized maximum temperature equations found previously. The equations will be used for the exact height of each criterion to determine if the test would pass or fail the criteria.

< 316 C (600 F) at 3 in. below the ceiling

The first UL 199 test criteria assessed is whether or not the maximum temperature 3 in. below the ceiling at either location exceeds 316 C. Since a thermocouple was not placed at 3 in. below the ceiling, both layers 7 feet and 8 feet above the floor are analyzed.

The following table compares the maximum average layer temperature at 7 feet and 8 feet from the ground to this test criteria to determine if temperatures remained below 316 C. One table provides results from the older standard response sprinklers while the other table provides the results from the newer fast response sprinklers.

Standard Response					
Test Number	UL Criteria	Temperature at 7 Feet	Pass/Fail	Temperature at 8 Feet	Pass/Fail
2	<316 C	127.829 C	Pass	148.336 C	Pass
3	<316 C	136.783 C	Pass	153.222 C	Pass
4	<316 C	119.908 C	Pass	137.650 C	Pass
5	<316 C	143.046 C	Pass	142.780 C	Pass
7	<316 C	122.608 C	Pass	151.711 C	Pass

8	<316 C	150.596 C	Pass	174.209 C	Pass
9	<316 C	151.359 C	Pass	181.215 C	Pass
10	<316 C	181.954 C	Pass	175.498 C	Pass
11	<316 C	145.083 C	Pass	150.979 C	Pass
12	<316 C	134.958 C	Pass	136.019 C	Pass
13	<316 C	155.548 C	Pass	164.715 C	Pass
14	<316 C	151.649 C	Pass	144.305 C	Pass
16	<316 C	88.434 C	Pass	123.773 C	Pass
17	<316 C	89.292 C	Pass	119.558 C	Pass
18	<316 C	103.713 C	Pass	158.535 C	Pass
19	<316 C	114.074 C	Pass	136.634 C	Pass
21	<316 C	137.453 C	Pass	143.809 C	Pass

Fast Response					
Test Number	UL Criteria	Temperature at 7 Feet	Pass/Fail	Temperature at 8 Feet	Pass/Fail
1	<316 C	105.730 C	Pass	104.257 C	Pass
6	<316 C	72.295 C	Pass	98.730 C	Pass
15	<316 C	63.564 C	Pass	70.999 C	Pass
20	<316 C	51.261 C	Pass	69.682 C	Pass
22	<316 C	74.162 C	Pass	75.728 C	Pass
23	<316 C	99.679 C	Pass	116.583 C	Pass

As can be seen in the table above, none of the tests resulted in temperatures exceeding 316 C.

Below are the characterized layer temperature equations found previously. The first equation determines the temperature at a height of 7.75 ft. above the floor when using the older standard response sprinklers and the second equation determines the temperature at a height of 7.75 ft. above the floor when using the newer fast response sprinklers.

$$T_{Max,SR} = 18.928(7.75ft) + 7.4405 = 154.1C$$

$$T_{Max,QR} = 9.347(7.75ft) + 13.95 = 86.4C$$

Using the results of the layer characterization equations, it also shows that neither the older standard response sprinklers nor the newer fast response sprinklers exceed the UL 199 criteria of 316 C.

< 93 C (200 F) at 5-¼ ft. (1.6m)

The second UL 199 test criteria assessed is whether or not the temperature at 5-¼ ft. above the floor exceeds 93 C. Since a thermocouple was not placed at 5-¼ ft. above the floor, both layers 5 ft. and 6 ft. above the floor are analyzed.

The following tables compare the maximum average temperature at both 5 ft. and 6 ft. above the floor. These layers were used to compare the temperatures at this height to determine if they ever exceeded 93 C. The first table provides these results for the older standard response sprinklers while the second provides the results from the newer fast response sprinklers.

Standard Response					
Test Number	UL Criteria	Temperature at 5 Feet	Pass/Fail	Temperature at 6 Feet	Pass/Fail
2	<93 C	117.539 C	Fail	115.155 C	Fail
3	<93 C	111.300 C	Fail	115.741 C	Fail
4	<93 C	99.980 C	Fail	106.657 C	Fail
5	<93 C	120.206 C	Fail	126.888 C	Fail
7	<93 C	132.862 C	Fail	138.048 C	Fail
8	<93 C	133.817 C	Fail	173.129 C	Fail
9	<93 C	129.006 C	Fail	169.005 C	Fail
10	<93 C	187.106 C	Fail	186.765 C	Fail
11	<93 C	136.537 C	Fail	137.485 C	Fail
12	<93 C	90.849 C	Pass	106.472 C	Fail
13	<93 C	106.801 C	Fail	138.412 C	Fail
14	<93 C	145.072 C	Fail	150.668 C	Fail
16	<93 C	81.772 C	Pass	98.339 C	Fail
17	<93 C	85.207 C	Pass	88.346 C	Pass
18	<93 C	91.387 C	Pass	95.473 C	Fail
19	<93 C	86.163 C	Pass	101.549 C	Fail
21	<93 C	122.537 C	Fail	137.601 C	Fail
Mean		116.36 C		128.57 C	
SD		27.118		29.065	
t value		3.5517		5.046	
p value		<0.05		<0.05	

As can be seen in the table above, for the standard response sprinklers, many failures of the test criteria occurred. At 5 ft. above the floor 12 of the 17 tests had temperatures that exceeded 93 C. At 6 ft. above the floor 16 of the 17 tests exceeded 93 C. A one sample, one-tailed, t-test was also conducted on each layer using the average maximum temperature at each layer to determine

if this temperature was statistically higher than the 93 C allowed by the UL 199 test standard. The following null and alternative hypothesis were used for these t-tests.

$$H_0: \mu_T = 93C$$

$$H_a: \mu_T > 93C$$

Where: μ_T = Mean temperature at the given layer height.

At 5 ft. above the ground (M=116.36, SD=27.118) the data did not support the null hypothesis that the mean temperature was equal to 93 C in favor of the alternative hypothesis that the mean temperature was greater than 93 C, $t(16) = 3.5517$, $p < 0.05$. At 6 ft. above the ground (M=128.57, SD=29.065) the data did not support the null hypothesis that the mean temperature was equal to 93 C in favor of the alternative hypothesis that the mean temperature was greater than 93 C, $t(16) = 5.046$, $p < 0.05$.

Fast Response					
Test Number	UL Criteria	Temperature at 5 Feet	Pass/Fail	Temperature at 6 Feet	Pass/Fail
1	<93 C	101.299 C	Fail	105.451 C	Fail
6	<93 C	68.690 C	Pass	77.457 C	Pass
15	<93 C	43.385 C	Pass	54.904 C	Pass
20	<93 C	39.105 C	Pass	48.825 C	Pass
22	<93 C	65.707 C	Pass	59.959 C	Pass
23	<93 C	73.070 C	Pass	67.779 C	Pass
Mean		65.2 C		69.06 C	
SD		22.514		20.441	
t value		-3.0236		-2.8688	
p value		<0.05		<0.05	

For the fast response sprinklers, one test recorded maximum average temperatures exceeding 93 C at both 5 feet and 6 feet above the floor. A one sample, one-tailed, t-test was conducted on both layers to determine if the temperatures at each layer was statistically lower than 93 C. The following null and alternative hypothesis were used for these t-tests.

$$H_0: \mu_T = 93C$$

$$H_a: \mu_T < 93C$$

Where: μ_T = Mean temperature at the given layer height.

At 5 ft. above the ground (M=65.2, SD=22.514) the data did not support the null hypothesis that the mean temperature was equal to 93 C in favor of the alternative hypothesis that the mean

temperature was less than 93 C, $t(5) = -3.0236$, $p < 0.05$. At 6 ft. above the ground ($M=69.06$, $SD=20.441$) the data also did not support the null hypothesis that the mean temperature was equal to 93 C in favor of the alternative hypothesis that the mean temperature was less than 93 C, $t(5) = -2.8688$, $p < 0.05$.

Below are the characterized layer temperature equations found previously. The first equation determines the temperature at a height of 5.25 ft. above the floor when using the older standard response sprinklers and the second equation determines the temperature at a height of 5.25 ft. above the floor when using the newer fast response sprinklers.

$$T_{Max,SR} = 18.928(5.25ft) + 7.4405 = 106.8C$$

$$T_{Max,QR} = 9.347(5.25ft) + 13.95 = 63C$$

Using the results of the layer characterization equations, it also shows that at a height of 5-¼ ft. above the floor that the older standard response sprinklers would exceed the UL 199 test criteria of 93 C while the fast response sprinkler would not exceed 93 C.

Never > 54 C for more than any continuous 2 minutes period at 5-¼ ft. (1.6m)

The final criteria of the UL 199 test standard were whether or not the temperatures at 5-¼ ft. above the floor ever exceeded 54 C. As thermocouples were not placed at 5-¼ ft. for these tests, the layers of 5 ft. and 6 ft. will be analyzed.

Standard Response					
Test Number	UL Criteria (seconds)	Time above 54C at 5 feet (seconds)	Pass/Fail	Time above 54C at 6 feet (seconds)	Pass/Fail
2	<120	122	Fail	128	Fail
3	<120	67	Pass	63	Pass
4	<120	98	Pass	108	Pass
5	<120	90	Pass	133	Fail
7	<120	144	Fail	157	Fail
8	<120	144	Fail	98	Pass
9	<120	153	Fail	163	Fail
10	<120	128	Fail	177	Fail
11	<120	146	Fail	172	Fail
12	<120	17	Pass	34	Pass
13	<120	38	Pass	81	Pass
14	<120	146	Fail	170	Fail
16	<120	102	Pass	92	Pass
17	<120	65	Pass	28	Pass
18	<120	21	Pass	23	Pass

19	<120	46	Pass	88	Pass
21	<120	111	Pass	128	Fail
Mean		96.35		108.412	
SD		46.36		51.33	

Seen in the table above, at a layer height of 5 ft. when using standard response sprinklers, 7 of the 17 tests did exceed 54 C for 2 minutes or more. At a layer height of 6 ft. when using standard response sprinklers, 8 of the 17 tests did exceed 54 C for 2 minutes or more. A one sample, one-tailed, t-test was conducted on both layers to determine if the times in which 54 C was exceeded was significantly less than 2 minutes (120 seconds). The following null and alternative hypothesis were used for these t-tests.

$$H_0: t_L = 120 \text{ seconds}$$

$$H_a: t_L < 120 \text{ seconds}$$

Where: t_L = mean time above 54C at a given layer height

At 5 ft. above the ground (M=96.35, SD=46.36) the data did not support the null hypothesis that the mean time was equal to 120 seconds (about 2 minutes) in favor of the alternative hypothesis that the mean time was less than 120 seconds, $t(16) = -2.1034$, $p < 0.05$. At 6 ft. above the ground (M=108.412, SD=51.33) the data cannot reject the null hypothesis that the mean time was equal to 120 seconds, $t(16) = -0.9308$, $p > 0.05$.

Fast Response					
Test Number	UL Criteria (seconds)	Time above 54C at 5 Feet (seconds)	Pass/Fail	Time above 54C at 6 Feet (seconds)	Pass/Fail
1	<120	94	Pass	243	Fail
6	<120	30	Pass	128	Fail
15	<120	0	Pass	3	Pass
20	<120	0	Pass	0	Pass
22	<120	49	Pass	80	Pass
23	<120	56	Pass	21	Pass
Mean		38.17		79.17	
SD		36.15		94.53	

Seen in the table above, at a layer height of 5 ft. when using fast response sprinklers, 0 of the 6 tests exceeded 54 C for 2 minutes or more with 2 of the 6 tests never exceeding 54 C at all. At a layer height of 6 ft. when using fast response sprinklers, 2 of the 6 tests exceeded 54 C for 2 minutes or more. A one sample, one-tailed, t-test was conducted on both layers to determine if

the times in which 54 C was exceeded was significantly less than 2 minutes (120 seconds). The following null and alternative hypothesis were used for these t-tests.

$$H_0: t_L = 120 \text{ seconds}$$

$$H_a: t_L < 120 \text{ seconds}$$

Where: t_L = mean time above 54C at a given layer height

At 5 ft. above the ground (M=38.17, SD=36.15) the data did not support the null hypothesis that the mean time was equal to 120 seconds (about 2 minutes) in favor of the alternative hypothesis that the mean time was less than 120 seconds, $t(5) = -5.5447$, $p < 0.05$. At 6 ft. above the ground (M=79.17, SD=94.53) the data cannot reject the null hypothesis that the mean time was equal to 120 seconds $t(5) = -1.058$, $p > 0.05$.

Averaged Maximum Layer Temperature Comparisons

The final analysis of this report will be to determine how significantly different the temperature results were when comparing the compartments with older standard response sprinklers and compartments with the newer fast response sprinklers. For this analysis, the first step was creating average temperatures for each height, known for this report as layer temperatures. To do this, the six different thermocouple trees for each test were averaged each height for each time step. Then the maximum of these averages was taken from each height, this can be seen in the following tables for both the standard response and fast response sprinklers.

Standard Response – Maximum Layer Temperature								
	1ft	2ft	3ft	4ft	5ft	6ft	7ft	8ft
Test 2	28.60	30.03	88.43	96.31	117.54	115.16	127.83	148.34
Test 3	29.64	30.70	38.22	97.74	111.30	115.74	136.78	153.22
Test 4	27.61	32.28	82.21	104.26	99.98	106.66	119.93	137.65
Test 5	32.49	39.69	68.62	110.90	120.21	126.89	143.05	142.78
Test 7	24.30	25.56	42.32	131.34	132.86	138.05	122.61	151.71
Test 8	25.75	42.97	42.90	133.33	133.82	173.13	150.99	174.21
Test 9	32.14	44.36	60.57	93.51	129.01	169.01	151.36	181.21
Test 10	29.25	31.98	97.74	174.67	187.11	186.76	181.95	175.46
Test 11	24.81	27.49	40.92	100.53	136.54	137.49	145.08	150.98
Test 12	27.59	30.35	33.50	55.75	90.85	106.47	134.96	136.02
Test 13	28.40	32.39	34.46	101.49	106.80	138.41	155.55	164.72
Test 14	30.09	31.40	88.51	126.09	145.07	150.67	151.65	144.30
Test 16	24.72	26.00	28.04	45.20	81.77	98.34	88.43	123.77
Test 17	27.99	30.17	32.40	98.09	85.21	88.35	89.29	119.56
Test 18	29.96	33.60	36.56	61.64	91.39	95.47	103.71	158.54
Test 19	31.17	33.70	35.31	63.32	86.16	101.55	114.07	136.63
Test 21	30.88	34.93	50.28	96.47	122.54	137.60	137.45	143.81
Average	28.55	32.80	53.00	99.45	116.36	128.57	132.63	149.58

Fast Response -Maximum Layer Temperature								
	1ft	2ft	3ft	4ft	5ft	6ft	7ft	8ft
Test 1	26.61	26.49	31.43	111.15	101.30	105.45	105.73	104.26
Test 6	29.27	54.74	28.96	73.53	68.69	77.46	72.29	98.73
Test 15	25.10	26.30	27.68	33.32	43.38	54.90	63.56	71.00
Test 20	29.48	31.63	30.68	30.75	39.10	48.82	51.26	69.68
Test 22	26.87	27.81	29.37	43.67	65.71	59.96	74.16	78.28
Test 23	29.10	30.82	31.56	41.35	73.07	67.78	99.68	116.58
Average	27.74	32.96	29.95	55.63	65.21	69.06	77.78	89.76

The next step was to then average each layer height to set up what is known for this analysis as the Averaged Maximum Layer Temperature (AMLT). These values can be seen on the bottom of the previous tables and again in the next table. The AMLT is the focus of this analysis.

Using the AMLT, a comparison can be made between compartments that had standard response sprinklers and fast response sprinklers. For each layer, a two-tailed t-test was conducted to determine if the two are statistically the same or different. The following null and alternative hypothesis were used for these t-tests.

$$H_0: \mu_S = \mu_Q$$

$$H_a: \mu_S \neq \mu_Q$$

Where: μ_S = Mean temperature in room with Standard Response Sprinkler

μ_Q = Mean temperature in room with Fast Response Sprinkler

Layer	Standard Response			Fast Response			t-test		
	n	AMLT (Degrees C)	Variance	n	AMLT (Degrees C)	Variance	df	t_stat	p_value
8ft	17	149.58	298.51	6	89.76	379.38	8	6.656	0.000
7ft	17	132.63	600.86	6	77.78	441.87	10	5.254	0.000
6ft	17	128.57	844.78	6	69.06	417.83	13	5.448	0.000
5ft	17	116.36	735.39	6	65.21	506.87	11	4.526	0.001
4ft	17	99.45	1021.24	6	55.63	973.43	9	2.939	0.017
3ft	17	53.00	538.38	6	29.95	2.35	16	4.071	0.001
2ft	17	32.80	27.83	6	32.96	118.68	6	-0.035	0.973
1ft	17	28.55	6.47	6	27.74	3.26	13	0.848	0.412

The results of the two-tailed t-test can be seen in the table above. The t-test was conducted for each layer. For each layer in which the p-value is below 0.05 (a 95% confidence) the null hypothesis can be rejected, meaning the data supports that the layer temperature for the Standard Response sprinkler compartments is significantly different than the layer temperatures of the fast response sprinkler compartments. This was the case between a height of 3 ft. and 8 ft. At the layer height of 1 ft. and 2 ft. from the ground, the p-value is greater than 0.05, meaning the null hypothesis cannot be rejected. Meaning there is no statistical evidence that the temperatures of the standard response compartments and fast response compartments were different.

Discussion

Sprinklers within residential occupancies provide the best chance of survivability for any occupant. Early activation of sprinklers provides a higher level of protection. For this study, old standard response sprinklers were compared to new fast response sprinklers. A total of 23 full scale room fires were conducted having 17 scenarios with the old standard response sprinklers and 6 scenarios with the new fast response sprinklers. Each room and ignition source were identical, and the fires were allowed to grow until sprinkler activation occurred. Thermocouples were used to collect temperature data within the rooms during the fires.

In both cases, sprinklers provided a better environment than if no sprinklers were present, activating during the growth stages of the fire and cooling the environment. However, the level of performance between the old standard response and new fast response sprinklers were noted. When using the UL 199 test criteria for listing of residential sprinklers, it was found that the standard response sprinklers were less likely to pass the test criteria while the fast response sprinklers were more likely to pass the UL 199 test criteria.

Further, using the test data from each 1-foot increment height in the room, it was seen that fast response sprinklers provided a lower maximum temperature at each level from 3 feet off the floor up to the 8 foot ceiling. Further, for the old standard response sprinklers, at a height of 5 feet up to 8 feet, the averaged maximum layer temperatures were all found to be higher than 100 C. This is an important threshold as this is the temperature in which steam is created and becomes more detrimental to occupants if inhaled [7]. Inhaling steam causes damage to the esophagus which leads to incapacitation and even death. For the fast response sprinklers, the average maximum temperature never exceeds 100 C for any height. This demonstrates a higher level of survivability created by the fast response sprinklers.

Overall, the fast response sprinklers performed better than the old standard response sprinklers. The data from these burns shows the fast response sprinklers provide the better chance of survivability for an occupant within the room at the time of a fire.

Future Research

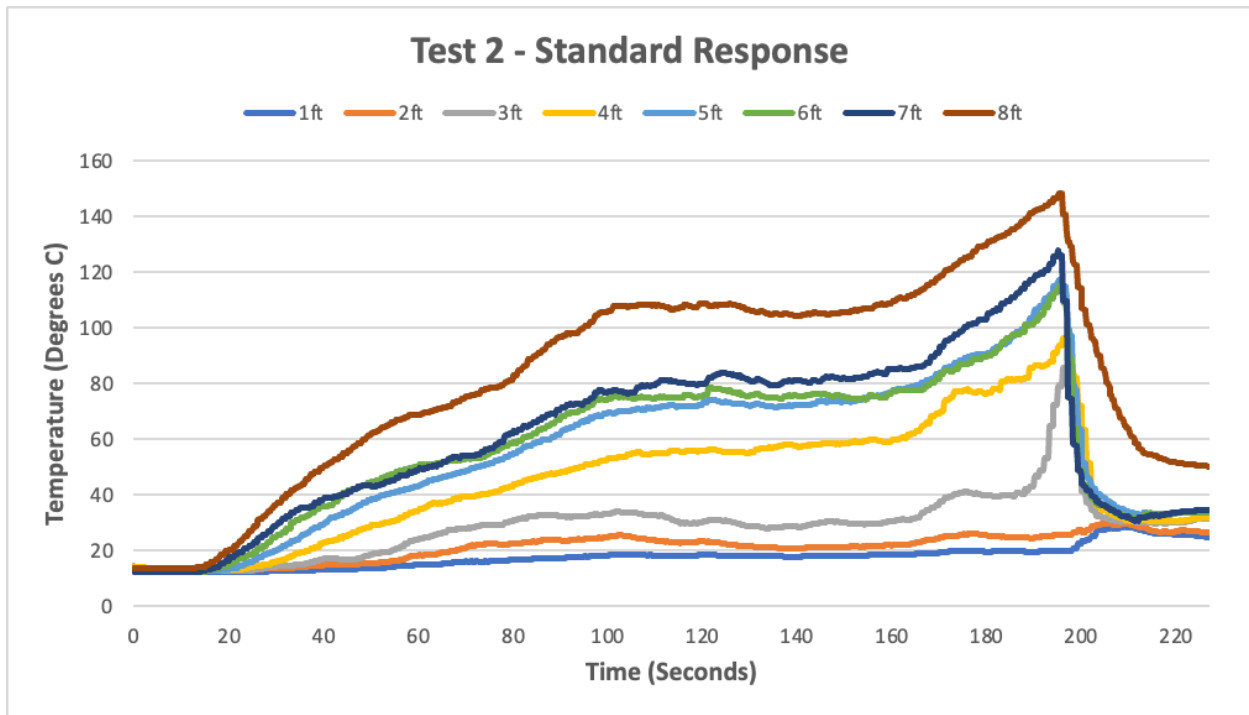
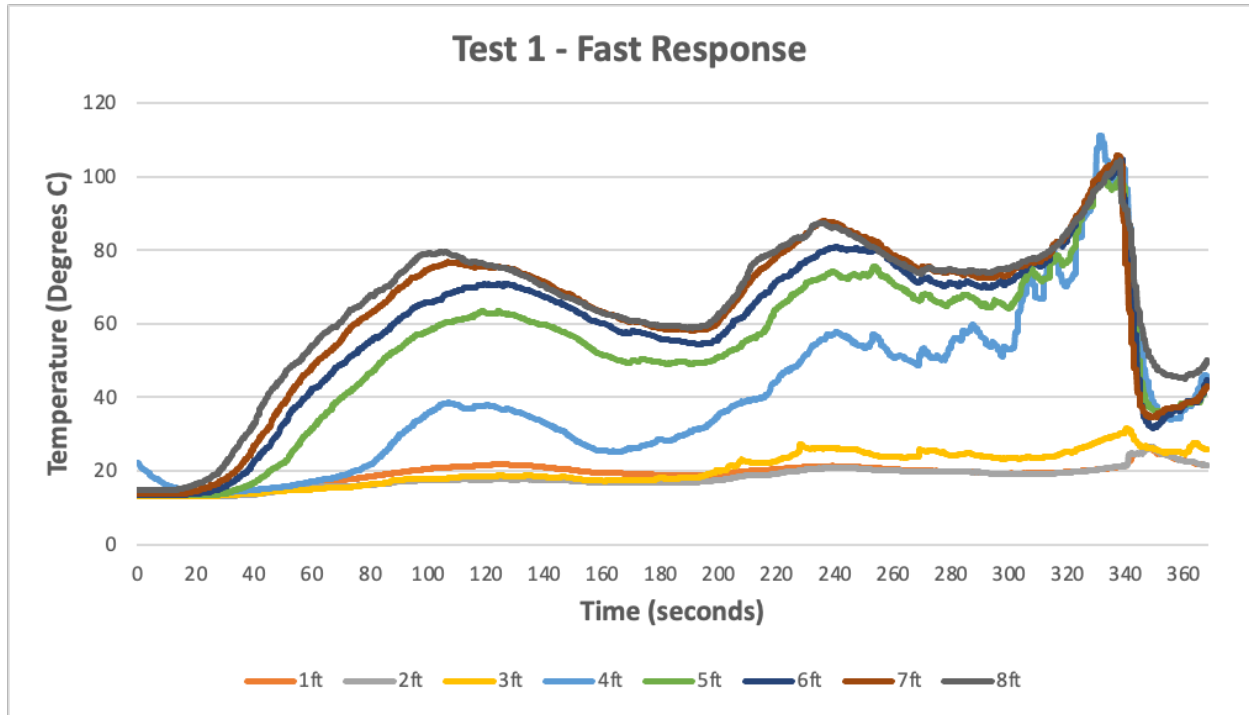
The following additional research opportunities are provided for future consideration:

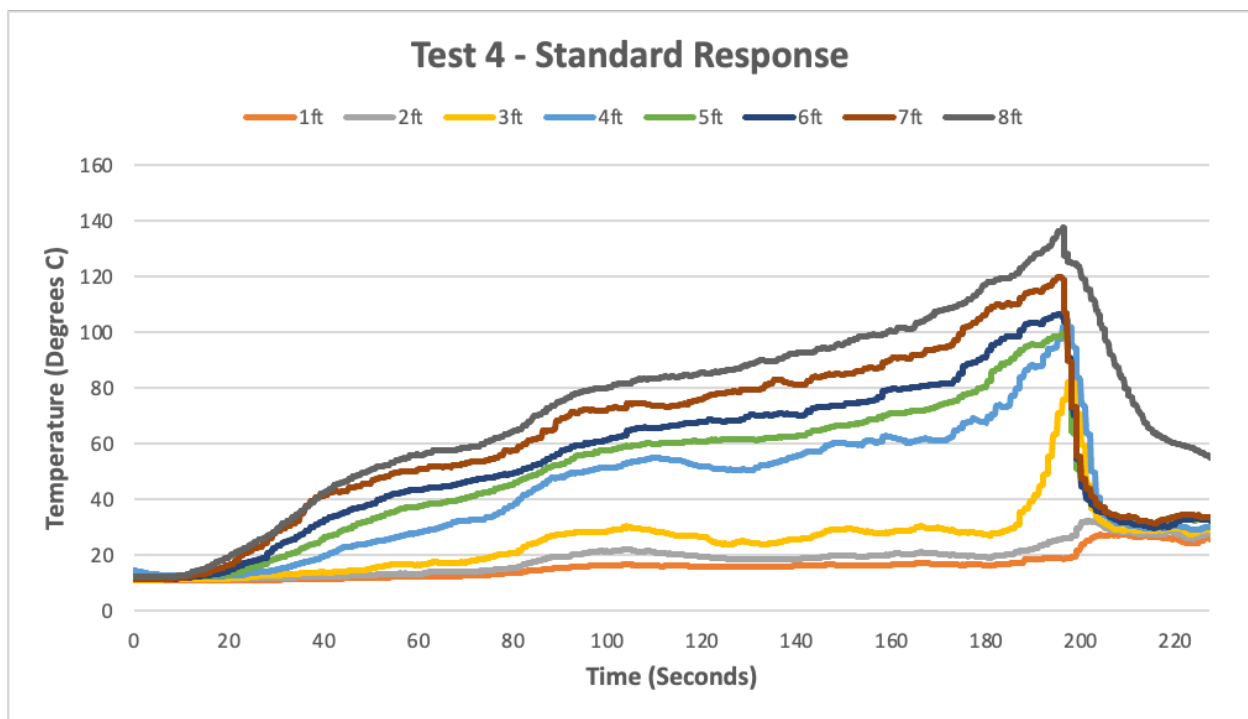
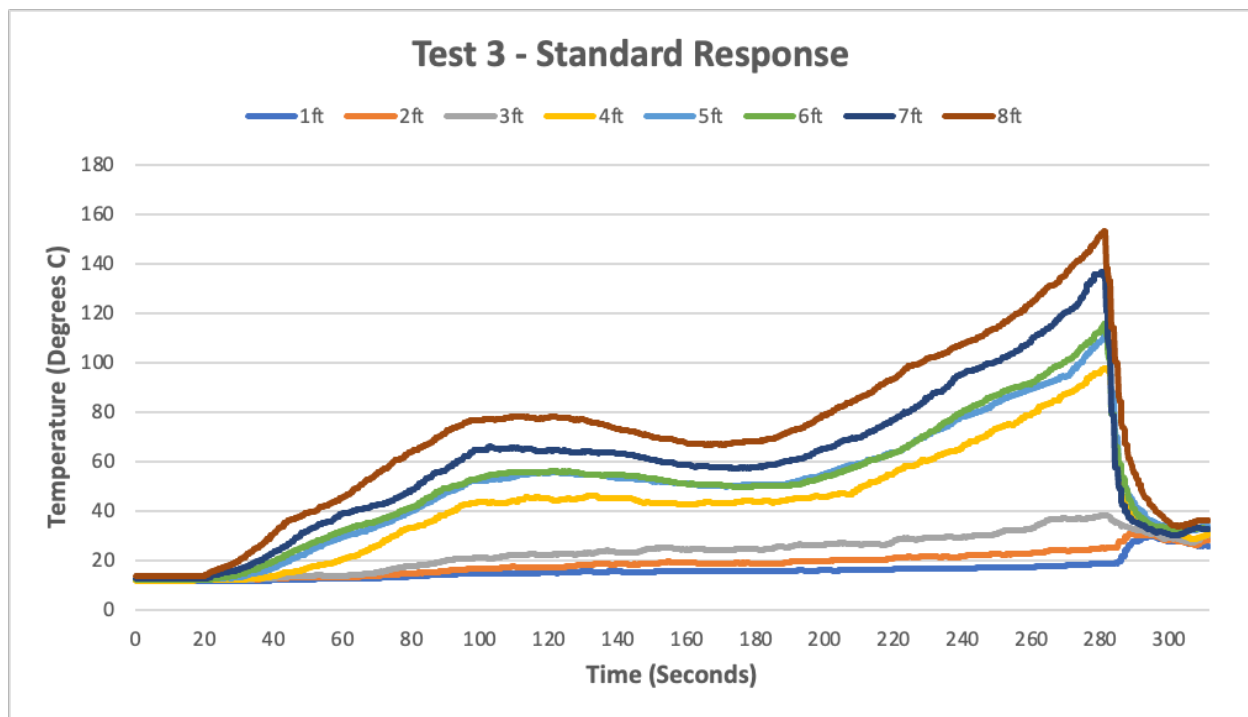
1. Vary the origin of the fire. The fire growth rate is affected by the location of the fire's origin with respect to walls. This test considered the origin of fire against one wall. Additional testing with the origin of the fire centered in the room away from the walls and in a corner of the room should be considered to determine their effect on sprinkler performance and occupant survivability.
2. Vary the fire growth and peak heat release rates. This test considered fast fire growth and high heat release rates for a residential dwelling unit fire originating in synthetic furniture. Additional testing simulating a slow fire growth and lower peak heat release rates should be considered to determine their effect on sprinkler performance and occupant survivability.
3. Vary the room ventilation. This test considered a well-ventilated room with an open door and natural ventilation. Additional testing simulating a vent limited fire should be considered to determine the effect on sprinkler performance and occupant survivability.
4. Vary the old standard response sprinkler RTI closer to the NFPA 25 permitted max of 350 (meters-seconds^{1/2}). The sprinklers considered in this test had an average RTI of 223 (meters-seconds^{1/2}). Additional testing with older standard response sprinklers with an RTI of 300-350 (meters-seconds^{1/2}) should be considered to determine their effect on sprinkler performance and occupant survivability.
5. Collect additional data including oxygen, carbon monoxide, and carbon dioxide levels to assess occupant survivability.

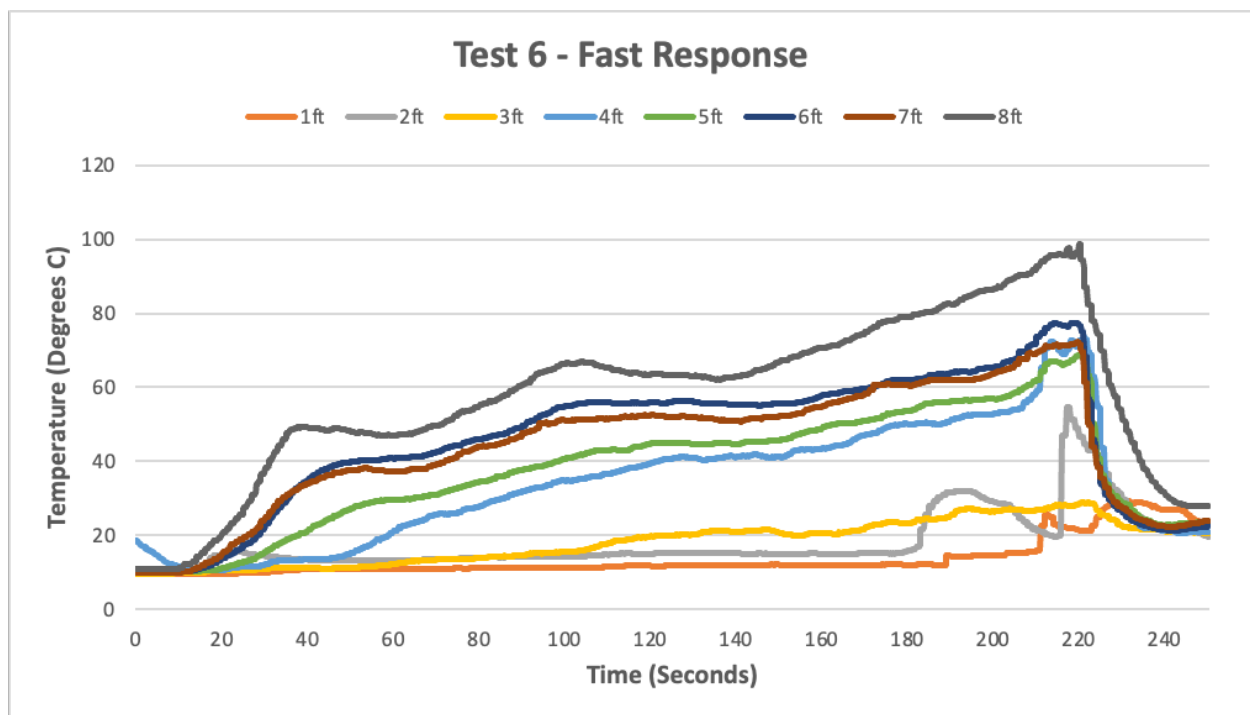
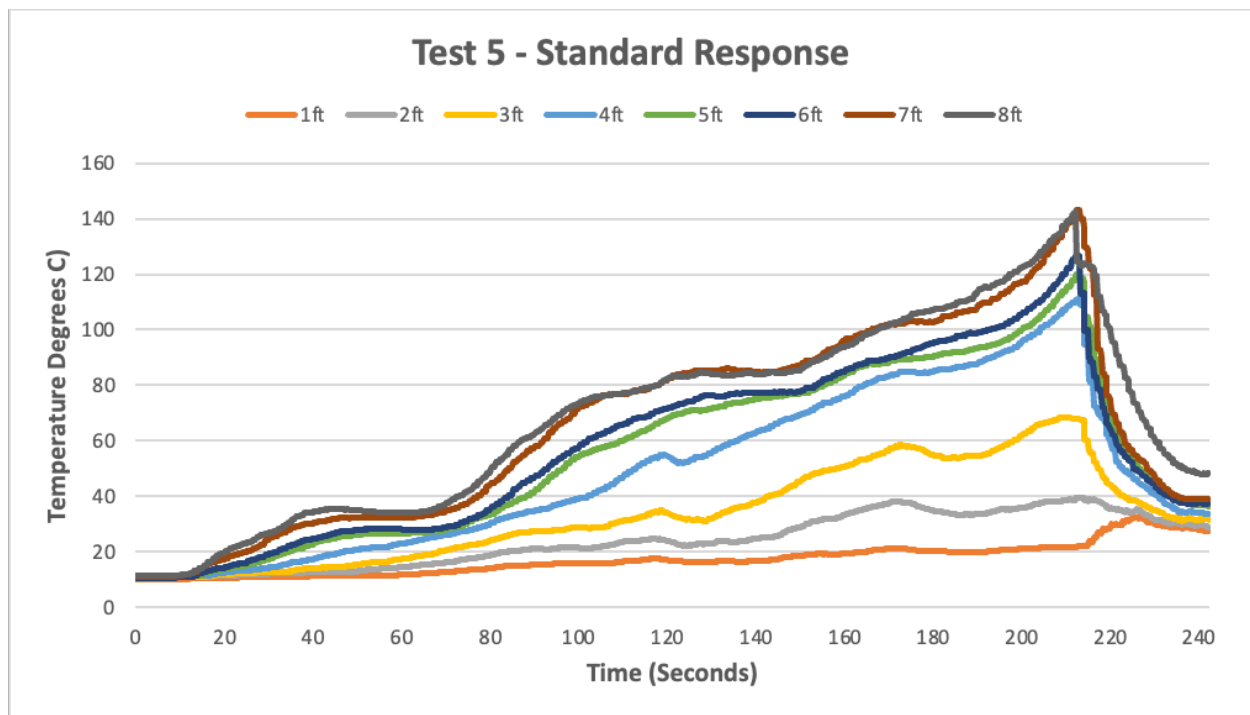
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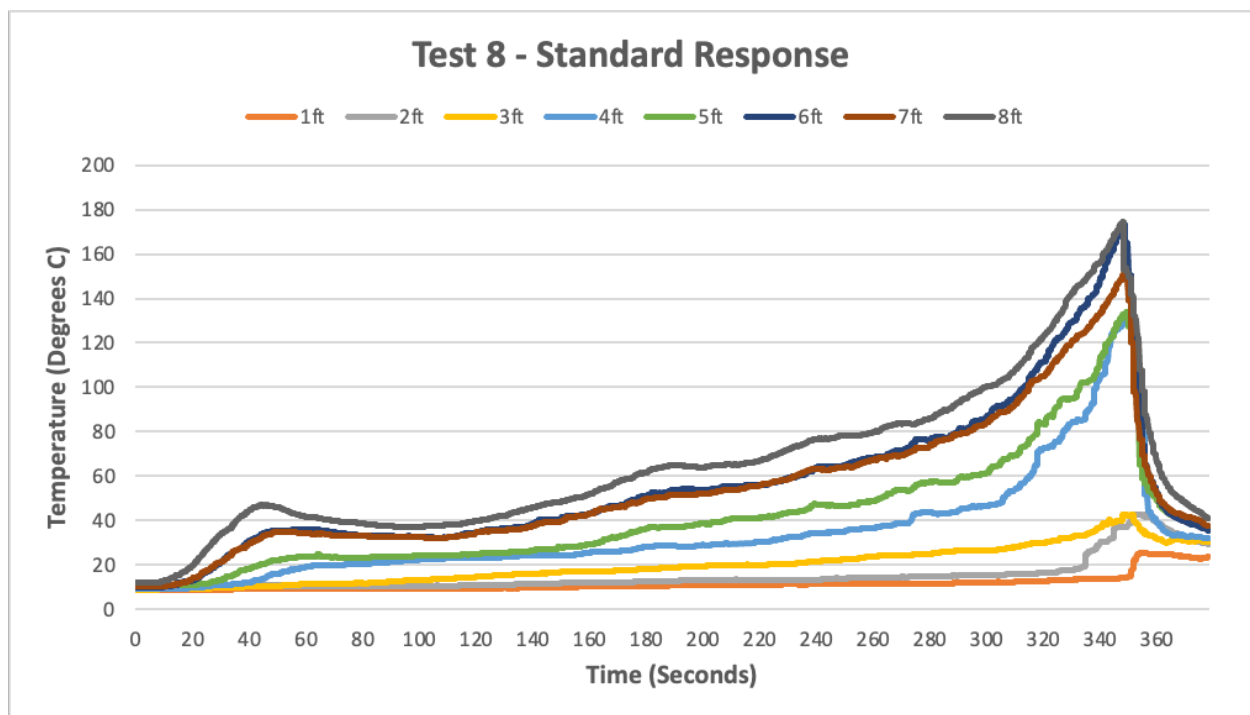
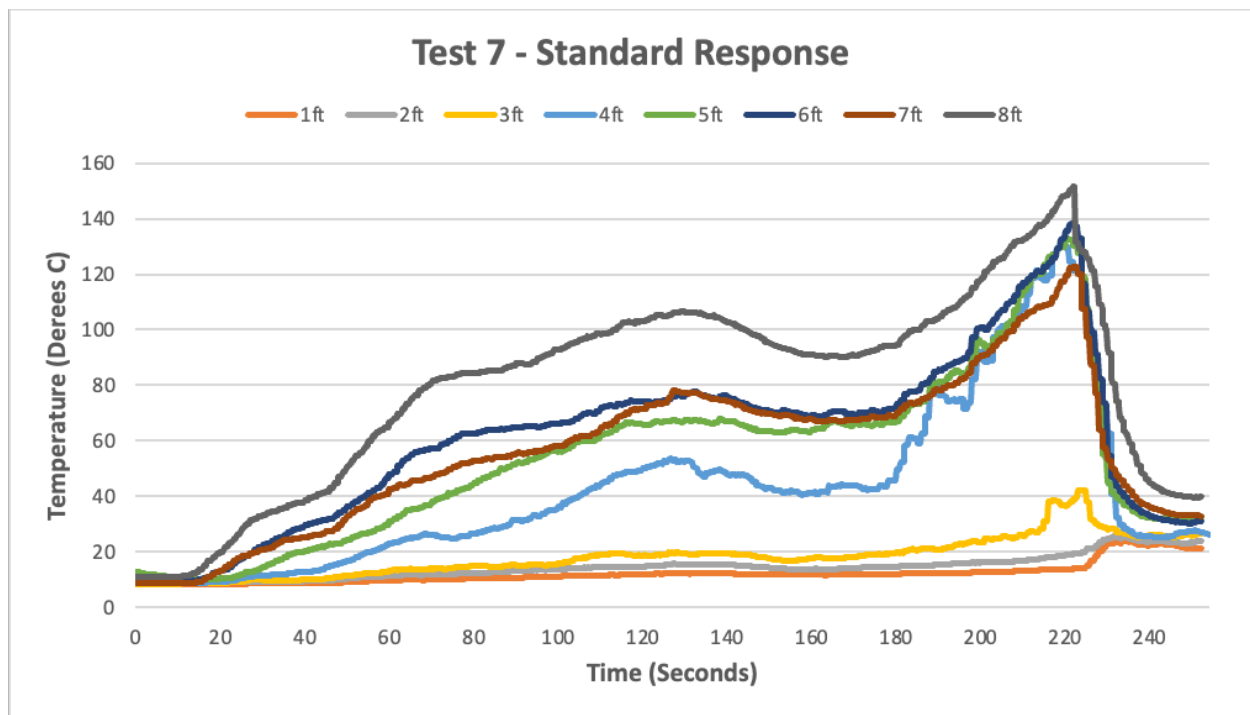
- [1] National Fire Protection Association, *NFPA 13 Standard for the Installation of Sprinkler Systems*, Quincy, 1996.
- [2] National Fire Protection Association, *NFPA 25 Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, Quincy, 2023.
- [3] ABC Fire & Safety, "The Evolution of Fire Sprinkler Technology: From the Past to the Present," 8 January 2024. [Online]. Available: <https://acceleratemarketing88.medium.com/the-evolution-of-fire-sprinkler-technology-from-the-past-to-the-present-0675793a1191>.
- [4] V. Ziavras, "The Basics of Sprinkler Thermal Characteristics," National Fire Protection Associations, 22 June 2022. [Online]. Available: <https://www.nfpa.org/news-blogs-and-articles/blogs/2021/06/22/the-basics-of-sprinkler-thermal-characteristics>.
- [5] Fire Safety Research Institute, "New Comparison of Natural and Synthetic Home Furnishings," 30 September 2020. [Online]. Available: <https://fsri.org/research/new-comparison-natural-and-synthetic-home-furnishings>.
- [6] B. J. McCaffrey, J. G. Quintiere and M. F. Harkleroad, "Estimating Room Fire Temperatures and the Likelihood of Flashover Using Fire Test Data Correlations," *Fire Technology*, vol. 17, no. 2, pp. 98-119, 1981.
- [7] D. Campbell, "Respiratory Tract Trauma in Burned Patients," *Colloquium*, 1985.

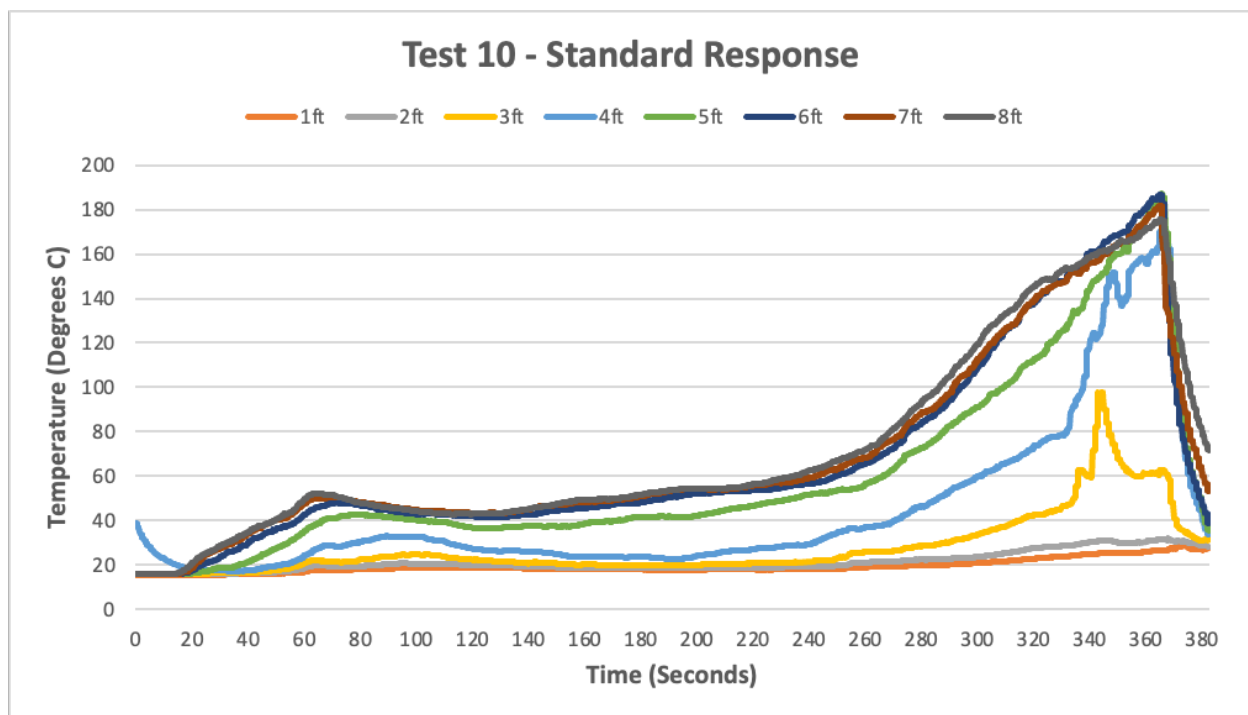
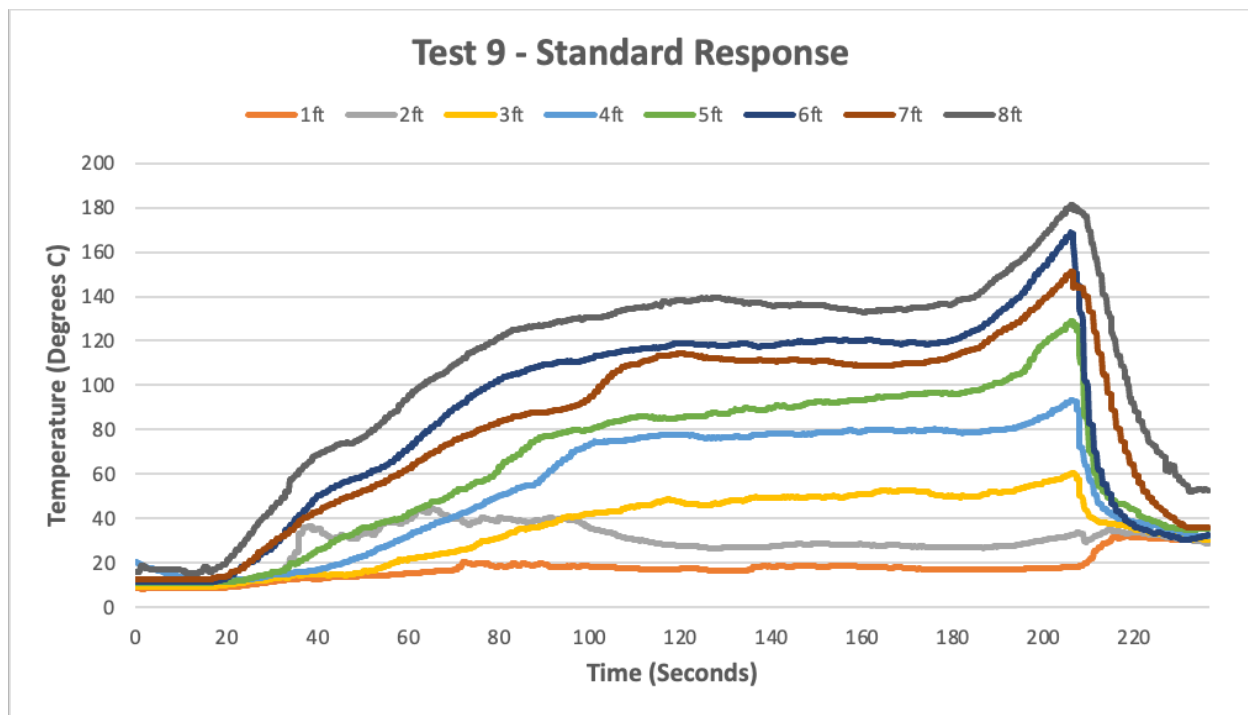
Appendix A – Average Layer Temperature Graphs

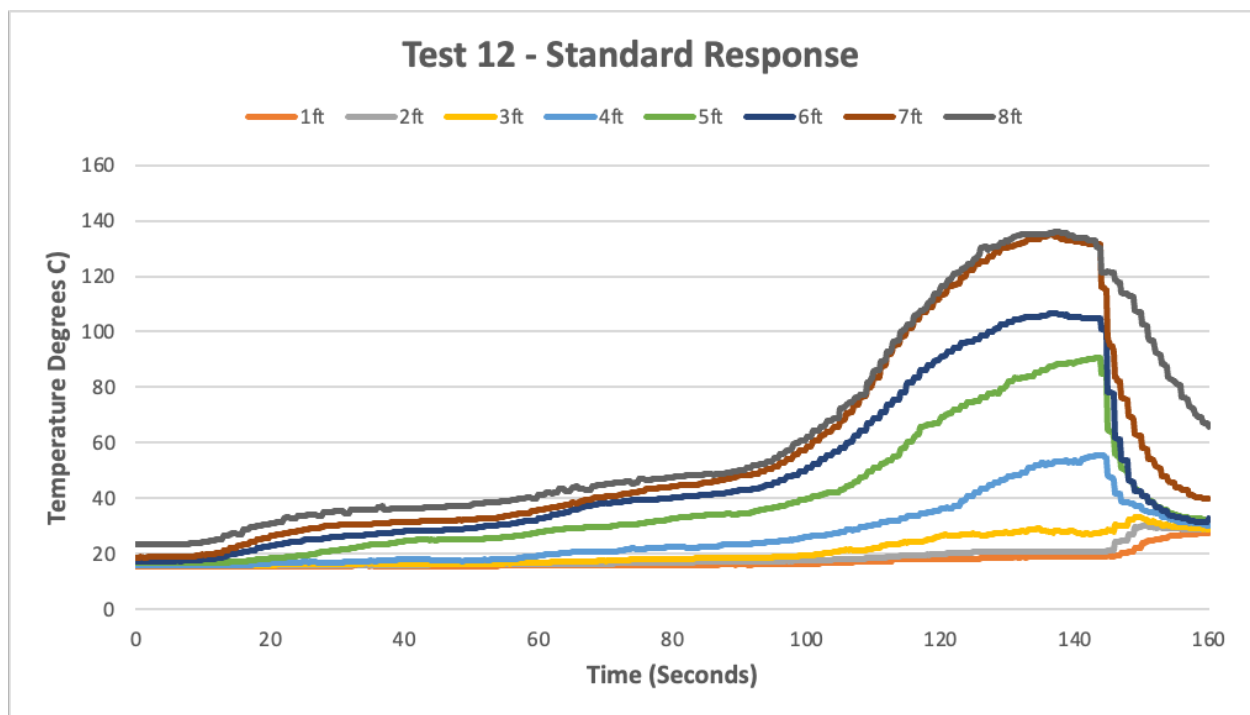
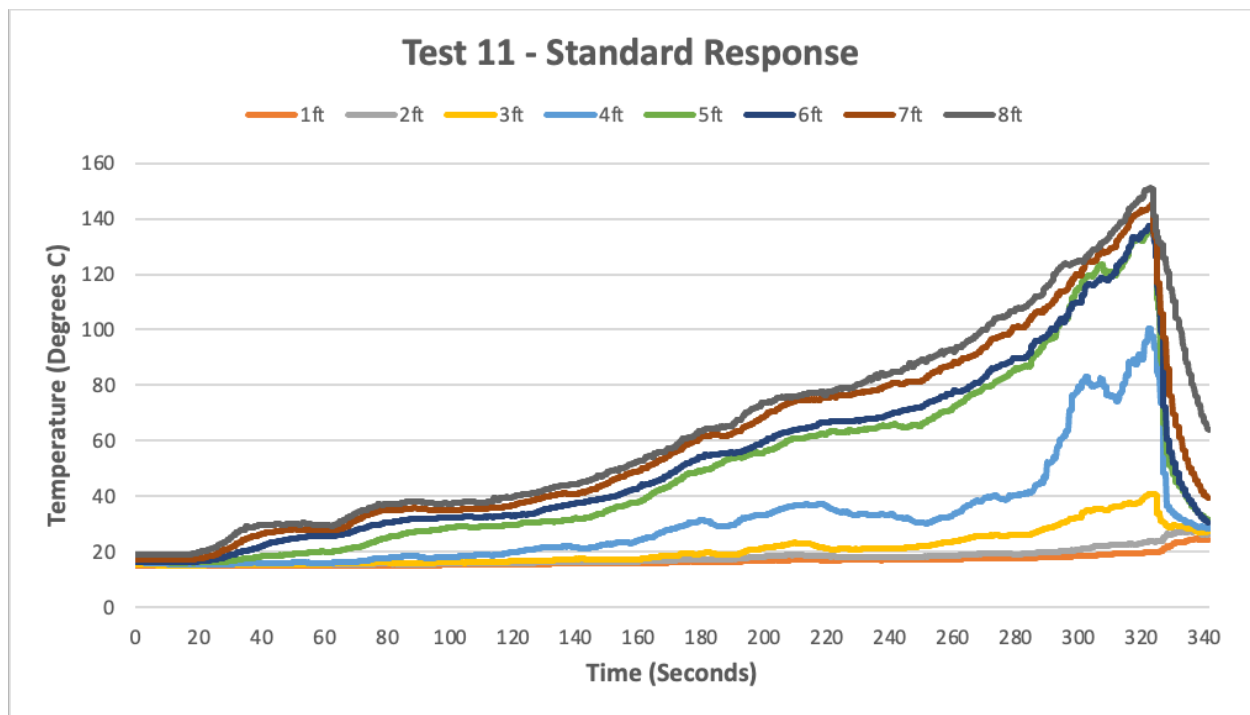


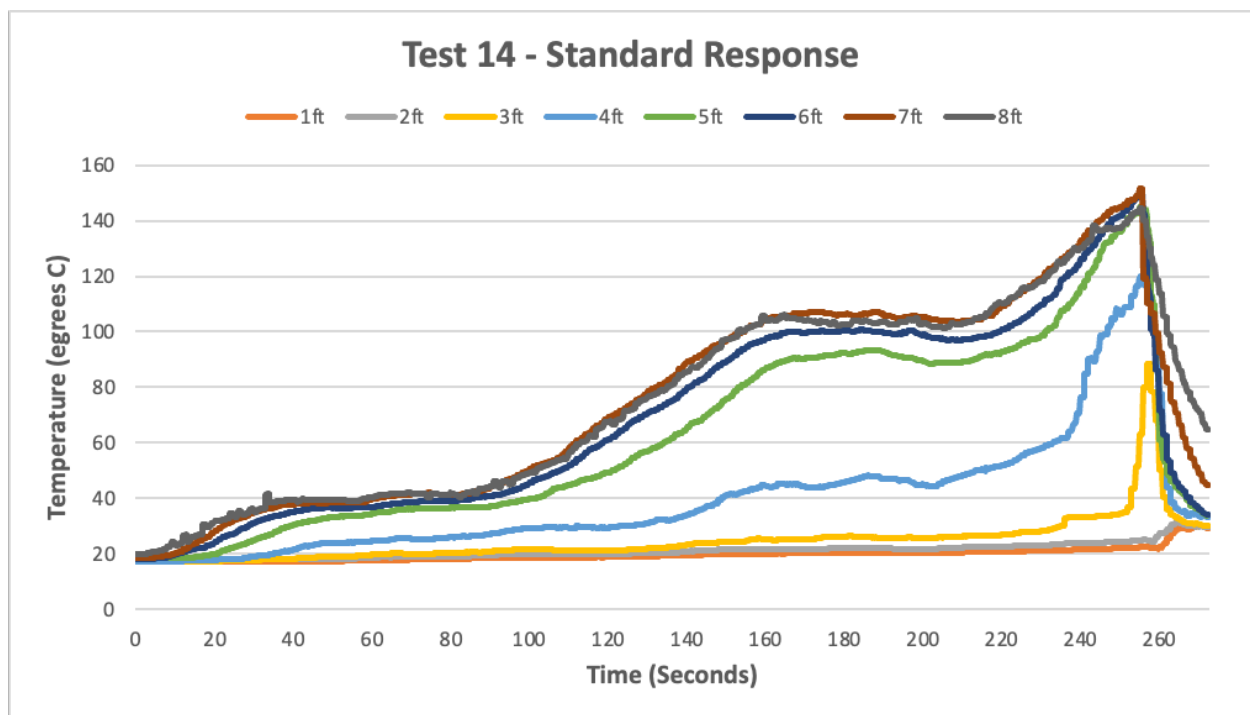
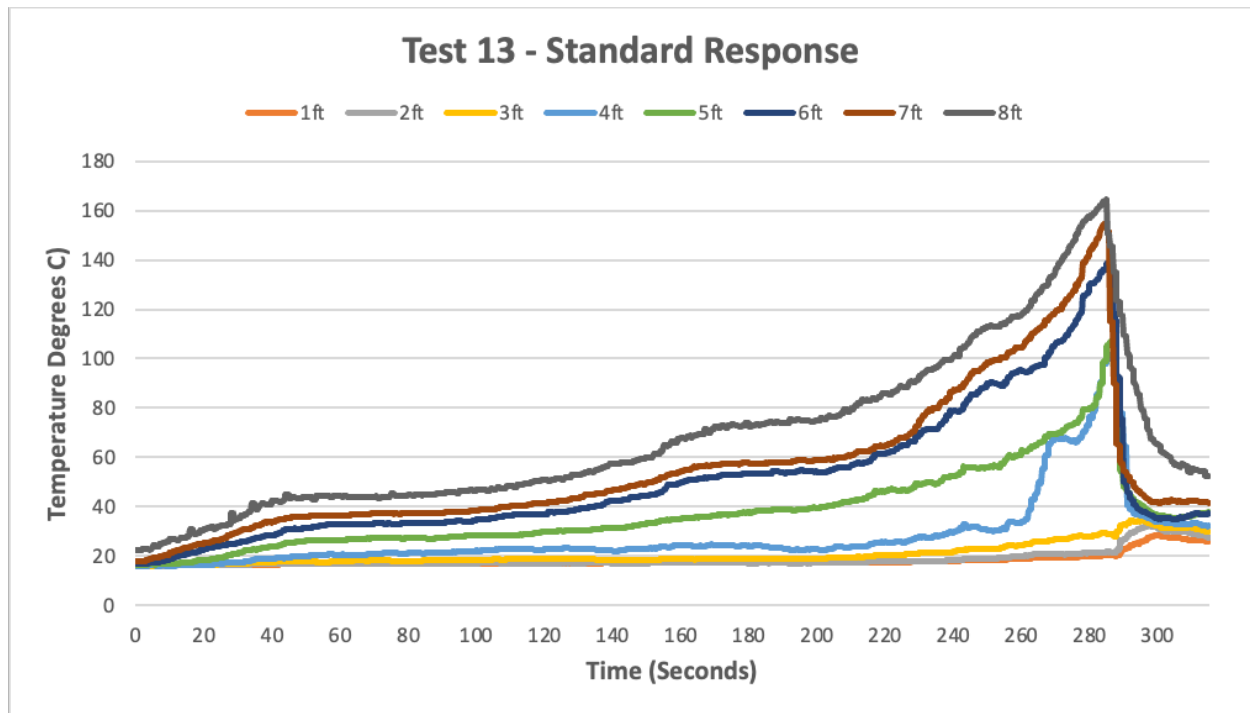


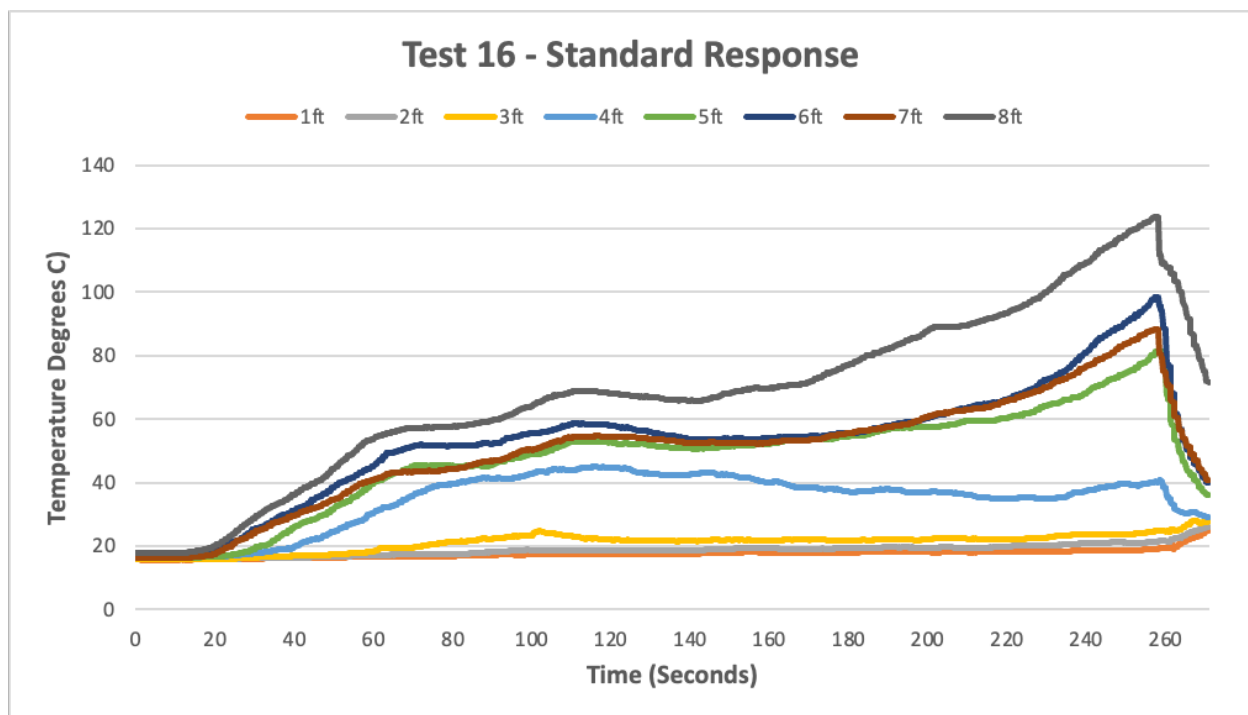
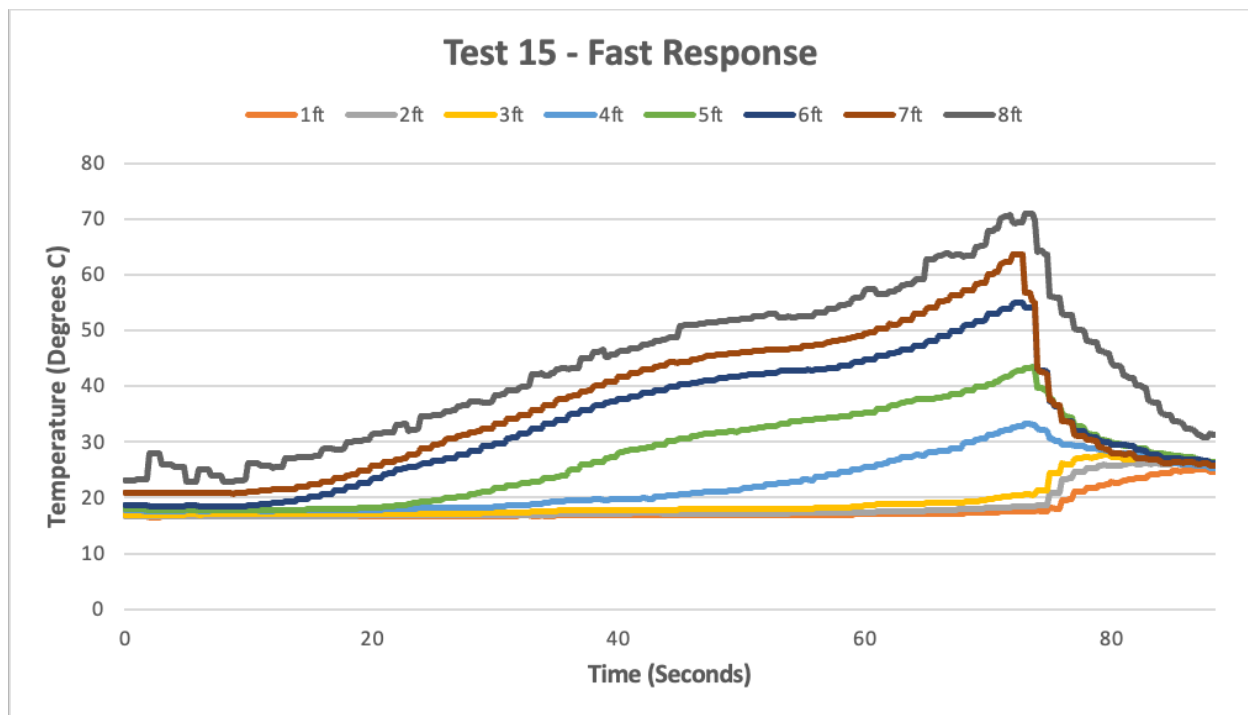


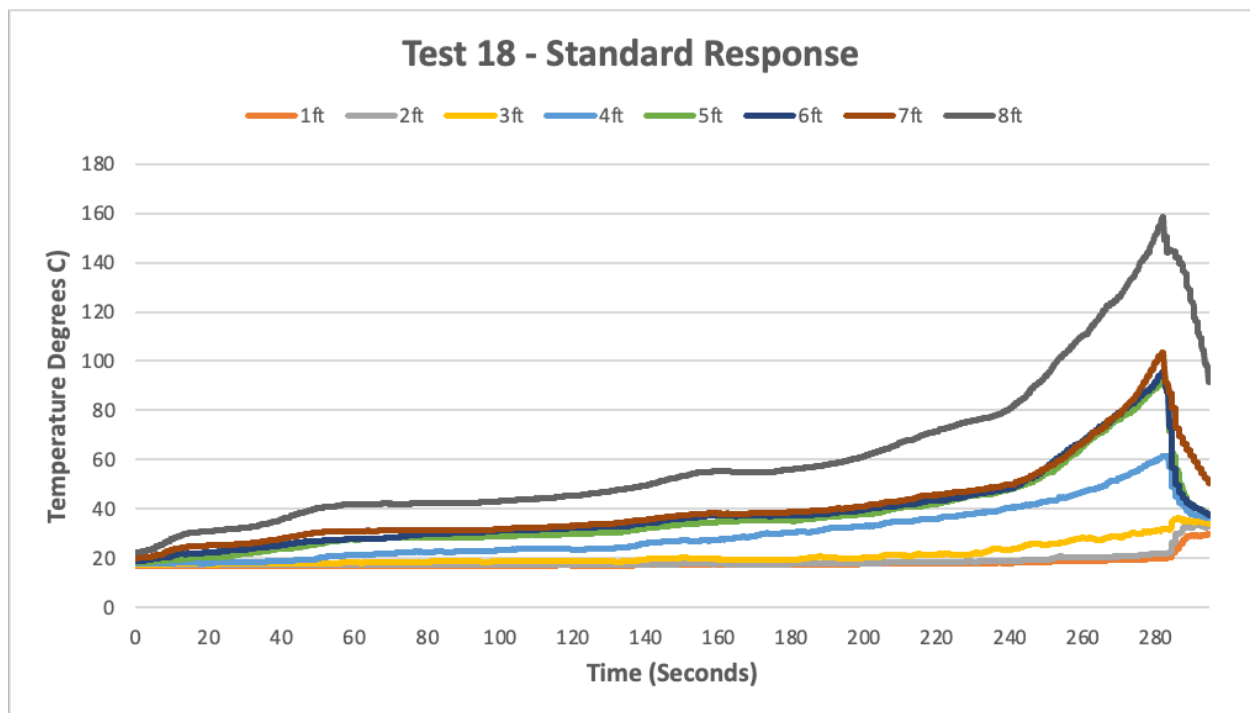
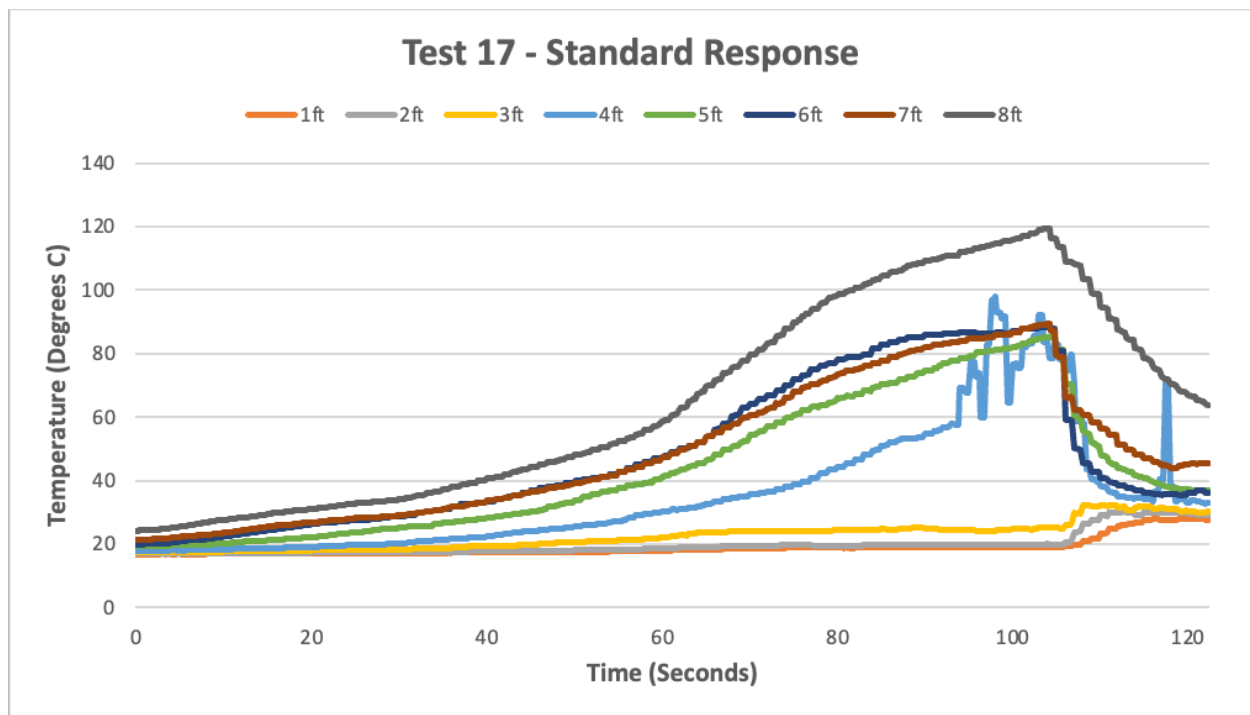


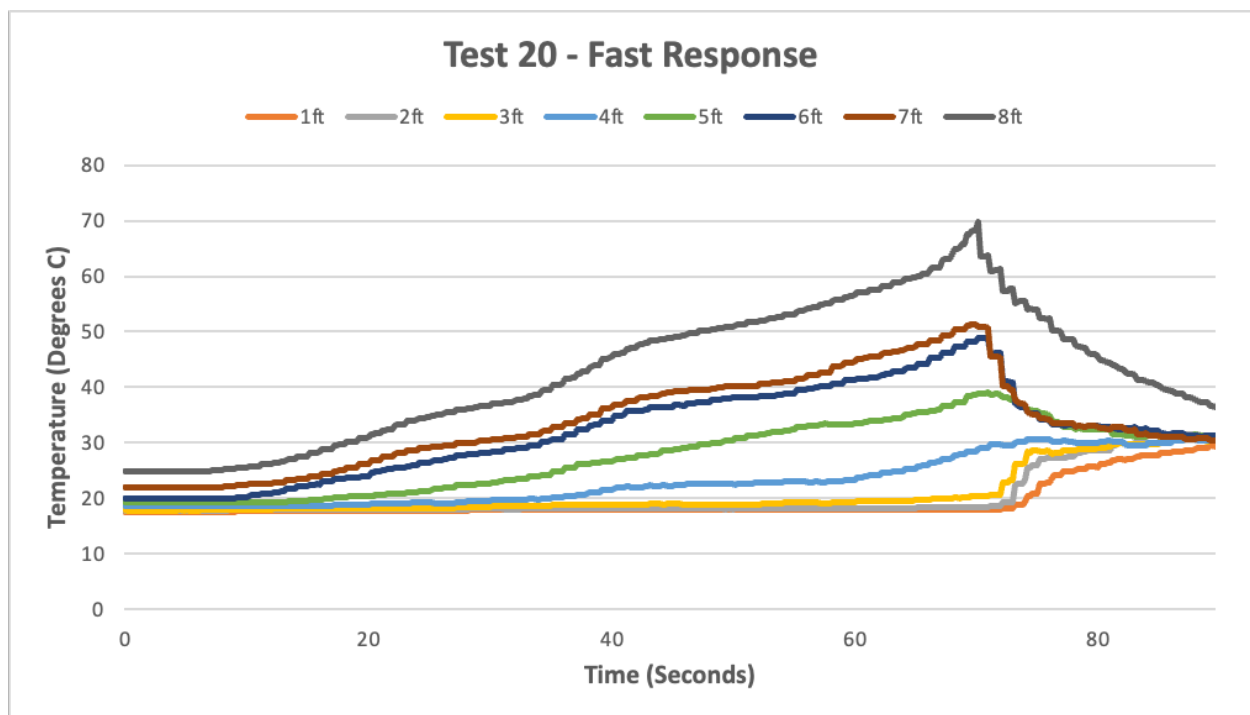
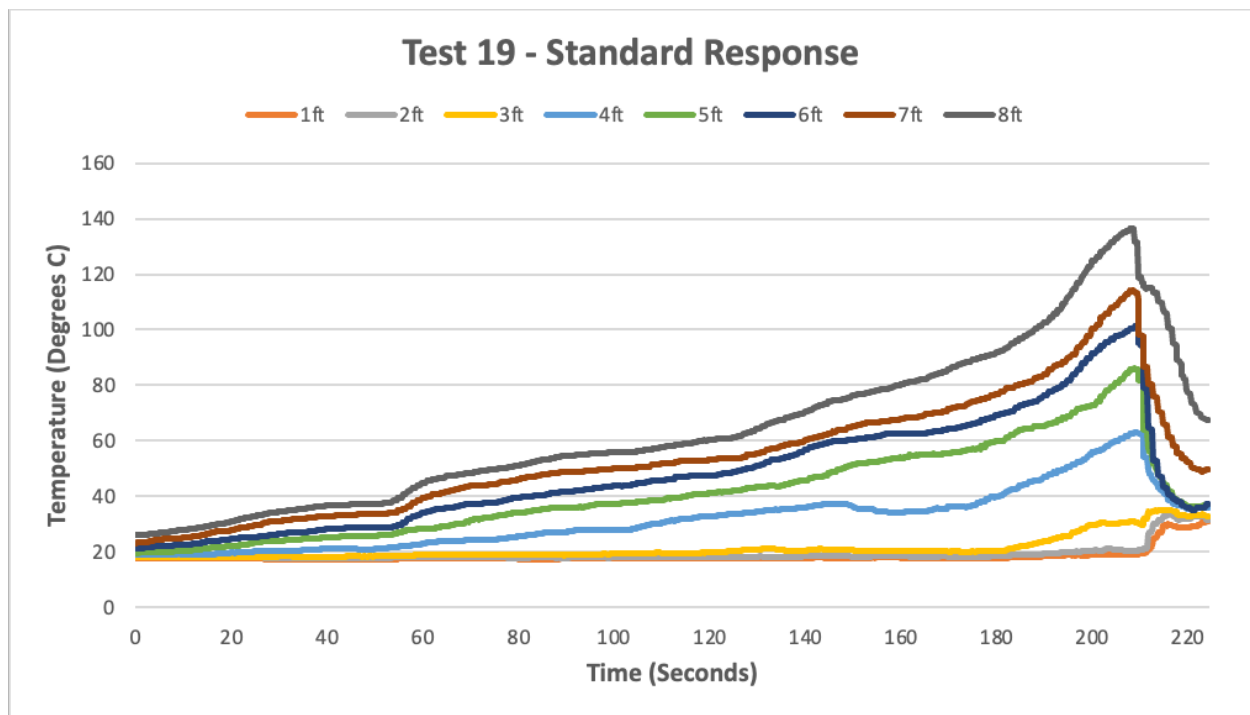


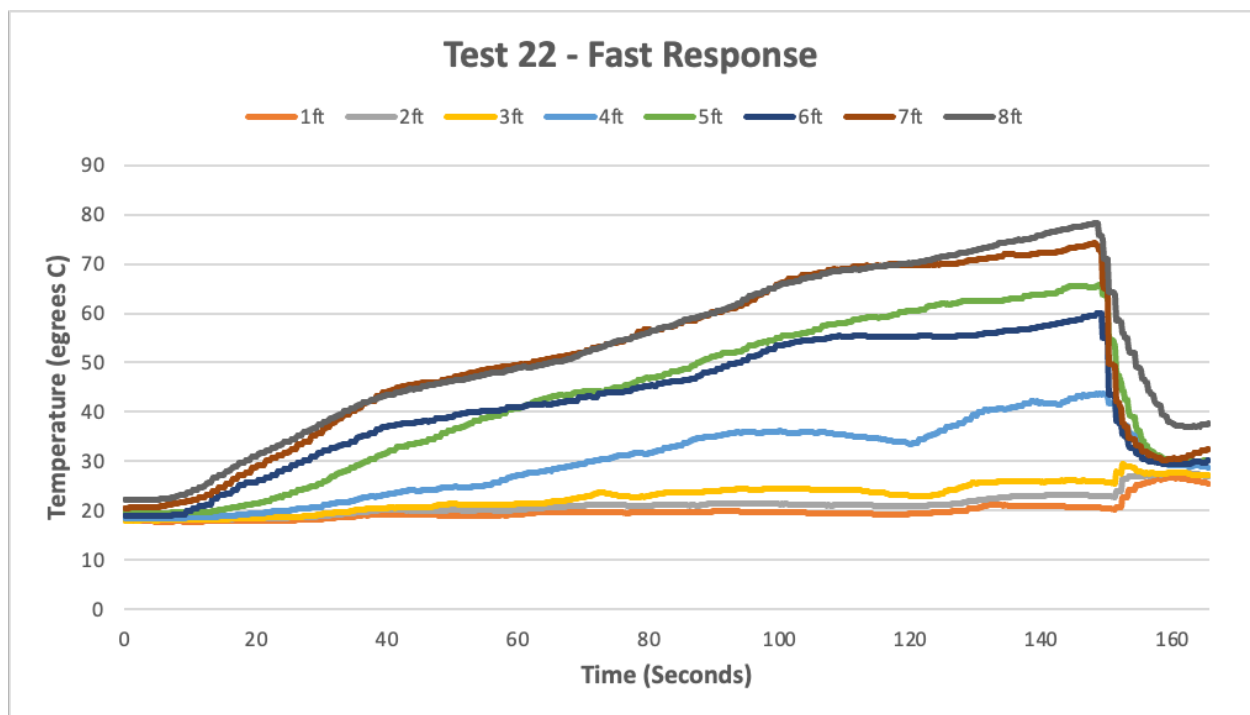
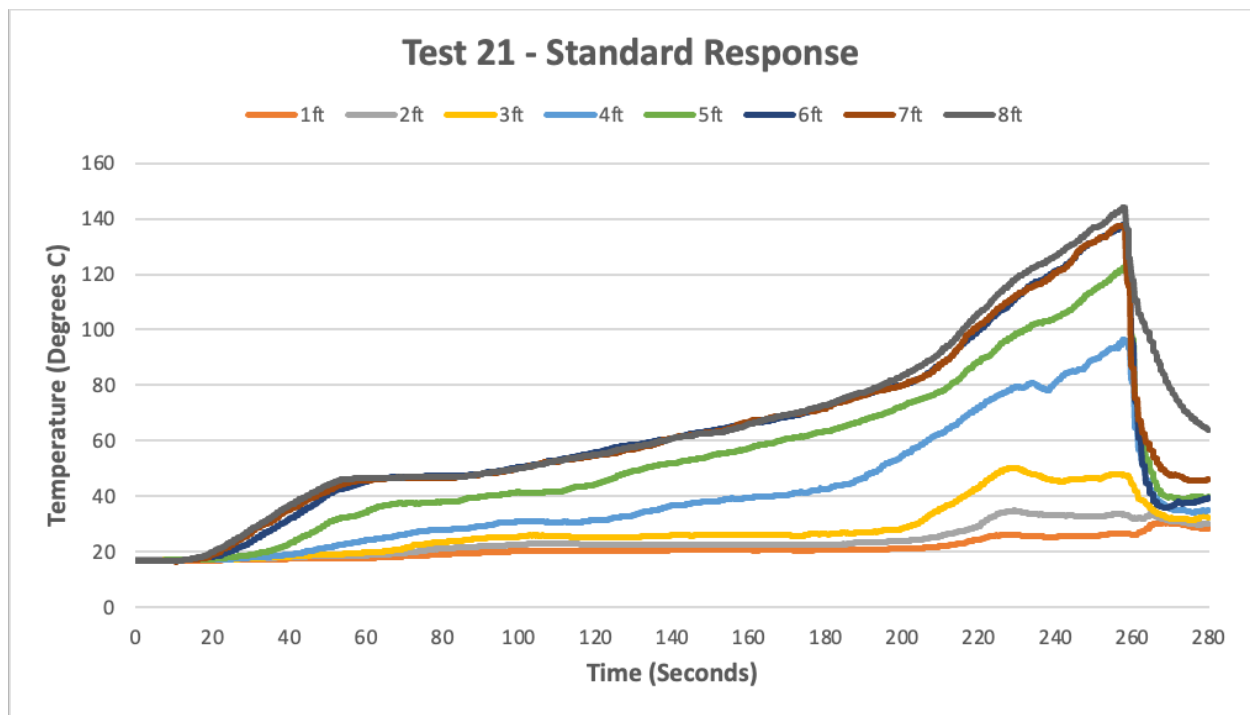


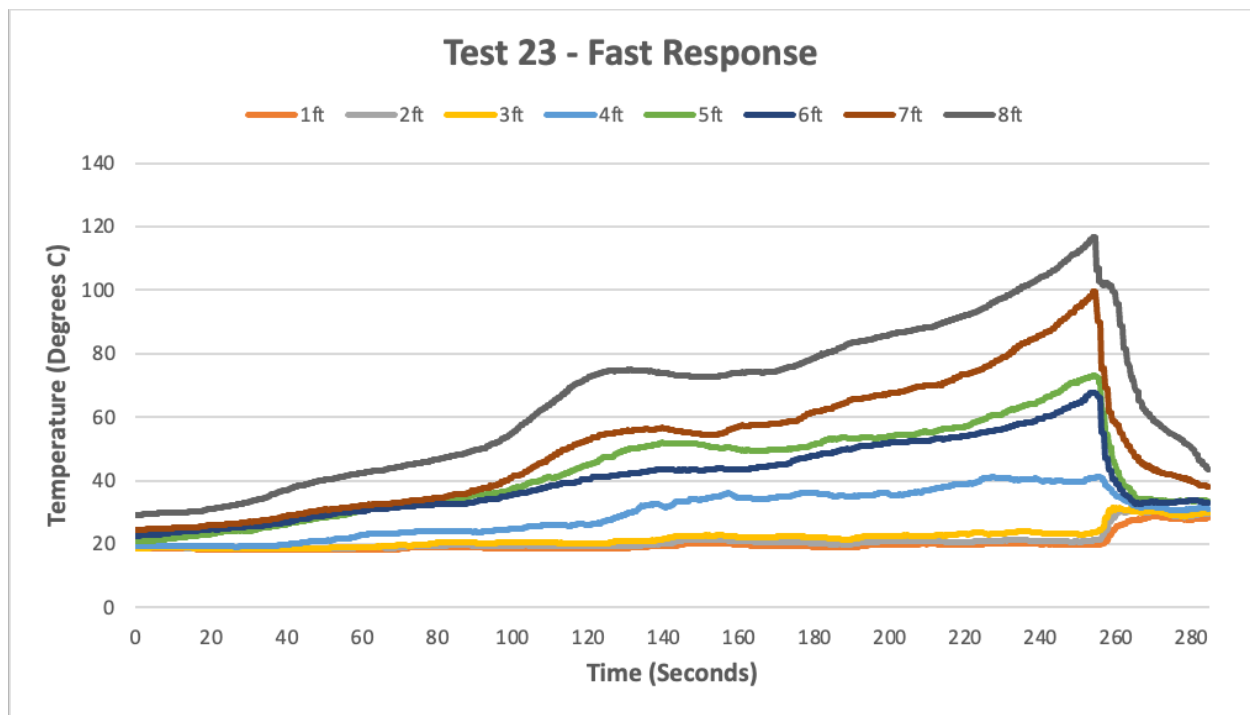












Appendix B – Plunge Test Results

LABORATORY TEST RESULTS

Report for:

National Fire Sprinkler Association
Michael Joanis
514 Progress Drive, Suite A
Linthicum Heights, MD 21090

Job Name:

Not Specified
Not Specified

Job Number: 120592

Number of Samples: 4

Date Received: 03/03/2022

Report Date: 03/09/2022

For Service Call: (800) 632-2304

Page: 1 of 4

Sample Information

Year Marking:	1975	Location:	Not Specified
Manufacturer:	SFH	Area:	
Series, Model or SIN:	Not Specified		
Temp Rating (°F/°C):	155 / 68		
Response Type:	Standard Response		
Releasing Mechanism:	Frangible Bulb		
Water Seal Config:	Belleville Spring		
Dry Sprinkler:	No		
Thread Size:	1/2"		

Test Results

Sample Number: 1

Date Tested: 3/8/2022 10:40:22 AM

Test	Method	Test Value	Requirement	Test Result
Response Time, Sec.	LBTR-3404	93.8	0 - 123.3	Pass
Response Time Index (RTI), (m-s) ^{1/2}	LBTR-3404	267	≤ 350	Pass
Water Seal Release (7 PSI)	LBTR-3404	Full Release	Full Release	Pass

This sample was tested as required by NFPA 25 2020 Ed. 5.3.1.1. Pictures of this sprinkler in the condition it was received and an image(s) of the waterway post testing, were made available via a link (active for 90 days) in the results email and are also available upon request. Dyne does NOT evaluate if any narrowing of the waterway is detrimental.

According to the 2020 Edition of NFPA 25 Section 5.3.1.3, "Where one sprinkler within a representative sample fails to meet the test requirement, all sprinklers within the area represented by that sample shall be replaced." If all sprinklers within a representative sample meet the test requirements and the sprinklers represented by that sample remain in service, they shall be listed for use in your system/application and must be resampled and retested in 5 or 10 years (depending on sprinkler type and environment) in accordance with NFPA 25 2020 Ed. 5.3.1.



Kyle Mykkeltvedt, Lab Analyst



It is the responsibility of the property owner or designated representative to ensure the sample information is correct (brand, type, etc.) and to correct deficiencies or impairments, including identifying and replacing any recalled products. The results relate only to the sample tested using a limited number of laboratory-scale methods and do not guarantee the system will operate properly. For further explanation, see LBTR-4402 at www.dyneusa.com. This report shall not be reproduced except in full, without the written consent of Dyne Technologies, LLC.

DYNE
FIRE PROTECTION LABS
2357 Ventura Dr Suite 108
Woodbury, MN 55125

LABORATORY TEST RESULTS

Report for:

National Fire Sprinkler Association
Michael Joanis
514 Progress Drive, Suite A
Linthicum Heights, MD 21090

Job Name:

Not Specified
Not Specified

Job Number: 120592

Number of Samples: 4

Date Received: 03/03/2022

Report Date: 03/09/2022

For Service Call: (800) 632-2304

Page: 2 of 4

Sample Information

Year Marking: 1973 Location: Not Specified
Manufacturer: SFH Area:
Series, Model or SIN: Not Specified
Temp Rating (°F/°C): 155 / 68
Response Type: Standard Response
Releasing Mechanism: Frangible Bulb
Water Seal Config: Belleville Spring
Dry Sprinkler: No
Thread Size: 1/2"

Test Results

Sample Number: 2

Date Tested: 3/8/2022 10:42:09 AM

Test	Method	Test Value	Requirement	Test Result
Response Time, Sec.	LBTR-3404	65.3	0 - 123.3	Pass
Response Time Index (RTI), (m-s)½	LBTR-3404	186	≤ 350	Pass
Water Seal Release (7 PSI)	LBTR-3404	Full Release	Full Release	Pass

This sample was tested as required by NFPA 25 2020 Ed. 5.3.1.1. Pictures of this sprinkler in the condition it was received and an image(s) of the waterway post testing, were made available via a link (active for 90 days) in the results email and are also available upon request. Dyne does NOT evaluate if any narrowing of the waterway is detrimental.

According to the 2020 Edition of NFPA 25 Section 5.3.1.3, "Where one sprinkler within a representative sample fails to meet the test requirement, all sprinklers within the area represented by that sample shall be replaced." If all sprinklers within a representative sample meet the test requirements and the sprinklers represented by that sample remain in service, they shall be listed for use in your system/application and must be resampled and retested in 5 or 10 years (depending on sprinkler type and environment) in accordance with NFPA 25 2020 Ed. 5.3.1.



Kyle Mykkeltvedt, Lab Analyst



It is the responsibility of the property owner or designated representative to ensure the sample information is correct (brand, type, etc.) and to correct deficiencies or impairments, including identifying and replacing any recalled products. The results relate only to the sample tested using a limited number of laboratory-scale methods and do not guarantee the system will operate properly. For further explanation, see LBTR-4402 at www.dyneusa.com. This report shall not be reproduced except in full, without the written consent of Dyne Technologies, LLC.



LABORATORY TEST RESULTS

Report for:

National Fire Sprinkler Association
Michael Joanis
514 Progress Drive, Suite A
Linthicum Heights, MD 21090

Job Name:

Not Specified
Not Specified

Job Number: 120592

Number of Samples: 4

Date Received: 03/03/2022

Report Date: 03/09/2022

For Service Call: (800) 632-2304

Page: 3 of 4

Sample Information

Year Marking:	1974	Location:	Not Specified
Manufacturer:	SFH	Area:	
Series, Model or SIN:	Not Specified		
Temp Rating (°F/°C):	155 / 68		
Response Type:	Standard Response		
Releasing Mechanism:	Frangible Bulb		
Water Seal Config:	Belleville Spring		
Dry Sprinkler:	No		
Thread Size:	1/2"		

Test Results

Sample Number: 3

Date Tested: 3/8/2022 10:44:56 AM

Test	Method	Test Value	Requirement	Test Result
Response Time, Sec.	LBTR-3404	73.6	0 - 123.3	Pass
Response Time Index (RTI), (m-s)½	LBTR-3404	209	≤ 350	Pass
Water Seal Release (7 PSI)	LBTR-3404	Full Release	Full Release	Pass

This sample was tested as required by NFPA 25 2020 Ed. 5.3.1.1. Pictures of this sprinkler in the condition it was received and an image(s) of the waterway post testing, were made available via a link (active for 90 days) in the results email and are also available upon request. Dyne does NOT evaluate if any narrowing of the waterway is detrimental.

According to the 2020 Edition of NFPA 25 Section 5.3.1.3, "Where one sprinkler within a representative sample fails to meet the test requirement, all sprinklers within the area represented by that sample shall be replaced." If all sprinklers within a representative sample meet the test requirements and the sprinklers represented by that sample remain in service, they shall be listed for use in your system/application and must be resampled and retested in 5 or 10 years (depending on sprinkler type and environment) in accordance with NFPA 25 2020 Ed. 5.3.1.



Kyle Mykkeltvedt, Lab Analyst



It is the responsibility of the property owner or designated representative to ensure the sample information is correct (brand, type, etc.) and to correct deficiencies or impairments, including identifying and replacing any recalled products. The results relate only to the sample tested using a limited number of laboratory-scale methods and do not guarantee the system will operate properly. For further explanation, see LBTR-4402 at www.dyneusa.com. This report shall not be reproduced except in full, without the written consent of Dyne Technologies, LLC.

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FIRE PROTECTION LABS
2357 Ventura Dr Suite 108
Woodbury, MN 55125

LABORATORY TEST RESULTS

Report for:

National Fire Sprinkler Association
Michael Joanis
514 Progress Drive, Suite A
Linthicum Heights, MD 21090

Job Name:

Not Specified
Not Specified

Job Number: 120592
Number of Samples: 4
Date Received: 03/03/2022
Report Date: 03/09/2022
Page: 4 of 4

For Service Call: (800) 632-2304

Sample Information

Year Marking: 1973 Location: Not Specified
Manufacturer: SFH Area:
Series, Model or SIN: Not Specified
Temp Rating (°F/°C): 155 / 68
Response Type: Standard Response
Releasing Mechanism: Frangible Bulb
Water Seal Config: Belleville Spring
Dry Sprinkler: No
Thread Size: 1/2"

Test Results

Sample Number: 4

Date Tested: 3/8/2022 10:45:12 AM

Test	Method	Test Value	Requirement	Test Result
Response Time, Sec.	LBTR-3404	84.6	0 - 123.3	Pass
Response Time Index (RTI), (m-s)½	LBTR-3404	240	≤ 350	Pass
Water Seal Release (7 PSI)	LBTR-3404	Full Release	Full Release	Pass

This sample was tested as required by NFPA 25 2020 Ed. 5.3.1.1. Pictures of this sprinkler in the condition it was received and an image(s) of the waterway post testing, were made available via a link (active for 90 days) in the results email and are also available upon request. Dyne does NOT evaluate if any narrowing of the waterway is detrimental.

According to the 2020 Edition of NFPA 25 Section 5.3.1.3, "Where one sprinkler within a representative sample fails to meet the test requirement, all sprinklers within the area represented by that sample shall be replaced." If all sprinklers within a representative sample meet the test requirements and the sprinklers represented by that sample remain in service, they shall be listed for use in your system/application and must be resampled and retested in 5 or 10 years (depending on sprinkler type and environment) in accordance with NFPA 25 2020 Ed. 5.3.1.



Kyle Mykkeltvedt, Lab Analyst



It is the responsibility of the property owner or designated representative to ensure the sample information is correct (brand, type, etc.) and to correct deficiencies or impairments, including identifying and replacing any recalled products. The results relate only to the sample tested using a limited number of laboratory-scale methods and do not guarantee the system will operate properly. For further explanation, see LBTR-4402 at www.dyneusa.com. This report shall not be reproduced except in full, without the written consent of Dyne Technologies, LLC.



Attachment #5: Technical Committee Roster

Address List No Phone

09/06/2024

Chad Duffy

INM-AAA

Inspection, Testing, and Maintenance of Water-Based Systems

Bradford T. Cronin Chair Strategic Code Solutions LLC. 182 Summer Street Suite 355 Kingston, MA 02364 Rhode Island Association of Fire Marshals	E 4/2/2020 INM-AAA	Niels Henrik Abrahamsen Principal Vid Fire-Kill Svalbardvej 13 Svendborg, FYN 5700 Denmark International Water Mist Association	M 12/07/2018 INM-AAA
Kerry M. Bell Principal UL LLC 333 Pfingsten Road Northbrook, IL 60062-2096 Alternate: Jeff Hebenstreit	RT 1/1/1991 INM-AAA	Tracey D. Bellamy Principal Telgian Corporation 900 Circle 75 Parkway Suite 680 Atlanta, GA 30339-3084 The Home Depot Alternate: Tammy Mayo	U 10/18/2011 INM-AAA
John D. Campbell Principal Global Fire Protection Group, LLC 732 Spring Crest Court Fenton, MO 63026-3920 NFPA Industrial Fire Protection Section Alternate: Stephen M. Jaskolka	U 12/02/2020 INM-AAA	Corey Certain Principal Siemens 2201 Crownpoint Executive Dr Building 2, Suite K Charlotte, NC 28227 Alternate: Lee Zajac Hamilton	M 08/08/2019 INM-AAA
Shane M. Clary Principal Bay Alarm Company 5130 Commercial Circle Concord, CA 94520-8522 Automatic Fire Alarm Association, Inc. Alternate: Christopher M. Campion	M 08/24/2021 INM-AAA	David A. Dagenais Principal Partners/Wentworth-Douglass Hospital 789 Central Avenue Dover, NH 03820 NFPA Health Care Section	U 10/28/2014 INM-AAA
Nicholas A. Dawe Principal Cobb County Fire Marshal's Office 1595 County Services Parkway Marietta, GA 30008 International Fire Marshals Association (IFMA) Alternate: Kip LaMotte	E 08/23/2023 INM-AAA	Richard L. Day Principal Michigan State Fire Marshal's Office 207 Jackson Street Allegan, MI 49010-9156 Alternate: Scott E. Burke	E 04/03/2019 INM-AAA
Ryan Fick Principal Intel Corporation 2501 NE Century Boulevard RA13-CUB4-201 Hillsboro, OR 97124 Alternate: Justin Lee Espinosa	U 04/14/2021 INM-AAA	David W. Frable Principal US General Services Administration Public Buildings Service 665 Green Meadow Lane Geneva, IL 60134 Alternate: Todd M. Roeder	U 03/07/2013 INM-AAA

Address List No Phone

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Inspection, Testing, and Maintenance of Water-Based Systems

Brandon W. Frakes	I 10/23/2013	Christina F. Francis	U 12/07/2021
Principal AXA XL/Global Asset Protection Services, LLC 127 N. Wildcat Run Court Advance, NC 27006	INM-AAA	Principal Tesla 2415 Moores Mill Road Suite 265-170 Auburn, AL 36830 Alternate: Timothy Patrick Hennessey	INM-AAA
Scott Futrell	SE 12/06/2019	Greg Garber	M 10/28/2008
Principal KFI Engineers 670 County B Road, West Roseville, MN 55113 Alternate: Charles B. Sullivan	INM-AAA	Principal Pittsburg Tank & Tower Group 624 San Marcos Lane Virginia Beach, VA 23451	INM-AAA
Larry Keeping	SE 1/1/1992	Kevin J. Kelly	M 08/08/2019
Principal PLC Fire Safety Engineering 4 Robert Speck Parkway Suite 1500 Mississauga, ON L4Z 1S1 Canada Alternate: Russell P. Fleming	INM-AAA	Principal Victaulic 4901 Kesslersville Road Easton, PA 18040-6714 Fire Suppression Systems Association Alternate: Scott Bailey	INM-AAA
Charles W. Ketner	L 1/10/2008	William E. Koffel	SE 10/20/2010
Principal National Automatic Sprinkler Fitters LU 669 Joint Apprenticeship & Training Committee 7050 Oakland Mills Road Columbia, MD 20732 United Assn. of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry Alternate: Jeffrey J. Van Rhyn, Jr.	INM-AAA	Principal Koffel Associates, Inc. 8815 Centre Park Drive Suite 200 Columbia, MD 21045-2107 Alternate: Adam R. Graybeal	INM-AAA
Bryan Edwin Matthews	I 08/24/2021	Joshua P. McDonald	IM 08/23/2023
Principal Liberty Mutual Group 16767 County Route 181 Clayton, NY 13624 Alternate: Timothy Dwain Schmidle	INM-AAA	Principal American Fire Sprinkler Association(AFSA) 12750 Merit Drive Suite 350 Dallas, TX 75251 Alternate: Kevin R. Hall	INM-AAA
Travis M. Montembeault	M 11/29/2023	John D. Munno	U 7/1/1994
Principal Peerless Pump 2005 Dr. MLK Jr. Street Indianapolis, IN 46202	INM-AAA	Principal Arthur J. Gallagher Risk Management Services, Inc. 615 East Britton Road Oklahoma City, OK 73114 Edison Electric Institute	INM-AAA

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Scott Newman	U 04/08/2015	Brian L. Olsen	U 08/10/2022
Principal Walgreens 1411 Lake Cook Road MS #L411 Deerfield, IL 60015-5213	INM-AAA	Principal Phillips 66 20414 North 4030 Road Bartlesville, OK 74006 American Petroleum Institute	INM-AAA
Erik G. Olsen	I 03/03/2014	Matthew Osburn	IM 04/14/2021
Principal Chubb Limited 132 Naughtright Road Long Valley, NJ 07853-3277 Alternate: Kevin Hornyak	INM-AAA	Principal Canadian Automatic Sprinkler Association (CASA) 315 Renfrew Drive Suite 302 Markham, ON L3R 9S7 Canada	INM-AAA
Damon T. Pietraz	IM 8/9/2011	Charles David Raborn	E 11/30/2016
Principal Underwood Fire Equipment, Inc. 48216 Frank Street Wixom, MI 48393	INM-AAA	Principal Cape Coral Fire Department P.O. Box 150027 Cape Coral, FL 33915 Alternate: Brian Hawthorne	INM-AAA
Richard M. Ray	IM 7/28/2006	Steve Rustenburg	IM 04/12/2022
Principal Cybor Fire Protection Company 5123 Thatcher Road Downers Grove, IL 60515-4029 Illinois Fire Prevention Association Alternate: David R. Baron	INM-AAA	Principal Academy Fire 42 Broadway 2nd Floor Lynbrook, NY 11563 National Association of Fire Equipment Distributors Alternate: Drew Slocum	INM-AAA
John F. Saidi	U 1/1/1991	Piya Sawangpanich	SE 03/20/2023
Principal USDOE Stanford Site Office Bay Area Site Office (BASO) Lawrence Berkeley National Laboratory 400 Jonathan Ridge Danville, CA 94506	INM-AAA	Principal P.S Grand Group Co., Ltd. 2/85 Bangkhuntien16 Thailand, BANGKOK 10150 Thailand	INM-AAA
Leslie D. Scott	SE 08/08/2019	Manuel R. Silva	M 12/07/2022
Principal Tank Industry Consultants P.O. Box 2069 Atascadero, CA 93423 Alternate: Patrick Jon Brown	INM-AAA	Principal Johnson Controls 1467 Elmwood Avenue Cranston, RI 02910-3849 Alternate: Eric Ricker	INM-AAA

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Inspection, Testing, and Maintenance of Water-Based Systems

George W. Stanley	IM 1/10/2008	Dennis Sullivan	M 04/14/2021
Principal Wiginton Fire Protection Engineering, Inc. 699 Aero Lane Sanford, FL 32771 National Fire Sprinkler Association Contractor Alternate: Vincent Powers	INM-AAA	Principal Marioff North America 400 Main Street Ashland, MA 01721 Alternate: Jussi Nygard	INM-AAA
Stephanie C. Thomas	I 04/14/2021	Franklin True	U 04/14/2021
Principal FM 270 Central Avenue Johnston, RI 02919 Alternate: David B. Fuller	INM-AAA	Principal US Department of Veterans Affairs Veterans Health Administration 13 McKinney Road Harpwell, ME 04079 Alternate: James Kemp	INM-AAA
Terry L. Victor	I 04/05/2001	Cary M. Webber	M 08/17/2018
Principal Risk Suppression Partners, LLC 3621 Carrollton Road Upperco, MD 21155 Alternate: Wilton Marburger	INM-AAA	Principal Reliable Automatic Sprinkler 1470 Smith Grove Road Liberty, SC 29657 National Fire Sprinkler Association Manufacturer Alternate: Brandon Telford	INM-AAA
Natalie Whalen	I 12/07/2022	John Whitney	M 10/27/2005
Principal Swiss Re Corporate Solutions 5515 Burlinghall Drive Houston, TX 77035 Alternate: Tom Hampton	INM-AAA	Principal Clarke Fire Protection Products, Inc. 100 Progress Place Cincinnati, OH 45246-1718 Alternate: John T. Whitney, III	INM-AAA
Gabriel Arroyo	I 08/17/2017	Bruce G. Campbell	SE 08/10/2022
Voting Alternate American International Group, Inc (AIG) 8834 Saratoga Drive Sugar Land, TX 77479	INM-AAA	Voting Alternate Jensen Hughes 112 Rancho Bueno Drive Georgetown, TX 78628-9523	INM-AAA
Joseph M. Flynn	E 08/10/2022	Scott Bailey	M 08/11/2020
Voting Alternate Town of North Attleboro Fire Department 65 E. Washington Street, #2111 North Attleboro, MA 02760	INM-AAA	Alternate Koorsen Fire & Security 2719 North Arlington Avenue Indianapolis, IN 46218-3322 Fire Suppression Systems Association Principal: Kevin J. Kelly	INM-AAA

Address List No Phone

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Inspection, Testing, and Maintenance of Water-Based Systems

David R. Baron	IM 8/9/2011	Patrick Jon Brown	SE 10/29/2012
Alternate Global Fire Protection Company 5121 Thatcher Road Downers Grove, IL 60515 Illinois Fire Prevention Association Principal: Richard M. Ray	INM-AAA	Alternate Tank Industry Consultants 7740 West New York Street Indianapolis, IN 46214 Principal: Leslie D. Scott	INM-AAA
Scott E. Burke	E 04/17/2024	Christopher M. Campion	M 04/12/2022
Alternate Holston Army Ammunition Plant (HAAP) Fire Department/Centerra Group LLC 510 Maple Avenue E Big Stone Gap, VA 24219 Principal: Richard L. Day	INM-AAA	Alternate Eastern Fire & Safety, LLC 914 Woodcrest Drive Spring Lake Heights, NJ 07762-2250 Automatic Fire Alarm Association, Inc. Principal: Shane M. Clary	INM-AAA
Justin Lee Espinosa	U 11/29/2023	Russell P. Fleming	SE 08/17/2017
Alternate Intel Corporation 21461 NW Kenai Court Portland, OR 97229 Principal: Ryan Fick	INM-AAA	Alternate Northeast Fire Suppression Associates, LLC 157 School Street PO Box 435 Keene, NH 03431 Principal: Larry Keeping	INM-AAA
David B. Fuller	I 10/27/2005	Adam R. Graybeal	SE 11/29/2023
Alternate FM Approvals 743 Reynolds Road West Glocester, RI 02814 Principal: Stephanie C. Thomas	INM-AAA	Alternate Koffel Associates, Inc. 8815 Centre Park Drive Suite 200 Columbia, MD 21045 Principal: William E. Koffel	INM-AAA
Kevin R. Hall	IM 08/23/2023	Lee Zajac Hamilton	M 03/20/2023
Alternate American Fire Sprinkler Association(AFSA) 3206 Fait Avenue Baltimore, MD 21224 Principal: Joshua P. McDonald	INM-AAA	Alternate Siemens Building Technologies 12515 Research Boulevard Suite 250 Austin, TX 78759 Principal: Corey Certain	INM-AAA
Tom Hampton	I 08/23/2023	Brian Hawthorne	E 11/29/2023
Alternate Swiss Re 222 West Adams Street Suite 3000 Chicago, IL 60606 Principal: Natalie Whalen	INM-AAA	Alternate Clermont Fire Department 439 W. Highway 50 Clermont, FL 34711 Principal: Charles David Raborn	INM-AAA

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Inspection, Testing, and Maintenance of Water-Based Systems

Jeff Hebenstreit	RT 08/11/2014	Timothy Patrick Hennessey	M 11/29/2023
Alternate UL LLC 484 Tamarach Drive Edwardsville, IL 62025-5246 Principal: Kerry M. Bell	INM-AAA	Alternate Tesla, Inc. 45500 Fremont Boulevard Fremont, CA 94538 Principal: Christina F. Francis	INM-AAA
Kevin Hornyak	I 08/10/2022	Stephen M. Jaskolka	U 8/17/2017
Alternate Chubb Insurance Group 4192 Inlet Road Marietta, GA 30066 Principal: Erik G. Olsen	INM-AAA	Alternate Haines Fire & Risk Consultants 10 Tidswell Avenue Building A Second Floor Medford, NJ 08055 NFPA Industrial Fire Protection Section Principal: John D. Campbell	INM-AAA
James Kemp	U 08/29/2024	Kip LaMotte	E 04/17/2024
Alternate Department of Veterans Affairs 8 Mill Pond Road Milford, NJ 08848 Principal: Franklin True	INM-AAA	Alternate New Brighton Fire Division 552 10th Avenue, NW New Brighton, MN 55112 International Fire Marshals Association (IFMA) Principal: Nicholas A. Dawe	INM-AAA
Wilton Marburger	I 10/29/2012	Tammy Mayo	U 12/07/2022
Alternate Risk Suppression Partners 2102 Kimberton Road, Unit 966 Kimberton, PA 19442 Principal: Terry L. Victor	INM-AAA	Alternate Telgian 10230 S. 50th Place Suite 100 Phoenix, AZ 85044 The Home Depot Principal: Tracey D. Bellamy	INM-AAA
Jussi Nygard	M 04/14/2021	Vincent Powers	IM 12/06/2019
Alternate UTC/Marioff/Carrier Ayritie 24 PI 1002 Vantaa, UUSIMAA 01511 Finland Carrier/UTC Principal: Dennis Sullivan	INM-AAA	Alternate National Fire Sprinkler Association (NFSA) 514 Progress Drive Linthicum, MD 21090 National Fire Sprinkler Association Contractor Principal: George W. Stanley	INM-AAA
Eric Ricker	M 08/29/2024	Todd M. Roeder	U 03/03/2014
Alternate Johnson Controls Intl. 184 Moross Road Street Address 2 Grosse Pointe Farms, MI 48236 Principal: Manuel R. Silva	INM-AAA	Alternate US General Services Administration 9989 McClarden Court Fishers, IN 46040-5507 Principal: David W. Frable	INM-AAA

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09/06/2024

Chad Duffy

INM-AAA

Inspection, Testing, and Maintenance of Water-Based Systems

Timothy Dwain Schmidle	I 04/04/2017	Drew Slocum	IM 08/23/2023
Alternate	INM-AAA	Alternate	INM-AAA
Liberty Mutual Group Prop 489 S Smyser Rd Wooster, OH 44691 Principal: Bryan Edwin Matthews		Inspect Point / NYFSCA 6 Heritage Drive Stonington, CT 06378 National Association of Fire Equipment Distributors Principal: Steve Rustenburg	
Charles B. Sullivan	SE 11/29/2023	Brandon Telford	M 08/23/2023
Alternate	INM-AAA	Alternate	INM-AAA
Advanced Engineering Investigations Corporation (AEI Corporation) 8197 W. Brandon Drive Littleton, CO 80125 Principal: Scott Futrell		Reliable Automatic Sprinkler 511 E. Glenmare Drive Middletown, DE 19709 National Fire Sprinkler Association Manufacturer Principal: Cary M. Webber	
Jeffrey J. Van Rhyn, Jr.	L 04/11/2018	John T. Whitney, III	M 10/23/2013
Alternate	INM-AAA	Alternate	INM-AAA
Local 669 JATC Technology and Code Coordinator 3713 Vincelli Avenue North Las Vegas, NV 89031 United Assn. of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry Principal: Charles W. Ketner		Clarke Fire Protection Products, Inc. 100 Process Place Cincinnati, OH 45246-1718 Principal: John Whitney	
Cecil Bilbo, Jr.	SE 03/05/2012	Robert G. Caputo	IM 3/4/2009
Nonvoting Member	INM-AAA	Nonvoting Member	INM-AAA
Academy of Fire Sprinkler Technology, Inc. President 101 South Main Street Suite 001 Decatur, IL 62523		American Fire Sprinkler Association (AFSA) 1410 E. Renner Road Suite 150 Richardson, TX 75082 TC on Sprinkler System Installation Criteria	
Rohit "Rik" Khanna	C 10/1/1999	Thomas F. Norton	IM 7/1/1996
Nonvoting Member	INM-AAA	Nonvoting Member	INM-AAA
US Consumer Product Safety Commission (CPSC) Voluntary Standards Specialist 5 Research Place Rockville, MD 02085 US Consumer Product Safety Commission (CPSC)		Norel Service Company, Inc. 223 Laws Brook Road Apartment 312 Concord, MA 01742-2082	
Chad Duffy	3/1/2016		
Staff Liaison	INM-AAA		
National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169-7471			