Public Input No. 165-NFPA 25-2020 [Global Input]

If the language proposed in PI 160 is accepted in chapter 13, the term "main drain test" should be replaced throughout the standard with "water supply status test".

Statement of Problem and Substantiation for Public Input

If accepted, PI 160 would change the "main drain test" requirement to a "water supply test" requirement. This will need to be reflected in each of the summary tables and other references in the standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 160-NFPA 25-2020 [Section No. 13.2.3]	Main code change

Submitter Information Verification

Submitter Full Name: Jason Webb

Organization: Potter Electric Signal Company

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 25 12:53:04 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The "main drain test" terminology is well understood throughout the industry and changing this term might add confusion.

Public Input No. 224-NFPA 25-2020 [Global Input]

Change the term "inspectors test valve" with 'inspectors test connection" throughout to bring uniformity to the standard. Examples are 5.3.3.3 and 5.3.3.4.2 (use ITC), 13.2.4.5 and 13.2.4.6 (use ITV)

Statement of Problem and Substantiation for Public Input

Inspector's Test Connection: recommend that the NFPA 25 technical committee submit to the NFPA 13 technical committee a public input to define and update their references to Inspector's Test Connection.

Submitter Information Verification

Submitter Full Name: Jeff Lewis
Organization: VSC Fire & Security
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:09:27 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-111-NFPA 25-2020
Statement: Inspector's Test Connection includes the entire assembly used for testing. This provides uniformity throughout the document.

Public Input No. 169-NFPA 25-2020 [Section No. 1.1.1]

1.1.1 Coordination with *NFPA 72* Testing Requirements.(If NFPA 72 is applicable to this property)

1.1.1.1

The inspection, testing, and maintenance required by this standard and *NFPA 72* shall be coordinated so that the system operates as intended.

1.1.1.2*

All inspections, testing, and maintenance required by *NFPA 72* shall conform to *NFPA 72*, and all inspections, testing, and maintenance required by this standard shall conform to this standard.

1.1.1.3

This standard does not address all of the inspection, testing, and maintenance of the electrical components of the automatic fire detection equipment used to activate preaction and deluge systems that are addressed by *NFPA 72*.

Statement of Problem and Substantiation for Public Input

The current language makes it appear all properties have a NFPA 72 system installed. There are systems where no NFPA 72 system is installed. A note or annex material is needed to state coordination with NFPA 72 is required where a NFPA 72 system is installed.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 08:43:59 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: It is not necessary to make this statement; it is up to the local authorities to apply the adopted fire alarm code. The location of the proposed text is not acceptable according to the MOS.

Public Input No. 240-NFPA 25-2020 [Section No. 1.1.3.1]

1.1.3.1*

~~This standard does not require the inspector~~ Unless otherwise specifically stated in this standard the inspector is not required to verify the adequacy or accuracy of the design or installation of the system.

Statement of Problem and Substantiation for Public Input

There is still confusion about the role of the inspector and what is expected during a periodic inspection and/or test. The current statement in section 1.1.3.1 has been in NFPA 25 since the 2011 edition and the technical committee understands that it's also to be applied to the accuracy of the design and installation. The expectation is that the system was designed and installed correctly and both the design and the installation were approved in accordance with the applicable standard at the time of installation. However, since the installation isn't specifically mentioned in this section, many building owners believe the inspector is looking at the installed system for compliance to the installation standard. The proposed change should clear up remaining misconceptions about the role of the inspector performing inspections and tests per NFPA 25.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 242-NFPA 25-2020 [Section No. A.1.1.3.1]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:52:41 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 does not require the inspector to determine the accuracy of the design anywhere in the standard however, some ITM activities require comparing current results to that of the original design. The addition of accuracy or installation to the body of the standard is not necessary.

Public Input No. 168-NFPA 25-2020 [Chapter 2]

Chapter 2 Referenced Publications

2.1 General.

The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam,* 2016 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems,* 2019 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes,* 2019 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems,* 2019 edition.

NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection,* 2017 edition.

NFPA 16, *Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems,* 2019 edition.

NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection,* 2019 edition.

NFPA 22, *Standard for Water Tanks for Private Fire Protection,* 2018 edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances,* 2019 edition.

NFPA*70E*®, *Standard for Electrical Safety in the Workplace*®*,* 2018 edition.

NFPA 72®, *National Fire Alarm and Signaling Code*®*,* 2019 edition.

NFPA *101*®, *Life Safety Code*®*,* 2018 edition.

NFPA 110, *Standard for Emergency and Standby Power Systems,* 2019 edition.

NFPA 307, *Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves,* 2016 edition.

NFPA 409, *Standard on Aircraft Hangars,* 2016 edition.

NFPA 750, *Standard on Water Mist Fire Protection Systems,* 2019 edition.

NFPA 1962, *Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances,* 2018 edition.

2.3 Other Publications.

2.3.1 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM D975, *Standard Specification for Diesel Fuel Oils*, 2015.

ASTM D3359, *Standard Test Methods for Rating Adhesion by Tape Test*, 2017.

ASTM D6751, *Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels*, 2015ce1.

ASTM D7462, *Standard Test Method for Oxidation Stability of Biodiesel (B100) and Blends of Biodiesel with Middle Distillate Petroleum Fuel (Accelerated Method)*, 2011.

2.3.2 CGA Publications.

Compressed Gas Association, 14501 George Carter Way, Suite 103, Chantilly, VA 20151.

CGA C-6, *Standard for Visual Inspection of Steel Compressed Gas Cylinders,* 2013.

2.3.3 HI Publications.

Hydraulic Institute, 6 Campus Drive, First Floor North, Parsippany, NJ 07054-4405.

HI 3.6, *Rotary Pump Tests*, 2016.

2.3.4 Other Publications.

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

2.4 References for Extracts in Mandatory Sections.

NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam,* 2016 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems,* 2019 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems,* 2019 edition.

NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection,* 2017 edition.

NFPA 16, *Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems,* 2019 edition.

NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection,* 2019 edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances,* 2019 edition.

NFPA 72®, National Fire Alarm and Signaling Code®, 2019 edition.

NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations,* 2017 edition.

NFPA 110, *Standard for Emergency and Standby Power Systems,* 2019 edition.

NFPA 750, *Standard on Water Mist Fire Protection Systems,* 2019 edition.

NFPA 820, *Standard for Fire Protection in Wastewater Treatment and Collection Facilities,* 2020 edition.

NFPA 1141, *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas,* 2017 edition.

NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting,* 2017 edition.

NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles,* 2017 edition.

Statement of Problem and Substantiation for Public Input

Update all reference documents to the current edition unless there is a specific reason not to update a specific reference.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:

Submittal Date: Fri Jun 26 08:32:32 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-89-NFPA 25-2020
Statement: Updated references.

Public Input No. 61-NFPA 25-2020 [Section No. 2.3.1]

2.3.1 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM D975, *Standard Specification for Diesel Fuel Oils*, 2015.

ASTM D3359, *Standard Test Methods for Rating Adhesion by Tape Test*, 2017.

ASTM D6751, *Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels*, 2015ce1.

~~ASTM D7462, *Standard Test Method for Oxidation Stability of Biodiesel (B100) and Blends of Biodiesel with Middle Distillate Petroleum Fuel (Accelerated Method)* , 2011.~~

Statement of Problem and Substantiation for Public Input

This standard has been withdrawn as of July 2016 with no replacement: "because the method has limited use; efforts to obtain sufficient laboratories to conduct an interlaboratory study and develop a precision statement have not been successful since the test method was first approved in 2009."

Submitter Information Verification

Submitter Full Name: Grant Lobdell
Organization: Dyne Fire Protection Labs
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 19 14:35:49 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-89-NFPA 25-2020
Statement: Updated references.

Public Input No. 62-NFPA 25-2020 [Section No. 2.3.4]

2.3.4 Other Publications.

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

ISO-17025 General Requirements for the Competence of Testing and Calibration Laboratories, 2017 Edition.

Statement of Problem and Substantiation for Public Input

In another public input this standard is referenced so if that comment is accepted, it should be shown here.

Submitter Information Verification

Submitter Full Name:	Grant Lobdell
Organization:	Dyne Fire Protection Labs
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 19 14:41:28 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: The reference was not added to the body of the standard, therefore it is not needed in Chapter 2.

Public Input No. 91-NFPA 25-2020 [New Section after 3.3.11.2]

Definition Exercise

3.3.XX Exercise . A particular movement or series of movements applied to system components to ascertain their operational status and functionality.

A.3.3.XX Exercise. Examples of exercising components could include operating control valves through their range of motion, operating system components or moving a valve from its seat.

Statement of Problem and Substantiation for Public Input

The word exercise has increased in usage with the 2020 edition but there is no definition. There are one or two uses of this term in the document regarding judgment, changing the word from exercise to applied will limit its use to equipment only and can be easier defined.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 104-NFPA 25-2020 [Section No. A.5.2.2.1]	
Public Input No. 105-NFPA 25-2020 [Section No. A.13.5.2.2]	
Public Input No. 104-NFPA 25-2020 [Section No. A.5.2.2.1]	
Public Input No. 105-NFPA 25-2020 [Section No. A.13.5.2.2]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Association
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 03 15:10:13 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-2-NFPA 25-2020

Statement: The word "exercise" is frequently used throughout the standard and there is no definition currently that constitutes what exercising entails.

Public Input No. 170-NFPA 25-2020 [Section No. 3.3.12]

3.3.12 Fire Department Connection.

A connection through which the fire department can pump supplemental or primary water into the sprinkler system, standpipe, or other system furnishing water for fire extinguishment to supplement existing or be the primary water supplies.

Statement of Problem and Substantiation for Public Input

For certain systems, the fire department connection is the primary water supply. A manual dry standpipe systems in accordance with NFPA 14 is one example. The definition needs to be adjust to account for these situations.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Fri Jun 26 08:50:27 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-3-NFPA 25-2020

Statement: The text “to supplement existing water supplies” has been deleted as it is redundant. The fire department connections for manual standpipes are the primary water supply.

Public Input No. 250-NFPA 25-2020 [New Section after 3.3.15]

3.3.15 Heating Season.* The time of year when the outside air temperature falls below 40°F (4.0°C) requiring supplemental heat or other measures to protect water-based systems from freezing.

Statement of Problem and Substantiation for Public Input

There were numerous changes made in the 2020 edition that tied inspection and testing activities to either before the heating season begins or during the heating season. This definition will help the user know when this term applies.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 251-NFPA 25-2020 [New Section after A.3.3.14]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 11:28:14 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The definition is not necessary, the standard clearly identifies when action needs to be taken based on temperatures.

Public Input No. 262-NFPA 25-2020 [Section No. 3.3.25]

3.3.25* Inspection, Testing, and Maintenance Service.

A service program provided by a qualified contractor ~~or~~ , qualified person, or qualified property owner's representative in which all components unique to the property's systems are inspected and tested at the required times and necessary maintenance is provided.

Statement of Problem and Substantiation for Public Input

To ensure the person performing these activities are qualified.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 261-NFPA 25-2020 [Section No. 3.3.36]	qualified person

Submitter Information Verification

Submitter Full Name: Kenneth Schneider
Organization: Ua - Itf
Affiliation: United Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 13:40:51 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-4-NFPA 25-2020
Statement: The revision to this definition clarifies that those performing any ITM must be qualified.

Public Input No. 151-NFPA 25-2020 [New Section after 3.3.28]

3.3.29* Mechanical Injury.

Building spaces, situations, processes, or events that could subject a sprinkler head to damage.

Statement of Problem and Substantiation for Public Input

NFPA 13:16.2.6 uses the term “mechanical injury”. For consistency we are using the same terminology in this proposed change to NFPA 25. This term is not defined within any NFPA document. This code change proposes a definition for this term to eliminate any ambiguity on what may constitute “mechanical injury”. A coordinating annex section will describe and list some of these spaces, situations, and events specifically.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 152-NFPA 25-2020 [New Section after A.3.3.27]	

Submitter Information Verification

Submitter Full Name: Aaron Johnson
Organization:
Affiliation: SprinkGUARD
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 22 17:08:52 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The term “mechanical injury” is not used in the standard. The definition does not relate to the term, it is identifying spaces where mechanical injury might occur. The annex is very broad and would not have any practical application.

Public Input No. 88-NFPA 25-2020 [Section No. 3.3.32]

3.~~3~~ 5 .~~32~~ XX * Pressure-Regulating Device.

A device designed for the purpose of reducing, regulating, controlling, or restricting water pressure. [**14,** 2019]

Statement of Problem and Substantiation for Public Input

Group all pressure reducing and restricting valves/devices together in Chapter 3 under 3.5.XX. Grouping these definitions together allows easier identification of what type of valve or device is in question.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 89-NFPA 25-2020 [Section No. 3.3.33]	
Public Input No. 89-NFPA 25-2020 [Section No. 3.3.33]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 02 19:32:19 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-7-NFPA 25-2020
Statement: Relocate under 3.5 Valve Definitions.

Public Input No. 89-NFPA 25-2020 [Section No. 3.3.33]

3.~~3~~ 5 .~~33~~ XX Pressure-Restricting Device.

A valve or device designed for the purpose of reducing the downstream water pressure under flowing (residual) conditions only. [**14**, 2019]

Statement of Problem and Substantiation for Public Input

Group all pressure reducing and restricting valves/devices together in Chapter 3 under 3.5.XX. Grouping these definitions together allows easier identification of what type of valve or device is in question.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 88-NFPA 25-2020 [Section No. 3.3.32]	
Public Input No. 88-NFPA 25-2020 [Section No. 3.3.32]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 02 19:34:12 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-6-NFPA 25-2020

Statement: Relocate under 3.5 Valve Definitions.

Public Input No. 261-NFPA 25-2020 [Section No. 3.3.36]

3.3.36 ~~Qualified~~ Qualified Person .

A ~~competent and capable person who has met the requirements and training for a given field acceptable to the AHJ. [**96,** 2017]~~ person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to deal with problems related to the subject matter, the work, or the activity. [20, 2019}

Statement of Problem and Substantiation for Public Input

Where the standard refers to qualified, it pertains to a person performing an activity, however the current definition of qualified is too general in nature. Qualified person is used frequently in this standard, many times referring to fire pumps, so it would be more appropriate to use the definition from NFPA 20 than the definition currently used from NFPA 96. One minor edit to the NFPA 20 definition is to change the word project to activity to be consistent with the tasks of this standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 262-NFPA 25-2020 [Section No. 3.3.25]	
Public Input No. 264-NFPA 25-2020 [New Section after 4.1.1.2]	

Submitter Information Verification

Submitter Full Name: Kenneth Schneider
Organization: Ua - Itf
Affiliation: United Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 13:31:51 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-15-NFPA 25-2020

Statement: The revision to this definition clarifies that those performing any ITM must be qualified.

Public Input No. 66-NFPA 25-2020 [New Section after 3.3.42.18]

3.3.42.19

Sprinkler with Monitoring of Activation (SMA). A sprinkler which is equipped with integral means of monitoring of activation using electricity.

Statement of Problem and Substantiation for Public Input

New types of sprinklers (sprinklers with monitoring of activation) have been recognized by ISO 6182-1

Submitter Information Verification

Submitter Full Name: Leonid Tanklevskiy
Organization: Gefest Enterprise Group
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 01 05:08:48 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This term is not used in the standard.

Public Input No. 17-NFPA 25-2020 [Section No. 3.3.48]

3.3.48* Testing.

A procedure used to determine the operational status of a component or system by conducting periodic physical checks~~, such as waterflow tests, fire pump tests, alarm tests, and trip tests of dry pipe, deluge, or preaction valves~~ .

Statement of Problem and Substantiation for Public Input

In keeping with Manual of Style, examples have been removed from this definition and re-incorporated in the accompanying annex note.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 18-NFPA 25-2020 [Section No. A.3.3.48]	
Public Input No. 18-NFPA 25-2020 [Section No. A.3.3.48]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 05 15:35:51 EST 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-8-NFPA 25-2020
Statement: Examples should be in the annex to align with the MOS.

Public Input No. 90-NFPA 25-2020 [New Section after 3.5.6.1]

Definition

Water Control Valve. A valve that activates to allow water flow to the water-based fire protection system and devices

Statement of Problem and Substantiation for Public Input

Dry Valves, Preaction Valves, and Deluge Valves are recognized by UL as Water Control Valves. As such the castings/placards on these valves are often marked as “Water Control Valves”. By changing the definition of control valve to a valve that stops water flow rather than controls water flow these valves are specifically unincluded by that definition. A new definition needs to be established for Water Control Valves. This definition will be included in the 2022 edition of NFPA 13

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 02 19:39:07 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-9-NFPA 25-2020

Statement: Dry Valves, Preaction Valves, and Deluge Valves are recognized by UL as Water Control Valves. As such, the castings/placards on these valves are often marked as “Water Control Valves”. Control Valve does not apply, so it is appropriate to provide a definition for these valves.

Public Input No. 67-NFPA 25-2020 [Section No. 3.6.4 [Excluding any Sub-Sections]]

A system, commonly activated by heat from a fire **or via electric signal** and discharges water over the fire area, that consists of an integrated network of piping designed in accordance with fire protection engineering standards that includes a water supply source, a water control valve, a waterflow alarm, and a drain. The portion of the sprinkler system above ground is a network of specifically sized or hydraulically designed piping installed in a building, structure, or area, generally overhead, and to which sprinklers are attached in a systematic pattern. [**13,** 2019]

Statement of Problem and Substantiation for Public Input

Introducing the definition "Electrically Operated Sprinkler" led to another sprinkler activation method, that is why this information should be reflected in the definition Sprinkler system.

Submitter Information Verification

Submitter Full Name: Leonid Tanklevskiy

Organization: Gefest Enterprise Group

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 01 05:14:06 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: This is a definition of a system which is under the purview of NFPA 13. It is extracted from NFPA 13 into NFPA 25.

Public Input No. 239-NFPA 25-2020 [Section No. 4.1.1 [Excluding any Sub-Sections]]

The property owner or designated representative shall be responsible for properly inspecting, testing and maintaining ~~a~~ water-based fire protection ~~system~~ systems as well as managing impairments in accordance with this Standard .

Statement of Problem and Substantiation for Public Input

As written the provisions of 4.1.1 could imply that the owner is only responsible for maintenance and not the inspection, testing and management of impairments for water based fire protection systems.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:46:24 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-12-NFPA 25-2020
Statement: Clarifies that the owner is responsible for maintenance and the inspection, testing and management of impairments for water-based fire protection systems.

Public Input No. 92-NFPA 25-2020 [New Section after 4.1.1.1]

4.1.1.2 Testing not performed in accordance with this standard shall be considered a non-critical deficiency.

Statement of Problem and Substantiation for Public Input

To properly enforce the requirements of NFPA 25, testing procedures not performed should be considered a non-critical deficiency. Many AHJ's rely on contractors to perform requirements within the standard documenting testing work not completed on reports will assist building owners and AHJ's in having more compliant systems.

Submitter Information Verification

Submitter Full Name:	Vincent Powers
Organization:	National Fire Sprinkler Association
Affiliation:	NFSA Engineering and Standards Committee
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 03 15:19:04 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: It is up to the owner to maintain their system and meet the required ITM frequencies.

Public Input No. 174-NFPA 25-2020 [New Section after 4.1.1.2]

4.1.1.2.2

Any portion or all of the inspection, testing, and maintenance can be permitted to be contracted with an inspection, testing, and maintenance service. When an inspection, testing, and maintenance service company agrees to perform inspections, testing, and maintenance at a specific frequency required by this standard, the inspection, testing, and maintenance service company shall perform all inspections, tests, and maintenance that are required more frequently than the specified frequency. For example, the ITM service provider agrees to perform required inspections, tests, and maintenance on a daily, weekly, quarterly, and semiannual frequency should also be performed during the annual inspections, tests, and maintenance.

Statement of Problem and Substantiation for Public Input

A very high percentage of inspection, testing, and maintenance is contracted out to inspection, testing, and maintenance service contractors and allowance for these contracts needs to be in the body of the standard not in the Annex. Additionally, the word 'maintenance' was left out of several of the parts of this section that included inspections and testing only and the term maintenance needs to be included inclusively throughout the section.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 175-NFPA 25-2020 [Section No. A.4.1.1]	If PI 174 is not accepted then PI 175 needs to be edited as indicated.
Public Input No. 175-NFPA 25-2020 [Section No. A.4.1.1]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 11:38:10 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This language is inappropriate for the body of the standard and does not meet the MOS. This language should remain as annex.

Public Input No. 264-NFPA 25-2020 [New Section after 4.1.1.2]

4.1.1.2.1

Qualified personnel shall include, but not be limited to, one or more of the following:

(1) Personnel who has met the requirements and training for a given field acceptable to the authority having jurisdiction.

(2)* Personnel who are certified by a nationally recognized fire protection certification organization acceptable to the authority having jurisdiction (3) Personnel who are registered, licensed, or certified by a state or local authority.

A4.1.1.2.1(2) Nationally recognized fire protection certification programs include, but are not limited to, those programs offered by American Society of Sanitary Engineering (ASSE) and the National Institute for Certification in Engineering Technologies (NICET). Note: These organizations and the products or services offered by them have not been independently verified by the NFPA, nor have the products or services been endorsed or certified by the NFPA or any of its technical committees.

Substantiation: to provide better clarification of nationally recognized certification organizations.

Statement of Problem and Substantiation for Public Input

Adding a section to further define qualified personnel in conjunction with the general requirement from NFPA 20, to ensure those who are performing the activities have the appropriate training and skills required to ensure these life safety systems are inspected, tested and maintained per this standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 261-NFPA 25-2020 [Section No. 3.3.36]	Qualified Person per NFPA 20, 2019
Public Input No. 266-NFPA 25-2020 [Section No. 4.1.5.2]	

Submitter Information Verification

Submitter Full Name: Kenneth Schneider
Organization: Ua - Itf
Affiliation: United Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 13:48:38 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-11-NFPA 25-2020

Statement: Renumber the current section 4.1.1.2.1 to 4.1.1.3 and renumber subsequent sections. The new text further clarifies what justifies a qualified person. The annex language was not accepted as it is very North American centric, and this standard is used globally.

Public Input No. 93-NFPA 25-2020 [New Section after 4.1.1.2]

4.1.1.2.1 Automated inspections and testing shall be observed and results analyzed by qualified personnel.

Statement of Problem and Substantiation for Public Input

Where ITM is performed by qualified personnel, does that extend to the results of an automated flow test? Reading and recording a gauge is not specialized work but as automations increase experienced industry needs to be involved in making sure the process of getting the information/action is right.

Submitter Information Verification

Submitter Full Name:	Vincent Powers
Organization:	National Fire Sprinkler Associ
Affiliation:	NFSA Engineering and Standards Committee
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 03 15:26:07 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-10-NFPA 25-2020

Statement: The technical committee agrees that the results of automated inspection and testing must be observed and analyzed by qualified persons. Personnel changed to “persons” to be consistent with other revisions.

Public Input No. 213-NFPA 25-2020 [Section No. 4.1.2]

4.1.2* Freeze Protection.

The property owner or designated representative shall ensure that water-filled piping is maintained at a minimum temperature of 40°F (4°C) unless an ~~approved~~ listed antifreeze solution is utilized.

4.1.2.1*

All areas of the building containing water-filled piping that does not have another means of freeze protection shall be maintained at a minimum temperature of 40°F (4°C).

4.1.2.2*

The requirements of 4.1.2 shall not apply where water-filled piping is located in unconditioned building spaces or areas outside the building envelope and are not subject to freezing.

4.1.2.3

Aboveground water-filled pipes that pass through open areas, cold rooms, passageways, or other areas exposed to temperatures below 40°F (4°C), protected against freezing by insulating coverings, frostproof casings, listed heat tracing systems, or other reliable means, shall be maintained at temperatures between 40°F (4°C) and 120°F (48.9°C).

4.1.2.4

Where other approved means of freeze protection for water-filled piping as described in 4.1.2.3 are utilized, they shall be inspected, tested, and maintained in accordance with this standard.

4.1.2.5

Valve enclosures for preaction valves, deluge valves, and dry pipe valves subject to freezing shall be inspected daily during cold weather to verify a minimum temperature of 40°F (4°C).

4.1.2.5.1

Valve enclosures equipped with low-temperature alarms shall be allowed to be inspected weekly.

4.1.2.5.2

Low-temperature alarms, if installed in valve enclosures, shall be inspected annually at the beginning of the heating season to verify that they are free of physical damage.

Statement of Problem and Substantiation for Public Input

NFPA 13 requires that antifreezes be listed for use in fire sprinklers systems.

Submitter Information Verification

Submitter Full Name: Manuel Silva
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 09:36:37 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-14-NFPA 25-2020

Statement: Chapter 5 provides the requirements associated with anti-freeze.

Public Input No. 32-NFPA 25-2020 [New Section after 4.1.3]

4.1.3.1 Inspection of equipment installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shutdown.

4.1.3.2 Where approved by the authority having jurisdiction, tests of equipment installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shutdown.

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

A.4.1.3.3 Although some specific tasks may be delayed, it is not the intent that all NFPA 25 activities may be deferred. A reasonable attempt should be made to verify that the system is operational. Inspections and tests of equipment and components that are not in the area in which personnel safety may be compromised should still be performed.

Statement of Problem and Substantiation for Public Input

Proposed paragraph 4.1.3.1 already exists in Chapters 5, 7, and 12 for selected components. However, it is not apparent why the application of the paragraph is limited to those specific systems and components. Moving the text to Chapter 4 allows the concept to be used for all systems within the scope of NFPA 25.

NFPA 72, Paragraph 14.4.4.1 allows the application of the concept to test activities as well if approved by the authority having jurisdiction. Proposed paragraph 4.1.3.2 allows the same provisions in NFPA 25.

Paragraph 4.1.3.3 is the result of situations that arose during the COVID-19 public health emergency. Hospitals, with staff that were not able to keep up with tasks directly related to patient care and with portions of the hospital treating very contagious patients, were being told that they had to continue to meet ITM requirements. While one could argue that the language in 4.1.3.1 could apply, the language is more related to industrial operations that included planned shutdowns. Post COVID-19, most hospitals were not going to have a planned shutdown. The provision includes two restrictions: a risk assessment and approval from the AHJ. The proposed Annex note is intended to guide facilities to a point in which only those tasks that directly impact personnel safety should be deferred. Note that this will not address the burden on staff that may already be over-committed but it does address the personnel safety issue to patients, staff, visitors, and contractors. In some instances, some of which were directed by regulators, contractors were not permitted into the the health care facility due to the risk they might pose (if COVID-19 positive) to the patients and staff in the facility.

Submitter Information Verification

Submitter Full Name: William Koffel

Organization: Koffel Associates, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Fri Apr 10 13:41:13 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-13-NFPA 25-2020

Statement: Proposed paragraph 4.9.7 already exists in Chapters 5, 7, and 12 for selected components. Moving the text to Chapter 4 allows the concept to be used for all systems within the scope of NFPA 25.

NFPA 72, Paragraph 14.4.4.1 allows the application of the concept to test activities as well if approved by the authority having jurisdiction. Proposed paragraph 4.1.3.2 allows the same provisions in NFPA 25.

Paragraph 4.1.3.3 is the result of situations that arose during the COVID-19 public health emergency. Hospitals, with staff that were not able to keep up with tasks directly related to patient care and with portions of the hospital treating very contagious patients, were being told that they had to continue to meet ITM requirements. While one could argue that the language in 4.1.3.1 could apply, the language is more related to industrial operations that included planned shutdowns. Post COVID-19, most hospitals were not going to have a planned shutdown. The provision includes two restrictions: a risk assessment and approval from the AHJ. The Annex note is intended to guide facilities to a point in which only those tasks that directly impact personnel safety should be deferred. Note that this will not address the burden on staff that may already be over-committed but it does address the personnel safety issue to patients, staff, visitors, and contractors. In some instances, some of which were directed by regulators, contractors were not permitted into the the health care facility due to the risk they might pose (if COVID-19 positive) to the patients and staff in the facility.

Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]

4.1.3* Accessibility.

The property owner or designated representative shall ~~provide ready accessibility to~~ ensure components of water-based fire protection systems that require inspection, testing, and maintenance are not blocked from view or reach by movable or fixed storage .

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:
State:
Zip:
Submittal Date: Tue Jun 02 18:36:45 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The proposed text is not broad enough to account for all accessibility issues. This text appears to focus only on storage and is not appropriate for Chapter 4.

Public Input No. 273-NFPA 25-2020 [New Section after 4.1.5.1]

4.1.5.1.1 Impairments shall be corrected or repaired as soon as practical.

4.1.5.1.1.1 Until impairments are corrected or repaired an impairment program in accordance with Chapter 15 of this standard shall be implemented.

4.1.5.1.2* Critical deficiencies shall be corrected or repaired within 30 days.

4.1.5.1.2.1* A different timeframe for correcting or repairing critical deficiencies shall be permitted by the AHJ.

4.1.5.1.3* Non-Critical deficiencies shall be corrected or repaired within 90 days.

4.1.5.1.3.1* A different timeframe for correcting or repairing non-critical deficiencies shall be permitted by the AHJ.

Statement of Problem and Substantiation for Public Input

NFPA 25 has no guidance that advises the owner, the AHJ, or other parties what a reasonable time frame is for correcting deficiencies and impairments. Some owners or their designated representative may be misled to believe deficiencies must be repaired immediately and initiate costly repairs needlessly. Others have no urgency to get any deficiencies repaired because the standard doesn't provide this guidance. In every case of correcting deficiencies the AHJ can be consulted if repairs can't be performed within the time frame cited, or the AHJ can adopt their own requirements with time frames different than those in the standard.

Many AHJs have complained about not having enforceable language in NFPA 25 for correcting deficiencies and this new text gives them that language.

Impairments found while performing an inspection or test are considered emergency impairments (15.6.1). Unless the impairment is corrected or repaired immediately, an impairment program in accordance with Chapter 15 is required. In some cases it isn't practical to correct or repair the impairment right away due to the availability of parts and/or labor.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 275-NFPA 25-2020 [New Section after A.4.1.5.1.1]	
Public Input No. 276-NFPA 25-2020 [New Section after A.4.1.5.1.1]	
Public Input No. 277-NFPA 25-2020 [New Section after A.4.1.5.1.1]	
Public Input No. 278-NFPA 25-2020 [New Section after A.4.1.5.1.1]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 14:41:47 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 should not address specific timelines for correcting deficiencies and impairments. This is under the purview of the AHJ, owner, and insuring body.

Public Input No. 172-NFPA 25-2020 [Section No. 4.1.5.1 [Excluding any Sub-Sections]]

> The property owner or designated representative shall correct or repair deficiencies or impairments <u>that they observe or that are brought to their attention through reports and discrepancy proposals submitted by a qualified contractor</u> .

Statement of Problem and Substantiation for Public Input

The current text, and the remainder of the standard, does not provide specific guidance as to how these deficiencies or impairments are observed or communicated to the owner. Because the owner is not a sprinkler system, fire pump, foam system, underground supply, tank, and so on expert they cannot be expected to understand all of the potential deficiencies and / or impairments that can affect their water-based systems. However, when a qualified contractor makes observations there must be direct communication with the owner regarding the deficiency and / or impairment so the owner understands the problem as well as the potential problems that the owner would not be aware of or understand.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 173-NFPA 25-2020 [Section No. A.4.1.5.1]	Adds clarification to Annex for this section.
Public Input No. 173-NFPA 25-2020 [Section No. A.4.1.5.1]	

Submitter Information Verification

Submitter Full Name:	Scott Futrell
Organization:	Futrell Fire Consult & Design, Inc.
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Fri Jun 26 10:43:12 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: The proposed text adds confusion to the requirement. The current requirement is clear and stands on its own—all deficiencies and impairments must be corrected regardless of how they are discovered.

Public Input No. 197-NFPA 25-2020 [Section No. 4.1.5.2]

4.1.5.2

Corrections and repairs shall be performed by qualified maintenance personnel or a qualified ~~contractor~~ individual acceptable to the AHJ .

Statement of Problem and Substantiation for Public Input

The term "qualified" has been modified by the committee to only include the individual (person) and removed contractor from the definition in the 2017 edition. An AHJ can determine that the qualified (person) shall be employed by a qualified contractor, if not the owner. To be consistent the term within NFPA 25, it should only address the individual conducting the ITM tasks.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 23:10:14 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-16-NFPA 25-2020

Statement: The revision makes the requirement all encompassing and aligns with the definition of qualified person(s).

Public Input No. 266-NFPA 25-2020 [Section No. 4.1.5.2]

4.1.5.2

Corrections and repairs shall be performed by ~~qualified maintenance personnel or a qualified contractor~~ qualified personnel .

Statement of Problem and Substantiation for Public Input

removed maintenance or a qualified contractor to clarify and simplify that corrections and repairs need to be made by qualified personnel per 4.1.1.2.1

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 264-NFPA 25-2020 [New Section after 4.1.1.2]	Qualified Personnel

Submitter Information Verification

Submitter Full Name: Kenneth Schneider
Organization: Ua - Itf
Affiliation: United Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 13:58:58 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-16-NFPA 25-2020

Statement: The revision makes the requirement all encompassing and aligns with the definition of qualified person(s).

Public Input No. 142-NFPA 25-2020 [New Section after 4.1.6]

Notification of Authority Having Jurisdiction

Any time that a chance in occupancy or hazard classification is made, the building owner or the sprinkler installer shall notify the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

In industrial or storage settings, we have seen multiple instances of changes in occupancy or hazard classification without notification made to the AHJ. In recent times, a fire in an industrial warehouse located just outside of Parkersburg, WV was being used for storage of boxes of small plastic pellets, however that was not the intended use of the warehouse when built.

By including this requirement, the building owner or sprinkler installer/ITM technician would have been required to notify the AHJ.

Submitter Information Verification

Submitter Full Name: James Lewis

Organization: WV State Fire Marshals Office

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 18 13:41:35 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 already adequately addresses changes in occupancy in section 4.1.6 and requires an evaluation be performed. Communication with the AHJ is the responsibility of the owner and not the responsibility of the sprinkler installer or inspector.

Public Input No. 137-NFPA 25-2020 [Section No. 4.1.7.1]

4.1.7.1

Where changes in the occupancy, hazard, water supply, nitrogen supply where required for system design, storage commodity, storage arrangement, building modification, or other condition that affects the installation criteria of the system are identified, the property owner or designated representative shall promptly take steps to evaluate the adequacy of the installed system in order to protect the building or hazard in question.

Statement of Problem and Substantiation for Public Input

If approved by NFPA 13, dry and preaction systems using nitrogen as a supervisory gas will be permitted to use a higher c-value for system design.

It is important that NFPA 25 recognize this practice and establish a path forward for ensuring the nitrogen supply remains intact where system design is based on its use. 4.1.7 addresses the required steps to take when similar changes are identified. As written, including nitrogen supply in this list does not mandate it's use, but clarifies that the owner is responsible for maintaining the supply only when nitrogen was used as part of system design.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 138-NFPA 25-2020 [New Section after 5.2.9]	Nitrogen sign if required by NFPA 13
Public Input No. 143-NFPA 25-2020 [New Section after 13.4.3.2.13]	Nitrogen concentration in preaction systems
Public Input No. 144-NFPA 25-2020 [New Section after 13.4.5.2.9]	Nitrogen concentration in dry pipe systems
Public Input No. 138-NFPA 25-2020 [New Section after 5.2.9]	
Public Input No. 143-NFPA 25-2020 [New Section after 13.4.3.2.13]	
Public Input No. 144-NFPA 25-2020 [New Section after 13.4.5.2.9]	

Submitter Information Verification

Submitter Full Name: Jason Webb
Organization: Potter Electric Signal Company
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 16 09:25:18 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: It is not appropriate to add nitrogen criteria to this section. Section 4.1.7.1 is about changes to the hazard not system components.

Public Input No. 263-NFPA 25-2020 [New Section after 4.1.7.3]

4.1.8* Evaluation of the Installed System

4.1.8.1 The property owner or designated representative shall have the installed system evaluated at a minimum of every 5 years to determine if the installed system is adequate to protect the building or hazard being protected.

4.1.8.1.1 Storage occupancies shall be evaluated at a minimum of once every 3 years.

4.1.8.2 Evaluations performed in accordance with 4.1.6 or 4.1.7 satisfy this requirement if performed within the past 5 years.

4.1.8.3* The evaluation shall consider factors that include, but are not limited to, the following:

(1) Occupancy changes such as converting office or production space into warehousing

(2) Process or material changes such as metal stamping to molded plastics

(3) Building revisions such as relocated walls, added mezzanines, and ceilings added below sprinklers

(4) Removal of heating systems in spaces with piping subject to freezing

(5) Changes to the storage method, arrangement, height or commodities

(6) Changes in water supplies

4.1.8.4 Where the evaluation reveals that the installed system is inadequate to protect the building or hazard in question, the property owner or designated representative shall make the required corrections.

4.1.8.5 Corrections shall be approved.

Statement of Problem and Substantiation for Public Input

As described in the US Experience with Sprinklers Report by Marty Aherns – July 2017, 7% of fires where the sprinkler system failed and 6% of fires where the sprinkler system was ineffective were caused by an “Inappropriate system for type of fire”. NFPA 25 addresses many of the other causes of sprinkler failures including systems shut off, lack of maintenance, and system components damaged, but does not effectively address the cause of an inappropriate system for the type of fire. Section 4.1.6 requires an evaluation before any changes are made that could affect the installation criteria of the system, but many building owners or their designated representative(s) don’t realize changes being made will have an impact on the system, or aren’t aware of the need for this evaluation. If sections 4.1.6 or 4.1.7 were not followed when changes were made or later when changes were identified, an evaluation once every five years will help to identify the changes and determine what if any corrections are needed to keep the system compliant.

Storage and warehousing facilities (excluding cold storage facilities) have a higher rate of failure due to having an inappropriate system for type of fire. In many cases, the storage arrangement is changed from high pile to rack storage, or from double row racks to multi-row racks, or the rack height is increased, or the commodity changes, or the packaging changes. Any of these changes will have an impact on the system design criteria. Systems in these facilities have the highest failure rate related to the category “Inappropriate system for type of fire” and therefore should have evaluations performed more frequently.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 265-NFPA 25-2020 [New Section after A.4.1.7]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 13:45:11 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 is based on the premise that the system was designed and installed correctly with the applicable standard at the time. If changes are made to the building, water supply, or its use, section 4.1.6 and 4.1.7 already requires an evaluation.This recommendation may also conflict with the retroactivity clause of NFPA 13.

Public Input No. 198-NFPA 25-2020 [Section No. 4.1.8]

4.1.8 ~~–~~ Control Valve Location.

The location of remote shutoff valves shall be identified at the supplying system riser or other approved locations.

Statement of Problem and Substantiation for Public Input

This is sometimes construed has pertaining to control valve signs at the riser or trim (addressed in Ch. 13) and not the downstream isolation valves that are remote and may be possibly hidden. This section should be clear as a lead into the next section 4.1.9.

Submitter Information Verification

Submitter Full Name:	Jason Williams
Organization:	American Fire Sprinkler Associ
Affiliation:	AFSA
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jun 29 23:15:01 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-17-NFPA 25-2020

Statement: Editorial revision to maintain consistency throughout the document. The term remote was not added to this section as it is intended to only address the control valve used to shut down a system. The issue regarding remote control valve signs is addressed in section 4.1.9.2 by FR-18.

Public Input No. 257-NFPA 25-2020 [Section No. 4.1.9.1]

4.1.9.1

A permanently marked metal or rigid plastic information sign shall be placed at the system control riser supplying an antifreeze loop, dry system, preaction system, ~~or auxiliary~~ auxiliary system control valve or ancillary system .

Statement of Problem and Substantiation for Public Input

With the addition of ancillary system, it broadens the component terms to items like heat trace, automated testing devices/controls or other future supporting components for fire protection systems. The NFPA 25 committee and using contractors understand that supporting systems may be installed on existing fire protection systems and not all auxiliary systems may be identified or known at installation.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 13:11:44 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-19-NFPA 25-2020

Statement: The list of systems in 4.1.9.1 are not necessary as the required locations are covered in 4.1.9.2.

Public Input No. 280-NFPA 25-2020 [Section No. 4.1.9.1]

4.1.9.1

A permanently marked metal or rigid plastic information sign shall be placed at the system control riser ~~supplying an antifreeze loop, dry system, preaction system, or auxiliary system control valve~~ .

Statement of Problem and Substantiation for Public Input

As written the provisions of 4.1.9.1 only require an information sign on system that supply antifreeze loops, dry systems, preaction systems or auxiliary control valves. The items enumerated in 4.1.9.2 as being required on the information sign can apply to all systems, not just those types currently listed.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 15:32:05 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-19-NFPA 25-2020

Statement: The list of systems in 4.1.9.1 are not necessary as the required locations are covered in 4.1.9.2.

Public Input No. 10-NFPA 25-2020 [New Section after 4.1.10]

TITLE OF NEW CONTENT

Type your content here ... Proposed new section between existing 4.1.10 and 4.1.11

4.1.X Sprinkler Test Date Decal - When sprinklers are sampled and tested in accordance with 5.3.1.1, a decal shall be affixed to the riser of the system the sprinklers were taken from. The decal shall identify the date when the samples were tested and the type of sprinklers tested, as they are classified in 5.3.1.1. If a decal represents a subsequent testing of the same type of sprinklers, the new decal may be affixed on top of the outdated decal.

Statement of Problem and Substantiation for Public Input

Now that many systems have fast response sprinklers and such sprinklers have been widely used for over 30 years, there are many systems with FR sprinklers in excess of 20 years old and no effective means for an inspector to know whether or not the sprinklers were tested or when that occurred. Paper record retention between 10 year re-test intervals is rare. Property ownership often changes in less than 10 years, with loss of records. Sprinkler inspection contractors cannot be relied upon for long-term records because property owners/managers switch providers regularly. Placing a decal on the system riser allows an inspector to confidently recommend sprinkler testing when it is required and prevent unnecessary sprinkler testing when the last test date is unknown. Since this same logic applies to dry sprinklers, high temperature sprinklers with continuous exposure, etc. a common decal can be used for all these variations. While a tag might be considered as a substitute for a decal, in many jurisdictions, tags are allowed to be removed from risers after a few years, defeating the purpose of creating a durable long-term record.

Submitter Information Verification

Submitter Full Name:	Roger Tate
Organization:	Verite Forensic Engineering
Affiliation:	Member of SFPE - not speaking on behalf of the organization
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jan 06 12:34:30 EST 2020
Committee:	INM-AAA

Committee Statement

Resolution: The proposed text is not in accordance with the MOS and is inappropriate for Chapter 4 as it is specifically addressing sprinkler testing and should be incorporated into Chapter 5.

Public Input No. 259-NFPA 25-2020 [New Section after 4.1.10]

4.1.11 Ancillary System Information Sign

An ancillary system information sign shall be placed on the supplying system riser when an ancillary system is either initially or retroactively installed, and where the provided General Information Sign does not identify subsidiary systems such as, but not limited to heat trace, automated testing devices, or corrosion controls that provide inspection, testing, maintenance or monitoring of fire sprinkler protection components.

Statement of Problem and Substantiation for Public Input

With the addition of ancillary system information sign, it requires building owners and (post acceptance) installers of systems that provide supporting control systems for fire protection like heat trace, automated testing or other future subsidiary systems to provide notification to ITM service contractors. NFPA 25 committee and using contractors understand that ancillary systems could be installed after the initial fire protection system is accepted and not all auxiliary systems may be identified or required to be identified on the General Information Sign. If a General Information Sign is provided and an ancillary system like heat trace is installed, the GIS is not necessarily required to list it per NFPA 13. If an inspector sees a GIS on the system, it's assumed that an Information Sign is not required and 4.1.9 would not apply and components like heat trace may never be identified at the system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 287-NFPA 25-2020 [New Section after 4.1.10]	
Public Input No. 290-NFPA 25-2020 [New Section after 5.2.9]	

Submitter Information Verification

Submitter Full Name:	Jason Williams
Organization:	American Fire Sprinkler Associ
Affiliation:	AFSA
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 13:20:43 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Ancillary systems are not defined, and these requirements already exist for auxiliary systems. They are addressed in 4.1.9.1 and 4.1.9.2.

Public Input No. 287-NFPA 25-2020 [New Section after 4.1.10]

4.1.11.1

Each sign shall be provided by the installing qualified maintenance personnel or individual, be permanently marked metal or rigid plastic, secured with corrosion-resistant wire, chain, or other approved means and shall indicate the type of ancillary system, the location of the system and associated devices or controls.

Statement of Problem and Substantiation for Public Input

If the new 4.1.11 Ancillary System Information Sign is accepted, there will need to be installing requirements and assigned responsibility for the sign, since this would be defined and required by NFPA 25.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 259-NFPA 25-2020 [New Section after 4.1.10]	Ancillary System Information Sign

Submitter Information Verification

Submitter Full Name: Jason Williams
Organization: American Fire Sprinkler Associ
Affiliation: AFSA
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jun 30 16:07:24 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Ancillary systems are not defined, and these requirements already exist for auxiliary systems. They are addressed in 4.1.9.1 and 4.1.9.2.

Public Input No. 171-NFPA 25-2020 [Section No. 4.1.10]

4.1.10 Antifreeze Information Sign.

An antifreeze information sign shall be placed on the antifreeze system main valve, which indicates 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.

Add annex language to this section similar to the language used in A.4.1.9 for General Information signs:

Systems installed in accordance with 2007 and subsequent editions of NFPA 13 should have an antifreeze system placard. It is not the intent of the committee for a system to have both the antifreeze sign required by NFPA 25 and the antifreeze placard required by NFPA 13. The antifreeze sign required by this standards intended to be provided for systems installed prior to the 2007 edition of NFPA 13. Systems installed under the 2007 edition and subsequent editions

Statement of Problem and Substantiation for Public Input

The current language always requires an antifreeze system no matter what NFPA 13 standard was applicable. However, since the 2007 edition of NFPA 13, this sign has been required.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 09:44:56 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-20-NFPA 25-2020

Statement: This is to recognize that the antifreeze information is required with the general information sign that has been required since 2007.

Public Input No. 215-NFPA 25-2020 [Section No. 4.1.10]

4.1.10 Antifreeze Information Sign.

An antifreeze information sign shall be placed on the antifreeze system main valve, which indicates 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.

Statement of Problem and Substantiation for Public Input

Listed antifreezes are premixed by the factory and therefore the concentration level is not required to be on the sign.

Submitter Information Verification

Submitter Full Name: Manuel Silva

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 09:43:29 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Even where listed solutions are used, the concentration by volume of antifreeze is important to record so that the data can be compared from inspection to inspection.

Public Input No. 48-NFPA 25-2020 [Section No. 4.1.11]

4.1.11 Impairments.

4.1.11.1

Where an impairment to a water-based fire protection system occurs or is identified during inspection, testing, or maintenance activities, the procedures outlined in Chapter 15 shall be followed, including the attachment of a tag to the impaired system.

4.1.11.2

Where a water-based fire protection system is returned to service following an impairment, the system shall be verified to be working properly by means of an appropriate inspection or test as described in the table “Summary of Component Replacement [Action] Requirements” in the applicable chapters of this document.

4.1.11.3

Where a water-based fire protection system is determined to be impaired, the facility administration is responsible for notifying all Authority Having Jurisdictions (AHJ's). This notification shall include:

The date and time impairment was discovered

The nature of the impairment

Estimated time frame when repairs will start

Estimated time frame when repairs will be completed

Additional Proposed Changes

File Name	Description	Approved
.1588943498486		

Statement of Problem and Substantiation for Public Input

In several occupancies, including healthcare, a facility has more than one (1) AHJ. Often what happens is that impairments happen and the entire portions of NFPA 25 and NFPA13 are not enforced. The other AHJ's that inspect the facility on a regular basis are left in the dark until they arrive at there scheduled interval inspections and find deficiencies with the way that the impairments were handled. All other AHJ's would be notified real-time and violations would be averted, and a better chance that all the provisions of the code would be followed.

Submitter Information Verification

Submitter Full Name: Allen B Beebe
Organization: Ascellon Corp
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 08 09:03:28 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Impairment requirements are covered in Chapter 15. The added information is unnecessary.

Public Input No. 9-NFPA 25-2020 [Section No. 4.3.1.1]

4.3.1.1

Records shall be maintained by the property owner. Records will be transferred to the new property owner when a property changes hands.

Statement of Problem and Substantiation for Public Input

As a forensic fire protection engineer, I have found it to be a common occurrence for building maintenance records to fail to be transferred to the new owners when a property is sold. The absence of such records adds to the difficulty and expense of maintaining water-based fire protection systems and planning system upgrades or modifications. While revising the standard may not produce better behavior during real estate transactions, it does make it clear that records transfers are expected by authorities having jurisdictions.

Submitter Information Verification

Submitter Full Name:	Roger Tate
Organization:	Verite Forensic Engineering
Affiliation:	Member of SFPE - not speaking on behalf of that organization
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jan 06 12:26:47 EST 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-21-NFPA 25-2020

Statement: The proposed text is more appropriate as annex guidance.

Public Input No. 267-NFPA 25-2020 [Section No. 4.3.2]

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 ~~lead~~ qualified person for activity

Statement of Problem and Substantiation for Public Input

changed lead to qualified to be consistent within the standard.

Submitter Information Verification

Submitter Full Name: Kenneth Schneider
Organization: Ua - Itf
Affiliation: United Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 14:04:35 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-22-NFPA 25-2020
Statement: Qualified is the common term used throughout the standard.

Public Input No. 176-NFPA 25-2020 [Section No. 4.3.4]

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. These documents shall be made available to the inspector for their review before any inspection, testing or maintenance services are performed.

Statement of Problem and Substantiation for Public Input

These documents need to be made available to the inspector for the inspector to perform his work properly..

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 12:40:03 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: While this information is useful and appreciated, it is outside the scope of NFPA 25. The inspector is not required to review plans for compliance.

Public Input No. 38-NFPA 25-2020 [Section No. 4.3.5]

4.3.5

~~Subsequent~~ Inspection, test, and maintenance records shall be retained for a period of 1 year after the next inspection, test, or maintenance of that type required by the standard.

Statement of Problem and Substantiation for Public Input

As worded, and with the current placement, it could be interpreted to mean that all records from 4.3.4 or remodel information, etc. falls into this requirement. This has come up both from customers and in NFPA 25 classes- current wording.

Submitter Information Verification

Submitter Full Name: Bruce Clarke
Organization: American International Group,
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 01 15:39:40 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-23-NFPA 25-2020

Statement: This change clearly describes what was meant by “subsequent.”

Public Input No. 35-NFPA 25-2020 [Section No. 4.6.1 [Excluding any Sub-Sections]]

~~All~~ All components and systems shall be tested to verify that they function as intended. Visual inspection showing damage to component (s) indicating that testing could cause major damage should be repaired before preforming test of the component (s).

Statement of Problem and Substantiation for Public Input

There can be many problems with a system that if not repaired before testing could result in sever property damage to the system, its components, or the property. An example could be severely corroded pipe, rusted bolts, Controller reading problem on pump etc. The testing should be stopped until appropriate repairs are made. The system could be impaired or have critical deficiencies.

Submitter Information Verification

Submitter Full Name: Top Myers
Organization: Myers Risk Services, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Apr 29 15:20:53 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This added language is not needed. Inspections are already required by the standard. Proposed text does not meet the MOS.

Public Input No. 154-NFPA 25-2020 [New Section after 4.6.5]

NEW section after 4.5

4.6 Waterflow Alarm Device Status. 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.

4.6.1* Impairing vane-type waterflow alarm devices by preventing movement of the vane or stem shall be prohibited.

4.6.2* Interruption of the signal sent by the vane-type waterflow alarm device is permitted in accordance with 4.6.2.1 and 4.6.2.2

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

4.6.2.2 Interruption of the waterflow alarm circuit shall result in an audible and visual trouble 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 Input

NFPA 25 contains no prohibition against impairing flow switches using screwdrivers or other objects jammed into the paddle/trip stem mechanism. These tools often get left behind rendering the flow switch out of service until it is discovered during the next inspection. It also damages the device itself. Likewise, using switches to prevent the signal from being transmitted can be just as problematic unless a trouble condition is reported to the fire alarm system or some other indication is present at the switch. Annex material is also proposed to clarify the intent and highlight the dangers of these practices.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 155-NFPA 25-2020 [New Section after A.4.5]	Proposed associated annex language
Public Input No. 155-NFPA 25-2020 [New Section after A.4.5]	

Submitter Information Verification

Submitter Full Name: Jason Webb
Organization: Potter Electric Signal Company
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 23 10:39:57 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The proposed language does not belong in Chapter 4. If a change is made it should be to Chapter 13.

Public Input No. 145-NFPA 25-2020 [Section No. 4.6.6.9]

4.6.6.9

Failure of a component or system to pass an automated test shall result in an audible ~~supervisory signal~~ and visual trouble signal in accordance with NFPA 72 .

Statement of Problem and Substantiation for Public Input

NFPA 25 is the only water-based standard that requires the failure of a system to pass an automated test to generate a supervisory signal. NFPA 13 requires this condition to be reported as a trouble condition in section 28.3 (2019 edition, moved to 7.9 in the 2022 edition). This is consistent with other water-based design and installation standards, as well as with NFPA 72.

Without this change, if there were a failure of an automated test, the device would have to report a trouble signal at the acceptance test, then be reconfigured to report a supervisory signal to comply with NFPA 25. If the device is replaced, the conflict is immediate, and raises the question "is the device required to comply with NFPA 13, or NFPA 25"? This creates additional cost for the owner and requires monitoring of additional points by the fire alarm panel, which may not be available.

Submitter Information Verification

Submitter Full Name: Jason Webb

Organization: Potter Electric Signal Company

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 18 16:40:04 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-24-NFPA 25-2020

Statement: The following change correlates with NFPA 13 2022 edition. It is important that where a component fails, appropriate notification be given so that it can be addressed promptly.

Public Input No. 199-NFPA 25-2020 [New Section after 4.8]

4.8.1

Test equipment shall be calibrated when used for testing that requires the measurement of any water flow or pressures that are to be compared to system demands or equipment performance within this standard.

Statement of Problem and Substantiation for Public Input

All test equipment for measured flow rate tests within NFPA 25 shall be calibrated on an annual basis. This should be in Chapter 4 to cover required tests within Chapters 6, 7 and 13. It's address in chapter 8 when testing fire pumps but nowhere else within NFPA 25.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 200-NFPA 25-2020 [New Section after 4.8]	

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 23:25:49 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: There are certain tests that are performed that do not require calibrated equipment (i.e. main drain test). NFPA 25 identifies where tests require calibrated equipment (i.e. fire pump test).

Public Input No. 200-NFPA 25-2020 [New Section after 4.8]

4.8.1.1

Calibrated test equipment shall bear a label with the latest date of calibration within 12 months of the test date or per manufacturer's recommendations.

Statement of Problem and Substantiation for Public Input

All test equipment for measured flow rate tests within NFPA 25 shall be calibrated on an annual basis. This should be in Chapter 4 to cover required tests within Chapters 6, 7 and 13. It's address in chapter 8 when testing fire pumps but nowhere else within NFPA 25.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 199-NFPA 25-2020 [New Section after 4.8]	calibrated test equipment

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 23:29:09 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Labels are not the only way to show equipment has been calibrated. This section was not accepted as the new proposed section 4.8.1 was not accepted.

Public Input No. 55-NFPA 25-2020 [New Section after 4.9]

4.10 Fire Line fee

4.10.1 No fee, service charge, or base facility charge shall be assessed to any property for any size fire line or underground utility connected to a water-based fire sprinkler system.

Statement of Problem and Substantiation for Public Input

I feel that property owners are being penalized by water utility companies by charging fees for simply having underground fire lines that service fire sprinkler systems. By removing the fees it would remove some of the obstacles that property owners have in installing fire sprinkler systems.

Submitter Information Verification

Submitter Full Name: Ryan Banyas

Organization: Coconut Creek Fire Department

Street Address:

City:

State:

Zip:

Submittal Date: Tue May 12 08:35:27 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: This is outside the scope of NFPA 25.

Public Input No. 281-NFPA 25-2020 [Sections 4.9.5.1, 4.9.5.2]

Sections 4.9.5.1, 4.9.5.2

4.9.5.~~1~~ 2

Legally required equipment shall be used where working in an environment with hazardous materials present.

4.9.5.~~2~~ 1

The property owner or designated representative shall advise anyone performing inspection, testing, and maintenance on any system under the scope of this document, with regard to hazardous materials stored on the premises.

Statement of Problem and Substantiation for Public Input

Reverse the order of the requirements to be in the correct order.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 15:37:49 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-35-NFPA 25-2020
Statement: Editorial correction.

Public Input No. 115-NFPA 25-2020 [New Section after 4.9.6.2]

4.10 Contractors Responsibilities

4.10.1 Contractor shall inform the owner in writing when a newer edition of this standard is adopted in the owner's jurisdiction.

Statement of Problem and Substantiation for Public Input

Contractors are aware of changes to the edition of the standard and generally owners are not. Contractors can improve communication with owners by informing the owner when the standard has changed. It may be argued this is the AHJ's job, reality is the contractor may be the only entity to set foot in a building and they are utilizing the standard for their service. It is reasonable they could inform the owner a newer edition is enforceable because they are aware of that change.

Submitter Information Verification

Submitter Full Name: Scott Futrell

Organization: Futrell Fire Consult & Design, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Sun Jun 07 13:02:28 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: It is the owner’s responsibility to conform with local codes and ordinances.

Public Input No. 150-NFPA 25-2020 [Section No. 5.1.1.2]

5.1.1.2

Table 5.1.1.2 shall be used to determine the minimum required frequencies for inspection, testing, and maintenance.

Table 5.1.1.2 Summary of Sprinkler System Inspection, Testing, and Maintenance

Item	Frequency	Reference	
Inspection	–	–	
Assessment of the internal piping condition	–		Chapter 14
Control valves	–		Chapter 13
Fire department connections	–		Chapter 13
Gauges (wet and deluge systems)	–		Chapter 13
Gauges (dry and preaction systems)	–		Chapter 13
Hanger/braces/supports	Annually	5.2.3	
Heat tracing	Per manufacturer's requirements	5.2.6	
Hydraulic design information sign	Annually	5.2.5	
Information signs	Annually	5.2.7, 5.2.8, 5.2.9	
–	–	–	
Pipe and fittings	Annually	5.2.2	
Sprinklers	Annually	5.2.1	
Sprinklers (spare)	Annually	5.2.1.4	
Sprinkler guards	Annually	5.2.1.1.7.1 (new section)	
Supervisory signal devices (except valve supervisory switches)	–		5.2.4, Chapter 13
System valves	–		Chapter 13
Valve supervisory signal devices	–		5.2.4, Chapter 13
Waterflow alarm devices	Quarterly	5.2.4	
Test	–	–	
Antifreeze solution	Annually	5.3.4	
Control valves	–		Chapter 13
Gauges	–		Chapter 13
Main drain	–		Chapter 13
Sprinklers	At 50 years and every 10 years thereafter	5.3.1.1.1, 5.3.1.1.1.1, 5.3.1.1.1.2	
Sprinklers	At 75 years and every 5 years thereafter	5.3.1.1.1.5	
Sprinklers (dry)	15 years and every 10 years thereafter	5.3.1.1.1.6	
Sprinklers (extra-high or greater temperature solder type)	5 years	5.3.1.1.1.4	
Sprinklers (fast-response)	At 20 years and every 10 years thereafter	5.3.1.1.1.3	
Sprinklers (harsh environments)	5 years	5.3.1.1.2	

Item	Frequency	Reference	
Supervisory signal devices (except valve supervisory switches)	–		Chapter 13
System valves	–		Chapter 13
Valve supervisory signal devices	–		Chapter 13
Waterflow alarm devices (mechanical)	Quarterly	5.3.3.1	
Waterflow alarm devices (vane and pressure switch type)	Semiannually	5.3.3.2	
Maintenance	–	–	
Low-point drains (dry pipe and preaction systems)	–		Chapter 13
Sprinklers and automatic spray nozzles protecting commercial cooking equipment and ventilation systems	Annually	5.4.1.7	
Replacement of sprinklers	Removed for any reason	5.4.1.1	
Replacement of sprinkler guards	Removed for any reason	5.2.1.1.7.2 (new section)	
Valves (all types)	–		Chapter 13
Investigation	–	–	
Obstruction	–		Chapter 14

Statement of Problem and Substantiation for Public Input

This updates the table to coordinate with the new proposed language for sprinkler guards in Public Input 149.

NFPA 13:16.2.6 requires that sprinkler heads subject to mechanical injury be protected by a listed guard. However, these are not addressed in NFPA 25. This code change proposal provides direction to the inspector to examine the guard for damage, improper orientation, or the presence of such a guard. It is important that these guards be free of damage, and properly oriented, as per their listing, to ensure the effectiveness of the fire sprinkler operation and coverage.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 149-NFPA 25-2020 [New Section after 5.2.1.1.6]	Table to coordinating text

Submitter Information Verification

Submitter Full Name: Aaron Johnson
Organization:
Affiliation: SprinkGUARD
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 22 17:02:23 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-112-NFPA 25-2020

Statement: New criteria was added to inspect sprinkler guards. Not all changes requested by the submitter were included. Changes to Table 5.1.1.2 reflect those changes accepted by the technical committee.

Public Input No. 180-NFPA 25-2020 [Section No. 5.1.1.2]

5.1.1.2

Table 5.1.1.2 shall be used to determine the minimum required frequencies for inspection, testing, and maintenance.

Table 5.1.1.2 Summary of Sprinkler System Inspection, Testing, and Maintenance

Item	Frequency	Reference	
Inspection	–	–	
Assessment of the internal piping condition	–		Chapter 14
Control valves	–		Chapter 13
Fire department connections	–		Chapter 13
Gauges (wet and deluge systems)	–		Chapter 13
Gauges (dry and preaction systems)	–		Chapter 13
Hanger/braces/supports	Annually	5 .2.3	
Hanger/seismic bracing in accessible concealed spaces	5 years	5.2.3.3	
Heat tracing	Per manufacturer's requirements	5.2.6	
Hydraulic design information sign	Annually	5.2.5	
Information signs	Annually	5.2.7, 5.2.8, 5.2.9	
–	–	–	
Pipe and fittings	Annually	5 .2.2	
Pipe and Fittings in accessible concealed spaces	5 years	5.2.2.3	
Sprinklers	Annually	5 .2.1	
Sprinklers in accessible concealed spaces	5 years	5.2.1.1.3	
Sprinklers (spare)	Annually	5.2.1.4	
Supervisory signal devices (except valve supervisory switches)	–		5.2.4, Chapter 13
System valves	–		Chapter 13
Valve supervisory signal devices	–		5.2.4, Chapter 13
Waterflow alarm devices	Quarterly	5.2.4	
Test	–	–	
Antifreeze solution	Annually	5.3.4	
Control valves	–		Chapter 13
Gauges	–		Chapter 13
Main drain	–		Chapter 13
Sprinklers	At 50 years and every 10 years thereafter	5.3.1.1.1, 5.3.1.1.1.1, 5.3.1.1.1.2	
Sprinklers	At 75 years and every 5 years thereafter	5.3.1.1.1.5	
Sprinklers (dry)	15 years and every 10 years thereafter	5.3.1.1.1.6	

Item	Frequency	Reference	
Sprinklers (extra-high or greater temperature solder type)	5 years	5.3.1.1.1.4	
Sprinklers (fast-response)	At 20 years and every 10 years thereafter	5.3.1.1.1.3	
Sprinklers (harsh environments)	5 years	5.3.1.1.2	
Supervisory signal devices (except valve supervisory switches)	–		Chapter 13
System valves	–		Chapter 13
Valve supervisory signal devices	–		Chapter 13
Waterflow alarm devices (mechanical)	Quarterly	5.3.3.1	
Waterflow alarm devices (vane and pressure switch type)	Semiannually	5.3.3.2	
Maintenance	–	–	
Low-point drains (dry pipe and preaction systems)	–		Chapter 13
Sprinklers and automatic spray nozzles protecting commercial cooking equipment and ventilation systems	Annually	5.4.1.7	
Replacement of sprinklers	Removed for any reason	5.4.1.1	
Valves (all types)	–		Chapter 13
Investigation	–	–	
Obstruction	–		Chapter 14

Statement of Problem and Substantiation for Public Input

The tables were changed to be in accordance with the public inputs for those sections for added 5 year requirements.
The current 5 year requirement for sprinkler systems is not completely effective, most 5 year reports reviewed to meet the 5 year requirements are for the Fire Department Connection (hydro/flush or both) and assessment / investigation, this requirement is being performed after an annual inspection is performed due to the annual report stating "no 5 year tag or 5 year due".
By performing this inspection every 5 years the owner or owners representative is able to be assured that the piping above a ceiling is installed correctly.
There is allot of other work that is performed above ceilings, during other works there is a chance that Sprinkler piping can be affected.
By approving the additional inspection, NFPA 25 will be in accordance with the CA edition of NFPA 25.

Submitter Information Verification

Submitter Full Name: Steven Schwartz
Organization: Consolidated Fire Protection
Street Address:
City:
State:
Zip:

Submittal Date: Fri Jun 26 17:52:47 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: No changes were made to the main body requirements and therefore proposed changes to Table 5.1.2 are not needed.

Public Input No. 282-NFPA 25-2020 [Section No. 5.1.3]

5.1.3 ~~–~~ Internal Piping Condition and Obstruction Investigations.

The procedures outlined in Chapter 14 shall be followed where there is a need to conduct an assesment of the internal piping condition or an obstruction investigation.

Statement of Problem and Substantiation for Public Input

Chapter 14 addressing internal piping condition assessments and obstruction investigations.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 15:40:33 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-39-NFPA 25-2020
Statement: Chapter 14 addressing internal piping condition assessments and obstruction investigations.

Public Input No. 133-NFPA 25-2020 [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~~ Any amount of paint other than that applied by the sprinkler manufacturer located on the release mechanism, water seal, deflector, or cover plate (if applicable).

Statement of Problem and Substantiation for Public Input

Using the informal "Ask a Technical Question" feature on NFPA.org, I've received replies indicating that a small amount of paint located only on the frame of the sprinkler such that it doesn't impact sprinkler performance is NOT grounds for replacement. If that is the intent of the standard, it should be stated. If that is not the intent, more clarification should be given in the annex as to why paint on the frame is not allowed. For instance, while not a performance issue, an argument about such paint being an inspection hindrance could be made if it covers up any identification marks.

Submitter Information Verification

Submitter Full Name: Grant Lobdell

Organization: Dyne Fire Protection Labs

Street Address:

City:

State:

Zip:

Submittal Date: Fri Jun 12 11:16:41 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The amount of paint allowed on a sprinkler is a judgment call and is best addressed in the annex.

Public Input No. 2-NFPA 25-2019 [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

(7) Identified as a part of a replacement or recall program

Statement of Problem and Substantiation for Public Input

Section 4.1.5 was added in the 2020 code cycle but does not provide guidance for determining if recalled products should be treated as an Impairment, or Critical or Non-Critical deficiencies. Adding this additional line item will allow the committee to add recalled sprinklers to Table A.3.3.8 and determine a category or options based on prevailing conditions found.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3-NFPA 25-2019 [New Section after 13.2.1]	
Public Input No. 3-NFPA 25-2019 [New Section after 13.2.1]	
Public Input No. 4-NFPA 25-2019 [New Section after A.3.3.8]	

Submitter Information Verification

Submitter Full Name: Robert Caputo

Organization: Fire & Life safety America

Affiliation: NFPA 13 Installation Committee

Street Address:

City:

State:

Zip:

Submittal Date: Wed Dec 04 17:20:23 EST 2019

Committee: INM-AAA

Committee Statement

Resolution: Section 4.1.5.1.1 is not specific to sprinklers and not all products that are part of a replacement or recall program must be replaced. This section applies to anyone under any circumstance that identifies a component or piece of equipment under replacement or recall. By adding this requirement in section 5.2.1.1.1 the inspector is now required to look for recalled sprinklers, which is not the intent of section 4.1.5.1.1.

Public Input No. 156-NFPA 25-2020 [Section No. 5.2.1.1.3]

5.2.1.1.3*

Sprinklers installed in concealed spaces such as above suspended ceilings <u>or in concealed spaces where access is provided by access openings,</u> shall <u>be inspected at a frequency</u> not <u>exceeding 5 years. Sprinklers in inaccessible concealed spaces shall not</u> require inspection.

Statement of Problem and Substantiation for Public Input

The current 5 year requirement for sprinkler systems is not completely effective, most 5 year reports reviewed to meet the 5 year requirements are for the Fire Department Connection (hydro/flush or both) and assessment / investigation, this requirement is being performed after an annual inspection is performed due to the annual report stating "no 5 year tag or 5 year due".
By performing this inspection every 5 years the owner or owners representative is able to be assured that the piping above a ceiling is installed correctly.
There is allot of other work that is performed above ceilings, during other works there is a chance that Sprinkler piping can be affected.
By approving the additional inspection, NFPA 25 will be in accordance with the CA edition of NFPA 25.

Submitter Information Verification

Submitter Full Name:	Steven Schwartz
Organization:	Consolidated Fire Protection
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 23 20:17:03 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: The submitter is referencing inspecting piping in accessible concealed spaces while section 5.2.1.1.3 is specific to inspecting sprinklers only. Performing inspections in concealed spaces is beyond that which should be included in a minimum standard. Annual inspections are performed from the floor level as stated in 5.2.1. An inspection in accordance with this standard is not intended to assure that piping has been installed correctly.

Public Input No. 294-NFPA 25-2020 [New Section after 5.2.1.1.4]

5.2.1.5 Electrically Operated Sprinklers.

5.2.1.5.1 Electrically operated sprinklers shall be inspected from the floor level annually in accordance with the manufacturer's requirements.

5.2.1.5.2 Sprinklers with a damaged actuator, tensile link or other operative part shall be replaced.

5.2.1.5.3 Sprinklers which are found to be leaking or exhibiting visible signs of corrosion shall be replaced.

Statement of Problem and Substantiation for Public Input

A definition for electronically operated sprinklers as well as testing and maintenance criteria was added to the 2020 edition so this new technology was addressed in NFPA 25. However, inspection criteria was omitted. This new inspection criteria includes reference to the manufacturer's requirements as well as basic inspection requirements for these types of sprinklers.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 293-NFPA 25-2020 [New Section after 5.3.2.2]	

Submitter Information Verification

Submitter Full Name: Terry Victor

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 17:03:10 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-40-NFPA 25-2020

Statement: A definition for electronically operated sprinklers as well as testing and maintenance criteria was added to the 2020 edition so this new technology was addressed in NFPA 25. However, inspection criteria was omitted. This new inspection criteria includes reference to the manufacturer's requirements.

Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]

5.2.1.1.4

Sprinklers installed in areas that ~~are inaccessible~~ cannot be entered for safety considerations due to process operations shall be inspected during each scheduled shutdown.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	removing term accessible
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:

State:

Zip:

Submittal Date: Tue Jun 02 18:43:19 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The use of "cannot be entered" is too specific and does not necessarily address all situations where sprinklers may be inaccessible.

Public Input No. 283-NFPA 25-2020 [Section No. 5.2.1.1.5 [Excluding any Sub-Sections]]

Escutcheons ~~and coverplates~~ for recessed, flush, and concealed sprinklers shall be replaced with their listed escutcheon ~~or coverplate~~ if found missing during the inspection.

Statement of Problem and Substantiation for Public Input

I missing cover plate on a concealed sprinkler with the remainder of the supporting escutcheon in place does not warrant replacement. While esthetically it might not be pleasing the lack of a cover plate does not impact the ability of the sprinkler to operate.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 15:51:18 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: While it is correct that a concealed sprinkler will operate without a coverplate, the sprinkler and coverplate are listed as an assembly. The coverplate assembly should be replaced to maintain the listing. The coverplate indicates the proper positioning of the sprinkler to the ceiling.

Public Input No. 149-NFPA 25-2020 [New Section after 5.2.1.1.6]

5.2.1.1.7 Sprinkler Guards.

5.2.1.1.7.1 Sprinklers installed in areas subject to mechanical injury, and required to be protected with a listed sprinkler guard, shall be visually inspected, at least annually.

5.2.1.1.7.2 If a sprinkler guard is damaged, not correctly oriented, or is missing, the guard shall be replaced.

Statement of Problem and Substantiation for Public Input

NFPA 13:16.2.6 requires that sprinkler heads subject to mechanical injury be protected by a listed guard. However, the inspection/testing/maintenance of these is not addressed in NFPA 25. This code change proposal provides direction to the inspector to examine the guard for damage, improper orientation, or the recommended presence of such a guard. It is important that these guards be free of damage, and properly oriented, as per their listing, to ensure the effectiveness of the fire sprinkler operation and coverage.

The NFPA Report, "U.S. Experience with Sprinklers" (July, 2017), states that, in 2014, fire departments responded to an estimated 29,800 sprinkler activations caused by a system failure or malfunction and 33,600 unintentional sprinkler activations. Unintentional fire sprinkler activations due to sprinkler head damage can be costly. Costs involved can include, loss of product, damage to facilities, lost time. Clean-up costs for sprinkler systems has been estimated to be as high as $1,000 for every minute the sprinkler is left running.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 150-NFPA 25-2020 [Section No. 5.1.1.2]	

Submitter Information Verification

Submitter Full Name: Aaron Johnson
Organization:
Affiliation: SprinkGUARD
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 22 16:51:58 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-41-NFPA 25-2020

Statement: Sprinkler guards have not been addressed by the standard and criteria needs to be added for a proper inspection. A damaged sprinkler guard must be replaced with another sprinkler guard listed with the sprinkler. The inspector is not responsible to determine if the existing sprinkler guard is not oriented correctly or if it’s missing.

Public Input No. 189-NFPA 25-2020 [New Section after 5.2.1.1.6]

5.2.1.1.7

Concealed dry sprinklers installed in protected areas that are maintained at or below 32°F (0°C) shall be inspected by removing the coverplate without damaging, and visually inspect the sprinkler for ice every 3 years.

Statement of Problem and Substantiation for Public Input

Change the current 5.2.1.1.1 to 5.2.1.1.2* Any sprinkler that shows…..sub sections will continue in the same order with the very last one now being 5.2.1.1.7. These type sprinklers have a unique set of circumstances as leaks can be present but not show due to the type ceiling surface and water can freeze above the concealed plate. Ice can accumulate in and around the concealed frame and element with no visible signs from the floor. Recommend explanatory information to be provided in the annex for this standard if accepted.

Submitter Information Verification

Submitter Full Name:	Jason Williams
Organization:	American Fire Sprinkler Associ
Affiliation:	AFSA, Dallas, TX
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jun 29 18:17:05 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Annex text was added in the 2020 edition to address the inspection of concealed sprinklers. See A.5.2.1.1. Unless there are signs of leakage, damage, corrosion or other adverse conditions the coverplates do not need to be removed to inspect the sprinkler. Ice buildup under the coverplate should be evident which would then necessitate the removal of the coverplate to complete the inspection.

Public Input No. 284-NFPA 25-2020 [Section No. 5.2.1.2.3]

5.2.1.2.3*

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

Statement of Problem and Substantiation for Public Input

The sprinklers that require the increased clearance include ESFR and CMSA.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy

Organization: Telgian Corporation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 15:54:52 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-70-NFPA 25-2020

Statement: This section was clarified in the body and the annex is no longer needed but a reference to existing large drop sprinklers needs to be added for clarity.

Public Input No. 285-NFPA 25-2020 [Section No. 5.2.1.4]

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 ~~5.4.1.5~~ ?

(2) A sprinkler wrench for each type of sprinkler as required by ~~5.4.1.5.5~~ ?

(3) The list of spare sprinklers as required by ~~5.4.1.5.6~~ ?

Statement of Problem and Substantiation for Public Input

Correct references are needed.

Submitter Information Verification

Submitter Full Name:	Tracey Bellamy
Organization:	Telgian Corporation
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 15:58:32 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: The correct references are currently in the standard for the minimum number of spare sprinklers required, for the sprinkler wrench, and the list of spare sprinklers.

Public Input No. 157-NFPA 25-2020 [Section No. 5.2.2.3]

5.2.2.3*

Pipe and fittings installed in concealed spaces such as above suspended ceilings or in concealed spaces where access is provided by access openings, shall be inspected at a frequency not exceeding 5 years. Pipe and fittings in inaccessible concealed spaces shall not require inspection.

Statement of Problem and Substantiation for Public Input

The current 5 year requirement for sprinkler systems is not completely effective, most 5 year reports reviewed to meet the 5 year requirements are for the Fire Department Connection (hydro/flush or both) and assessment / investigation, this requirement is being performed after an annual inspection is performed due to the annual report stating "no 5 year tag or 5 year due".

By performing this inspection every 5 years the owner or owners representative is able to be assured that the piping above a ceiling is installed correctly.

There is allot of other work that is performed above ceilings, during other works there is a chance that Sprinkler piping can be affected.

By approving the additional inspection, NFPA 25 will be in accordance with the CA edition of NFPA 25.

Submitter Information Verification

Submitter Full Name: Steven Schwartz

Organization: Consolidated Fire Protection

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 23 20:31:34 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Performing inspections in concealed spaces is beyond that which should be included in a minimum standard. Annual inspections are performed from the floor level as stated in 5.2.2. An inspection in accordance with this standard is not intended to assure that piping has been installed correctly.

Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]

5.2.2.4

Pipe and fittings installed in areas that ~~are inaccessible~~ cannot be entered for safety considerations due to process operations shall be inspected during each scheduled shutdown.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and standards Committee
Street Address:
City:

State:

Zip:

Submittal Date: Tue Jun 02 18:49:50 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The use of “cannot be entered” is to specific and is not necessarily address all situation where pipe and fittings may be inaccessible.

Public Input No. 179-NFPA 25-2020 [Section No. 5.2.3.3]

5.2.3.3*

Strike this section in entirety: Hangers, braces, and supports installed in concealed spaces such as above suspended ceilings shall not require inspection.

New Language for section 5.2.2.3*:

5.2.3.3* Sprinkler pipe hangers and seismic braces installed in concealed spaces such as above suspended ceilings or in concealed spaces where access is provided by access openings, shall be inspected at a frequency not exceeding 5 years. Hangers and Seismic braces installed in inaccessible concealed spaces shall not require inspection.

Statement of Problem and Substantiation for Public Input

The current 5 year requirement for sprinkler systems is not completely effective, most 5 year reports reviewed to meet the 5 year requirements are for the Fire Department Connection (hydro/flush or both) and assessment / investigation, this requirement is being performed after an annual inspection is performed due to the annual report stating "no 5 year tag or 5 year due".
By performing this inspection every 5 years the owner or owners representative is able to be assured that the piping above a ceiling is installed correctly.
There is allot of other work that is performed above ceilings, during other works there is a chance that Sprinkler piping can be affected.
By approving the additional inspection, NFPA 25 will be in accordance with the CA edition of NFPA 25.

Submitter Information Verification

Submitter Full Name:	Steven Schwartz
Organization:	Consolidated Fire Protection
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Fri Jun 26 17:30:23 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Performing inspections in concealed spaces is beyond that which should be included in a minimum standard. Annual inspections are performed from the floor level as stated in 5.2.3.

NFPA Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]

5.2.3.4

Hangers, braces, and supports installed in areas that ~~are inaccessible~~ cannot be entered for safety considerations due to process operations shall be inspected during each scheduled shutdown.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:

City:
State:
Zip:
Submittal Date: Tue Jun 02 18:53:20 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The use of “cannot be entered” is too specific and is not necessarily addressing all situation where hangers may be inaccessible.

Public Input No. 70-NFPA 25-2020 [Section No. 5.2.4]

5.2.4 Waterflow Alarm and Supervisory Signal Initiating Device.

Waterflow alarm and supervisory signal initiating devices shall be inspected ~~quarterly to verify that they are free of physical damage.~~ in accordance with 13.2.4, 13.2.6, and 13.3.2.1.3.

Statement of Problem and Substantiation for Public Input

Waterflow alarm and supervisory devices are common system components. The inspection requirements for common components are located in Chapter 13. The redundancy of having this requirement in Chapter 5 is unnecessary and leads to possible coordination issues between chapters. If this PI is accepted, Table 5.1.1.2 must be corrected to reflect the change.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 71-NFPA 25-2020 [Section No. 5.3.3]	

Submitter Information Verification

Submitter Full Name: Russell Leavitt

Organization: Telgian Corporation

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 01 15:10:35 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-43-NFPA 25-2020

Statement: Waterflow alarm and supervisory devices are common system components. The inspection requirements for common components are located in Chapter 13. The redundancy of having this requirement in Chapter 5 is unnecessary and leads to possible coordination issues between chapters.

Public Input No. 138-NFPA 25-2020 [New Section after 5.2.9]

(NEW) 5.2.10 Nitrogen Sign.

The nitrogen sign required by NFPA 13 for systems where nitrogen is used to meet system design requirements shall be inspected annually to verify that it is provided, securely attached, and legible.

Statement of Problem and Substantiation for Public Input

If approved by NFPA 13, dry and preaction systems using nitrogen as a supervisory gas will be permitted to use a higher c-value for system design. Part of those requirements include a sign posted at the system control valve indicating that nitrogen is used for system design. This proposal simply carries that sign requirement forward for existing systems (where required) at a frequency consistent with other sign inspections in this section.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 137-NFPA 25-2020 [Section No. 4.1.7.1]	Maintaining nitrogen supply
Public Input No. 143-NFPA 25-2020 [New Section after 13.4.3.2.13]	Nitrogen concentration in preaction systems
Public Input No. 144-NFPA 25-2020 [New Section after 13.4.5.2.9]	Nitrogen concentration in dry pipe systems
Public Input No. 137-NFPA 25-2020 [Section No. 4.1.7.1]	
Public Input No. 143-NFPA 25-2020 [New Section after 13.4.3.2.13]	
Public Input No. 144-NFPA 25-2020 [New Section after 13.4.5.2.9]	

Submitter Information Verification

Submitter Full Name: Jason Webb
Organization: Potter Electric Signal Company
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 16 09:58:06 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: NFPA 13 does not require a specific nitrogen sign.

Public Input No. 147-NFPA 25-2020 [New Section after 5.2.9]

NEW Section after 5.2.9

5.2.10 Automatic Air Vents. Automatic air vents installed per NFPA 13 to remove air from wet pipe sprinkler systems shall be inspected annually from the floor level to verify they are free of physical damage, and show no signs of leakage.

5.2.10.1 Strainers, filters, and screens shall be removed and inspected every 5 years for damaged or corroded parts.

5.2.10.2 When removed for inspection, strainers, filters, and screens shall be flushed until clear or replaced.

Statement of Problem and Substantiation for Public Input

Air venting has been required by NFPA 13 to aid in removing trapped air in wet-pipe sprinkler systems since the 2016 edition. Automatic air vents are commonly used to comply with this requirement. This proposal adds routine inspection criteria, consistent with other similar components, to chapter 5 for these devices.

Submitter Information Verification

Submitter Full Name: Jason Webb

Organization: Potter Electric Signal Company

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 22 15:32:52 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-49-NFPA 25-2020

Statement: Air venting has been required by NFPA 13 to aid in removing trapped air in wet-pipe sprinkler systems since the 2016 edition. Automatic air vents are commonly used to comply with this requirement. This proposal adds routine inspection criteria, consistent with other similar components, to chapter 5 for these devices.

Public Input No. 290-NFPA 25-2020 [New Section after 5.2.9]

5.2.10 Ancillary System Information Sign

The ancillary system information sign required by 4.1.11 shall be inspected annually to verify that it is provided, securely attached, and legible .

Statement of Problem and Substantiation for Public Input

If PI 259 is accepted, this provides the annual inspection requirement for the sign.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 259-NFPA 25-2020 [New Section after 4.1.10]	Ancillary System Information Sign

Submitter Information Verification

Submitter Full Name:	Jason Williams
Organization:	American Fire Sprinkler Associ
Affiliation:	AFSA
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 16:18:37 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: The sign was not included in Chapter 4 so there is no need to inspect for it.

Public Input No. 289-NFPA 25-2020 [Section No. 5.2.9]

5.2.9 Antifreeze Information Sign.

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

Statement of Problem and Substantiation for Public Input

Changing "present" to "provided" just brings uniformity to the wording of the previous sections for General Information and Information Sign.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 16:15:50 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-50-NFPA 25-2020

Statement: Changing "present" to "provided" just brings uniformity to the wording of the previous sections for General Information and Information Sign.

Public Input No. 270-NFPA 25-2020 [Section No. 5.3.1.1]

5.3.1.1*

Where required by this section, sample sprinklers shall be submitted to a recognized testing laboratory acceptable to the authority having jurisdiction for field service testing.

5.3.1.1.1

~~Where sprinklers have been installed for 50 years, they shall be replaced or representative samples from one or more sample areas shall be tested.~~

5.3.1.1.1.1 _

~~Test procedures shall be repeated at 10-year intervals.~~

5.3.1.1.1.2 _

~~Sprinklers manufactured prior to 1920 shall be replaced.~~

5.3.1.1.1.3 * _

Sprinklers manufactured using fast-response elements that have been installed for 20 years shall be replaced or representative samples shall be tested and then retested at 10-year intervals.

5.3.1.1.1.4 * _

Representative samples of solder-type sprinklers with a temperature classification of extra high [325°F (163°C)] or greater that are exposed to semicontinuous to continuous maximum allowable ambient temperature conditions shall be tested at 5-year intervals.

5.3.1.1.1.5 _

Where sprinklers have been installed for 75 years, they shall be replaced or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory acceptable to the authority having jurisdiction for field service testing and repeated at 5-year intervals.

5.3.1.1.1.6 * _

Dry sprinklers that have been installed for 15 years shall be replaced or representative samples shall be tested and then retested at 10-year intervals.

5.3.1.1.2 * _

Sprinklers exposed to harsh environments, including corrosive atmospheres, shall be one of the following:

(1) Replaced

(2) Tested via representative sprinkler samples on a 5-year basis

5.3.1.1.3 _

Listed corrosion-resistant sprinklers installed in harsh environments shall be permitted to be tested on a 10-year basis.

5.3.1.1.4 _

Where historical data indicate, longer intervals between testing shall be permitted.

Statement of Problem and Substantiation for Public Input

• International standards (EN 12845, Annex K) have a test frequency for both fast and standard response of 25 years. This modification harmonizes global standard.

• When the first edition of NFPA 25 was issued, the replacement interval of 1920 was added to the standard. At the time of original issuance that represented a 72 year interval. This change clarifies that all sprinklers older than 75 years should be replaced.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 271-NFPA 25-2020 [Section No. 5.3.1.1.1.3]	
Public Input No. 272-NFPA 25-2020 [New Section after 5.3.1.1.1.2]	
Public Input No. 274-NFPA 25-2020 [Section No. 5.3.1.1.1.5]	
Public Input No. 97-NFPA 25-2020 [Section No. A.5.3.1.1.1.3]	
Public Input No. 271-NFPA 25-2020 [Section No. 5.3.1.1.1.3]	
Public Input No. 272-NFPA 25-2020 [New Section after 5.3.1.1.1.2]	
Public Input No. 274-NFPA 25-2020 [Section No. 5.3.1.1.1.5]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 14:28:55 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-51-NFPA 25-2020
Statement: Changes in this section reflect the latest results from UL on sprinklers tested in 2019.

Public Input No. 60-NFPA 25-2020 [Section No. 5.3.1.1 [Excluding any Sub-Sections]]

> Where required by this section, sample sprinklers shall be submitted to ~~a recognized~~ an ISO-17025 certified testing laboratory acceptable to the authority having jurisdiction for field service testing.

Statement of Problem and Substantiation for Public Input

ISO-17025 "General Requirements for the Testing and Calibration of Laboratories", ensures the laboratory is following industry standards for testing and is audited to this standard so the AHJ and building owner can be assured the testing is accurate, precise and conducted correctly.

Submitter Information Verification

Submitter Full Name:	Grant Lobdell
Organization:	Dyne Fire Protection Labs
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 19 14:24:24 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: There hasn't been a problem identified by the current allowance of sprinklers being tested by a testing laboratory acceptable to the AHJ.

Public Input No. 272-NFPA 25-2020 [New Section after 5.3.1.1.1.2]

5.3.1.1.1.2 Where all sprinklers within a light hazard occupancy are replaced. Replacement sprinklers shall be:

(1) Quick-response type

(2) Residential sprinklers

(3) Quick respone CMSA sprinklers

(4) ESFR sprinklers

(5) Standard-response sprinklers used for modifications or additions to existing light hazard systems equipped with standard-response sprinklers.

Statement of Problem and Substantiation for Public Input

For nearly 25 years the fire protection industry has recognized the importance of using fast response sprinklers in light hazard occupancies. This change clarifies the importance of providing that same level of protection for existing light hazard occupancies as new ones.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 270-NFPA 25-2020 [Section No. 5.3.1.1]	
Public Input No. 271-NFPA 25-2020 [Section No. 5.3.1.1.1.3]	
Public Input No. 274-NFPA 25-2020 [Section No. 5.3.1.1.1.5]	
Public Input No. 97-NFPA 25-2020 [Section No. A.5.3.1.1.1.3]	
Public Input No. 270-NFPA 25-2020 [Section No. 5.3.1.1]	
Public Input No. 271-NFPA 25-2020 [Section No. 5.3.1.1.1.3]	
Public Input No. 274-NFPA 25-2020 [Section No. 5.3.1.1.1.5]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 14:37:37 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The user should refer to the requirements in NFPA 13 for replacement of sprinklers in a light hazard occupancy.

Public Input No. 34-NFPA 25-2020 [Section No. 5.3.1.1.1.2]

5.3.1.1.1.2

~~Sprinklers manufactured prior to 1920 shall be replaced.~~

Statement of Problem and Substantiation for Public Input

See PI 33

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 33-NFPA 25-2020 [Section No. 5.3.1.1.1.5]	

Submitter Information Verification

Submitter Full Name: David Baron
Organization: Global Fire Protection Company
Street Address:
City:
State:
Zip:

Submittal Date: Wed Apr 29 12:29:52 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Sprinklers manufactured prior to 1920 are not reliable and need to be replaced.

Public Input No. 271-NFPA 25-2020 [Section No. 5.3.1.1.1.3]

5.3.1.1.1.~~3~~ 1 *

~~Sprinklers manufactured using fast-response elements that~~ Sprinklers that have been installed for ~~20~~ 25 years shall be replaced or representative samples shall be tested and then retested at 10-year intervals.

Statement of Problem and Substantiation for Public Input

- International standards (EN 12845, Annex K) have a test frequency for both fast and standard response of 25 years. This modification harmonizes global standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 270-NFPA 25-2020 [Section No. 5.3.1.1]	
Public Input No. 272-NFPA 25-2020 [New Section after 5.3.1.1.1.2]	
Public Input No. 274-NFPA 25-2020 [Section No. 5.3.1.1.1.5]	
Public Input No. 97-NFPA 25-2020 [Section No. A.5.3.1.1.1.3]	
Public Input No. 270-NFPA 25-2020 [Section No. 5.3.1.1]	
Public Input No. 272-NFPA 25-2020 [New Section after 5.3.1.1.1.2]	
Public Input No. 274-NFPA 25-2020 [Section No. 5.3.1.1.1.5]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 14:34:36 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-51-NFPA 25-2020

Statement: Changes in this section reflect the latest results from UL on sprinklers tested in 2019.

Public Input No. 274-NFPA 25-2020 [Section No. 5.3.1.1.1.5]

5.3.1.1.1.5

Where sprinklers have been installed for 75 years, they shall be ~~replaced or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory acceptable to the authority having jurisdiction for field service testing and repeated at 5-year intervals.~~ replaced

Statement of Problem and Substantiation for Public Input

When the first edition of NFPA 25 was issued, the replacement interval of 1920 was added to the standard. At the time of original issuance that represented a 72 year interval. This change clarifies that all sprinklers older than 75 years should be replaced.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 270-NFPA 25-2020 [Section No. 5.3.1.1]	
Public Input No. 271-NFPA 25-2020 [Section No. 5.3.1.1.1.3]	
Public Input No. 272-NFPA 25-2020 [New Section after 5.3.1.1.1.2]	
Public Input No. 97-NFPA 25-2020 [Section No. A.5.3.1.1.1.3]	
Public Input No. 270-NFPA 25-2020 [Section No. 5.3.1.1]	
Public Input No. 271-NFPA 25-2020 [Section No. 5.3.1.1.1.3]	
Public Input No. 272-NFPA 25-2020 [New Section after 5.3.1.1.1.2]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 14:42:23 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Test data does not support just replacing sprinklers that are 75 years old.

Public Input No. 33-NFPA 25-2020 [Section No. 5.3.1.1.1.5]

5.3.1.1.1.5

Where sprinklers have been installed for 75 years, they shall be replaced~~ or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory acceptable to the authority having jurisdiction for field service testing and repeated at 5-year intervals~~ .

Statement of Problem and Substantiation for Public Input

I believe that back in the 90's when the original replacement date for sprinklers of 1920 was set that this was the original intent. However because a date was actually used instead of an age in years this was left in tact and never updated. This just corrects that and updates it to a current date without having to revisit this again in the standard process. It will also allow the 1920 date to be eliminated in 5.3.1.1.1.2

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 34-NFPA 25-2020 [Section No. 5.3.1.1.1.2]	

Submitter Information Verification

Submitter Full Name: David Baron
Organization: Global Fire Protection Company
Street Address:
City:
State:
Zip:
Submittal Date: Wed Apr 29 12:22:31 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Test data does not support just replacing sprinklers that are 75 years old.

Public Input No. 291-NFPA 25-2020 [New Section after 5.3.1.1.3]

5.3.1.1.4* Sprinklers inspected in accordance with 5.2.1 that show signs of corrosion or loading shall be allowed to be tested to determine if the corrosion or loading is detrimental to the sprinkler performance.

5.3.1.1.4.1 Samples selected for testing in accordance with 5.3.1.2 shall be based on worst-case conditions.

5.3.1.1.4.2 If the samples successfully pass the tests, representative samples of the remaining corroded or loaded sprinklers shall be retested at 5-year intervals.

Statement of Problem and Substantiation for Public Input

There is language in section 5.2.1.1.1 that infers that as long as corrosion or loaded on a sprinkler isn't detrimental to the sprinkler performance the corroded sprinklers can remain in service. Many sprinkler contractors submit samples to the testing laboratories to determine if the sprinkler performance is acceptable. However, there isn't any criteria for retesting the remaining sprinklers. This new section provides criteria for submitting these sprinklers for testing as well as criteria for retesting the remaining sprinklers.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 292-NFPA 25-2020 [New Section after A.5.3.1.1.2]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 16:29:48 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This criteria isn't necessary and a degree of judgement is needed to determine if a sprinkler is severely loaded or corroded. Guidance is in the annex to help determine the severity. See A.5.2.1.1.1.

Public Input No. 20-NFPA 25-2020 [New Section after 5.3.1.2]

5.3.1.2.1

The sample area and the sprinklers chosen for testing from the sample area shall be defined by the building owner or designated representative.

Statement of Problem and Substantiation for Public Input

I believe this is the intent of the standard but such a statement is currently not found in the document. This statement will eliminate confusion as to how to define the sampling area.

Submitter Information Verification

Submitter Full Name:	Grant Lobdell
Organization:	Dyne Fire Protection Labs
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Fri Mar 06 10:38:35 EST 2020
Committee:	INM-AAA

Committee Statement

Resolution:	FR-53-NFPA 25-2020
Statement:	These annex changes reflect the change in 5.3.1.2 when describing the group of sprinklers being tested as a sample area. Text is added to suggest that the owner and the contractor performing the work consult when selecting the sample area for testing.

Public Input No. 21-NFPA 25-2020 [New Section after 5.3.1.2]

5.3.1.2.2

Each type of sprinkler in the sample area shall be represented in the sample.

Statement of Problem and Substantiation for Public Input

This statement is in the Annex but should be clearly stated in the body of the document. The annex should still be included to note that sprinklers of different orientation are considered the same type for the purposes of the field service test.

Submitter Information Verification

Submitter Full Name: Grant Lobdell
Organization: Dyne Fire Protection Labs
Street Address:
City:
State:
Zip:
Submittal Date: Fri Mar 06 10:40:29 EST 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-54-NFPA 25-2020

Statement: It is important that each type and manufacturer of sprinklers in the sample area be included in the sample set of sprinklers being tested. The annex clarifies that each different orientation of the same sprinkler type and manufacturer doesn't need to be tested.

Public Input No. 19-NFPA 25-2020 [Section No. 5.3.1.2]

5.3.1.2*

A representative sample of sprinklers for testing per 5.3.1.1 shall consist of a minimum of not less than four sprinklers or 1 percent of the number of sprinklers per ~~individual sprinkler~~ sample area , whichever is greater.

Statement of Problem and Substantiation for Public Input

The wording is confusing as the term "individual sample" is currently referring to the group of sprinklers in a defined area and not a single sprinkler. I believe the change proposed is more clear.

Submitter Information Verification

Submitter Full Name: Grant Lobdell

Organization: Dyne Fire Protection Labs

Street Address:

City:

State:

Zip:

Submittal Date: Fri Mar 06 10:37:28 EST 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-52-NFPA 25-2020

Statement: The wording is confusing as the term "individual sprinkler sample" is currently referring to the group of sprinklers in a defined area and not a single sprinkler. This revised wording provides clarity when selecting sprinklers for testing.

Public Input No. 187-NFPA 25-2020 [New Section after 5.3.1.3.1]

5.3.1.4

Where sprinklers have been replaced or tested as required by 5.3.1, a sign or label shall be attached to each system riser which indicates the following:

(1) The date the sprinklers were sample tested or replaced

(2) The area(s) where sprinklers were replaced or covered by the sample testing

(3) The type(s) of sprinklers replaced or sample tested

(4) The maximum interval permitted for the next sample test or replacement

Statement of Problem and Substantiation for Public Input

It is a often difficult to determine if sprinklers have been replaced or sample tested as required by 5.3.1. Records are often not available or difficult to find. A sign or label would simplify the verification process and eliminate the need for researching the compliance with 5.3.1.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 188-NFPA 25-2020 [New Section after A.5.3.1.2]	
Public Input No. 188-NFPA 25-2020 [New Section after A.5.3.1.2]	

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 29 18:00:35 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Record keeping is the responsibility of the owner and is already covered in Chapter 4. A Task Group will be looking at this issue and any others that address documentation.

Public Input No. 139-NFPA 25-2020 [Section No. 5.3.1.3.1]

5.3.1.3.1

~~Manufacturers shall be permitted to make modifications to their own sprinklers in the field with listed devices that restore the original performance as intended by the listing, where acceptable to the authority having jurisdiction.~~

Statement of Problem and Substantiation for Public Input

Reason:
This was added in previous cycles to provide manufacturers to be able to make modifications to sprinklers in the field. The reality is that any sprinklers that are found to need modifications are simply replaced rather than altered so this is not needed in the code anymore.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello

Organization: UL LLC

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 16 11:46:07 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-55-NFPA 25-2020

Statement: This was added in previous cycles to provide manufacturers to be able to make modifications to sprinklers in the field. However, sprinklers that are found to need modifications are typically replaced rather than altered. The requirements allowing a manufacturer to make modifications to listed devices is already covered in section 4.2.

Public Input No. 68-NFPA 25-2020 [Section No. 5.3.2.1]

5.3.2.1

Electrically operated sprinklers and sprinklers with monitoring of activation shall be tested in accordance with the manufacturer's requirements.

Statement of Problem and Substantiation for Public Input

New types of sprinklers (sprinklers with monitoring of activation) have been recognized by ISO 6182-1 and their maintenance and inspection requirements should be described

Submitter Information Verification

Submitter Full Name:	Leonid Tanklevskiy
Organization:	Gefest Enterprise Group
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jun 01 05:19:29 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: These types of sprinklers have not been recognized for use in systems installed in accordance with NFPA 13.

Public Input No. 293-NFPA 25-2020 [New Section after 5.3.2.2]

5.3.2.3 Electrically operated sprinklers that have been installed for 5 years shall be replaced or representative samples shall be tested and then retested after 10-years.

5.3.2.3.1 After the tenth year, representative samples shall be retested every year.

5.3.2.4 A representative sample of electrically operated sprinklers shall consist of a minimum of not less than ten sprinklers or 1 percent of the number of sprinklers per individual sprinkler sample, whichever is greater.

Statement of Problem and Substantiation for Public Input

Additional test criteria is included for electrically operated sprinklers.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 294-NFPA 25-2020 [New Section after 5.2.1.1.4]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 16:53:53 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The manufacturer's data sheet should be consulted for the necessary testing requirements for these special sprinklers.

Public Input No. 71-NFPA 25-2020 [Section No. 5.3.3]

5.3.3 Waterflow Alarm Devices.

~~**5.3.3.1**~~ –

~~Mechanical waterflow alarm devices including, but not limited to, water motor gongs, shall be tested quarterly.~~

~~**5.3.3.2 ***~~ –

~~Vane-type and pressure switch–type waterflow alarm devices shall be tested semiannually.~~

~~**5.3.3.3**~~ –

~~Testing of pressure switch–type waterflow alarm devices on wet pipe systems shall be accomplished by opening the inspector's test connection.~~

~~**5.3.3.3.1**~~ –

~~Where freezing weather conditions or other circumstances prohibit use of the inspector's test connection, the bypass connection shall be permitted to be used.~~

~~**5.3.3.4**~~ –

~~Except as permitted in 5.3.3.4.1 , testing of vane-type waterflow alarm devices on wet pipe systems shall be accomplished by a flow of water equivalent to the flow out of the smallest single k-factor sprinkler (or smaller) past the flow switch.~~

~~**5.3.3.4.1**~~ –

~~A vane-type waterflow alarm device listed with an integral automated test feature that is capable of verifying the presence of water at the location of the water flow alarm device and function of the water flow device and alarm shall be permitted to be used.~~

~~**5.3.3.4.2**~~ –

~~Vane-type waterflow alarm devices tested semiannually using circulated water or as described in 5.3.3.4.1 shall be tested by opening the inspector's test connection at a minimum frequency of once every 3 years.~~

~~**5.3.3.5**~~ –

~~Fire pumps shall not be taken out of service during testing unless constantly attended by qualified personnel or all impairment procedures contained in Chapter 15 are followed.~~

<u>Waterflow alarm devices shall be tested in accordance with 13.2.4</u>

Statement of Problem and Substantiation for Public Input

Waterflow alarm devices are a common component and the requirements are located in Chapter 13. Redundant sections are deleted and 5.3.3.4, 5.3.3.4.1, and 5.3.3.4.2 are relocated to Chapter 13. 5.3.3.5 is unneeded as it is addressed as a general requirement in 4.4. If this revision is accepted Table 5.1.1.2 must be revised.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 70-NFPA 25-2020 [Section No. 5.2.4]	
Public Input No. 72-NFPA 25-2020 [New Section after 13.2.4.6]	
Public Input No. 73-NFPA 25-2020 [Section No. 13.2.4.7]	

Public Input No. 72-NFPA 25-2020 [New Section after 13.2.4.6]

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 01 15:25:14 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-147-NFPA 25-2020

Statement: Waterflow alarm devices are a common component and the requirements are located in Chapter 13. Relocating from Chapter 5 to Chapter 13 to be consistent with common components being in Chapter 13.

Public Input No. 134-NFPA 25-2020 [Section No. 5.3.4]

5.3.4* Antifreeze Systems.

Annually, before the onset of freezing weather, the antifreeze solution shall be tested using the following procedure:

(1) Using 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, the type of antifreeze in the system shall be determined and (a) or (b) implemented if necessary:

(a) If the antifreeze is found to be a type that is no longer permitted, the system shall be drained completely and the antifreeze replaced with an acceptable solution.

(b) If the type of antifreeze cannot be reliably determined, the system shall be drained completely and the antifreeze replaced with 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) and 5.3.4(1)(b), test samples shall be taken at the top of each system and at 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 exhibits a concentration in excess of what is permitted by 5.3.4.4, the system shall be emptied and refilled with a new acceptable solution.

(5) If a concentration greater than what is currently 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.

5.3.4.1

The antifreeze solution shall be tested at its most remote portion and where it interfaces with the wet pipe system.

5.3.4.2

Where antifreeze systems have a capacity larger than 150 gal (568 L), tests at one additional point for every 100 gal (379 L) shall be made.

5.3.4.2.1

If the results indicate an incorrect freeze point at any point in the system, the system shall be drained and refilled with new premixed antifreeze.

5.3.4.2.2

For premixed solutions, the manufacturer's instructions shall be permitted to be used with regard to the number of test points and the refill procedure.

5.3.4.3

The use of antifreeze solutions shall be in conformity with state and local health regulations.

5.3.4.3.1*

Listed CPVC sprinkler pipe and fittings shall be protected from freezing with glycerine only.

5.3.4.3.1.1

The use of diethylene, ethylene, or propylene glycols shall be specifically prohibited.

5.3.4.4

Except as permitted by 5.3.4.4.1 and 5.3.4.4.3, all antifreeze systems shall utilize listed antifreeze solutions.

5.3.4.4.1*

For systems installed prior to September 30, 2012, listed antifreeze solutions shall not be required until September 30, 2022, where one of the following conditions is met:

(1)* The concentration of the antifreeze solution shall be limited to 30 percent propylene glycol by volume or 38 percent glycerine by volume.

(2)* Antifreeze systems with concentrations in excess of 30 percent but not more than 40 percent propylene glycol by volume and 38 percent but not more than 50 percent glycerine by volume shall be permitted based upon an approved deterministic risk assessment prepared by a qualified person approved by the authority having jurisdiction.

5.3.4.4.2

Newly introduced solutions shall be factory premixed antifreeze solutions (chemically pure or United States Pharmacopeia 96.5 percent).

5.3.4.4.3

Premixed antifreeze solutions of propylene glycol exceeding 30 percent concentration by volume shall be permitted for use with ESFR sprinklers where the ESFR sprinklers are listed for such use in a specific application.

Statement of Problem and Substantiation for Public Input

Delete all of 5.3.4 and re-write the hole section.
There are a number of changes that need to be addressed such as we now have listed antifreeze available, need to decide if existing antifreeze should be changed or grandfathered under current rules or new listed required. Need to address CPVC needing specific types of antifreeze. Are there new requirements for testing new antifreeze?

Add new device - Fire sprinkler pressure tank as part of rewrite,
.

Submitter Information Verification

Submitter Full Name: Top Myers
Organization: Myers Risk Services, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 12 17:06:06 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 217-NFPA 25-2020 [Section No. 5.3.4 [Excluding any Sub-Sections]]

Annually, before the onset of freezing weather, the antifreeze solution shall be tested using the following procedure:

(1) Using 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, the type of antifreeze in the system shall be determined and (a) or (b) implemented if necessary:

(2) If the antifreeze is found to be a type that is no longer permitted, the system shall be drained completely and the antifreeze replaced with

~~an acceptable~~

(a) a listed solution.

(b) If the type of antifreeze cannot be reliably determined, the system shall be drained completely and the antifreeze replaced with

~~an acceptable solution~~

(a) a listed solution in accordance with 5.3.4.4 .

(3) If the antifreeze is not replaced in accordance with 5.3.4(1)(a) and 5.3.4(1)(b), test samples shall be taken at the top of each system and at the bottom of each system as follows:

(4) 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.

(5) 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.

(6) 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.

(7) If any of the samples exhibits ~~a concentration in excess of what is permitted by 5.3.4.4 , the~~ values that are outside of the allowable range the system shall be emptied and refilled with a new ~~acceptable~~ listed solution.

(8) ~~If a concentration greater than what is currently 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.~~

(9)

Statement of Problem and Substantiation for Public Input

listed antifreezes are sold premixed and manufacturers provided acceptable specific gravity and refractive index values. Non listed antifreezes are required to be replaced with antifreezes listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva

Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 09:49:13 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 56-NFPA 25-2020 [Section No. 5.3.4 [Excluding any Sub-Sections]]

Annually, before the onset of freezing weather, the antifreeze solution shall be tested using the following procedure:

(1) Using 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, the type of antifreeze in the system shall be determined and (a) or (b) implemented if necessary:

  (2) If the antifreeze is found to be a type that is no longer permitted, the system shall be drained completely and the antifreeze replaced with an acceptable solution.

  (3) If the type of antifreeze cannot be reliably determined, the system shall be drained completely and the antifreeze replaced with an acceptable solution in accordance with 5.3.4.4 .

(4) If the antifreeze is not replaced in accordance with 5.3.4(1)(a) and 5.3.4(1)(b), test samples shall be taken at the top of each system and at the bottom of each system as follows:

  (5) 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.

  (6) 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.

(7) The ~~specific gravity of each solution~~ samples shall be ~~checked using a hydrometer with a suitable scale or a refractometer having a scale calibrated for the antifreeze solution~~ sent to a testing laboratory for analysis .

(8) If any of the samples ~~exhibits a concentration in excess of what is permitted by~~ do not conform to the concentrations of the listed antifreeze solution, or the concentrations permitted in 5.3.4.4 , the system shall be emptied and refilled with a new acceptable solution.

(9) If a concentration greater than what is currently 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.

Statement of Problem and Substantiation for Public Input

As of the time of writing this input, there is only one listed antifreeze solution. The only way to confirm an antifreeze sample is the listed solution is via laboratory analytical methods. Measuring the density will not distinguish a listed antifreeze from a non listed antifreeze, therefore it should be required to send a sample to a laboratory for testing, at least annually.

Submitter Information Verification

Submitter Full Name: Grant Lobdell

Organization: Dyne Fire Protection Labs

Street Address:

City:

State:

Zip:

Submittal Date: Tue May 12 13:34:20 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 219-NFPA 25-2020 [Section No. 5.3.4.2.1]

5.3.4.2.1

If the results indicate an incorrect freeze point at any point in the system, the system shall be drained and refilled with new ~~premixed~~ listed antifreeze.

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name:	Manuel Silva
Organization:	Johnson Controls
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 09:55:41 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 220-NFPA 25-2020 [Section No. 5.3.4.2.2]

5.3.4.2.2

For ~~premixed~~ listed solutions, the manufacturer's instructions shall be permitted to be used with regard to the number of test points and the refill procedure.

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 09:57:10 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 221-NFPA 25-2020 [Section No. 5.3.4.3.1 [Excluding any Sub-Sections]]

Listed CPVC sprinkler pipe and fittings shall be protected from freezing ~~with glycerine~~ using listed antfreezes only.

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use. The antifreeze listing protocol tests for CPVC compatibility.

Submitter Information Verification

Submitter Full Name:	Manuel Silva
Organization:	Johnson Controls
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 09:58:18 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 233-NFPA 25-2020 [Section No. 5.3.4.3.1 [Excluding any Sub-Sections]]

~~Listed~~ Where CPVC sprinkler pipe and fittings ~~shall be~~ are protected from freezing with ~~glycerine only~~ anti-freeze, the anti-freeze solution shall be specifically listed for use in/with CPVC .

Statement of Problem and Substantiation for Public Input

The 2019 edition of NFPA 13 section 8.6.2 requires anti-freeze solution be listed for use in sprinkler systems. NFPA 25 2020 edition section 5.3.4 requires newly introduced solution be factory pre-mix and by September of 2022 that all existing systems utilize listed anti-freeze solution. This change keeps this section current while not limiting any new material or base from being specifically excluded as long as it is listed for use with this type of pipe/fitting material.

Submitter Information Verification

Submitter Full Name: David Baron
Organization: Global Fire Protection Company
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:28:42 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 223-NFPA 25-2020 [Section No. 5.3.4.4]

5.3.4.4

Except as permitted ~~by~~ by 5.3.4.4.1 ~~and~~ ~~5.3.4.4.3~~ , all antifreeze systems shall utilize listed antifreeze solutions.

5.3.4.4.1* –

~~For systems installed prior to September 30, 2012, listed antifreeze solutions shall not be required until September 30, 2022, where one of the following conditions is met:~~

(1)* ~~The concentration of the antifreeze solution shall be limited to 30 percent propylene glycol by volume or 38 percent glycerine by volume.~~

(2)* ~~Antifreeze systems with concentrations in excess of 30 percent but not more than 40 percent propylene glycol by volume and 38 percent but not more than 50 percent glycerine by volume shall be permitted based upon an approved deterministic risk assessment prepared by a qualified person approved by the authority having jurisdiction.~~

~~**5.3.4.4.2**~~ –

~~Newly introduced solutions shall be factory premixed antifreeze solutions (chemically pure or United States Pharmacopeia 96.5 percent).~~

~~**5.3.4.4.3**~~ –

Premixed antifreeze solutions of propylene glycol exceeding 30 percent concentration by volume shall be permitted for use with ESFR sprinklers where the ESFR sprinklers are listed for such use in a specific application.

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 10:03:50 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 94-NFPA 25-2020 [Section No. 5.3.4.4.1]

5.3.4.4.1*

For systems installed prior to September 30, 2012, listed antifreeze solutions shall ~~not~~ be required ~~until~~ after September 30, 2022~~, where one of the following conditions is met* The concentration of the antifreeze solution shall be limited to 30 percent propylene glycol by volume or 38 percent glycerine by volume~~ .

~~* Antifreeze systems with concentrations in excess of 30 percent but not more than 40 percent propylene glycol by volume and 38 percent but not more than 50 percent glycerine by volume shall be permitted based upon an approved deterministic risk assessment prepared by a qualified person approved by the authority having jurisdiction.~~

Statement of Problem and Substantiation for Public Input

The language in this section needs to change as the sunset date of September 30, 2022 will have past by the time the 2023 edition of NFPA 25 is released.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 243-NFPA 25-2020 [Sections A.5.3.4.4.1, A.5.3.4.4.1(1), A.5.3.4.4.1(2)]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 03 15:30:00 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 241-NFPA 25-2020 [Section No. 5.3.4.4.2]

5.3.4.4.2

Newly introduced solutions shall be listed factory premixed antifreeze solutions (chemically pure or United States Pharmacopeia 96.5 percent).

Statement of Problem and Substantiation for Public Input

By the time this standard is issued the 2022 date for requiring listed anti-freeze will have passed and any newly installed anti-freeze solution will be required to be listed.

Submitter Information Verification

Submitter Full Name: David Baron

Organization: Global Fire Protection Company

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 10:54:53 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 186-NFPA 25-2020 [New Section after 5.4.1.1]

5.4.1.1.1

Dry sprinklers shall be permitted to be reinstalled when removed in accordance with the manufacturer's installation and maintenance instructions.

Statement of Problem and Substantiation for Public Input

This would coincide with NFPA 13, 2019 edition in section 16.2.1.1.1, since wet sprinklers were addressed by NFPA 25, dry sprinklers should also.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 185-NFPA 25-2020 [Section No. 5.4.1.1]	Replacement of sprinklers.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 17:52:00 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-57-NFPA 25-2020

Statement: Adding the word “threaded” permits the reuse of sprinklers removed from grooved fittings where torque is not applied to the removal or installation of the sprinkler. New allowances for the removal and reinstallation of dry sprinklers when removed in accordance with the manufacturer’s data sheet(s) and for the removal and reuse of sprinklers when the entire fittings is removed with the sprinkler and the sprinklers don’t get damaged. These allowances correlate with NFPA 13.

Annex language clarifies that flexible hose connections are fittings.

Public Input No. 185-NFPA 25-2020 [Section No. 5.4.1.1]

5.4.1.1

Where a sprinkler has been removed ~~for any reason~~ from a fitting or welded outlet , it shall not be reinstalled, except as permitted by 5 .4.1.1.1.

Statement of Problem and Substantiation for Public Input

NFPA 13 allows for sprinklers to be removed if not directly removed from the fitting it is installed in, this would coincide with the installing standard, NFPA 13 section 16.2.1.1.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 186-NFPA 25-2020 [New Section after 5.4.1.1]	

Submitter Information Verification

Submitter Full Name: Jason Williams
Organization: American Fire Sprinkler Associ
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 29 17:32:52 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-57-NFPA 25-2020

Statement: Adding the word “threaded” permits the reuse of sprinklers removed from grooved fittings where torque is not applied to the removal or installation of the sprinkler. New allowances for the removal and reinstallation of dry sprinklers when removed in accordance with the manufacturer’s data sheet(s) and for the removal and reuse of sprinklers when the entire fittings is removed with the sprinkler and the sprinklers don’t get damaged. These allowances correlate with NFPA 13.

Annex language clarifies that flexible hose connections are fittings.

Public Input No. 65-NFPA 25-2020 [Section No. 5.4.1.5.1]

5.4.1.5.1

The sprinklers shall correspond to the types and temperature ratings of the sprinklers in the property.

Delete all 5.4.1.5.1

Statement of Problem and Substantiation for Public Input

5.4.1.5.1 is covered in 5.4.1.5.4 with almost same wording. This removes possible confusion and over thinking.

Submitter Information Verification

Submitter Full Name: Top Myers

Organization: Myers Risk Services, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Thu May 28 17:26:52 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-58-NFPA 25-2020

Statement: Deleted redundant text in 5.4.1.5.4 that is already covered in 5.4.1.5.1. The charging sentence is changed to better describe the number of sprinklers required in the spare sprinkler cabinet required by 5.4.1.5.2.

Public Input No. 69-NFPA 25-2020 [Section No. 5.4.1.8]

5.4.1.8

Electrically operated sprinklers and sprinklers with monitoring of activation shall be maintained in accordance with the manufacturer's requirements.

Statement of Problem and Substantiation for Public Input

New types of sprinklers (sprinklers with monitoring of activation) have been recognized by ISO 6182-1 and their maintenance and inspection requirements should be described.

Submitter Information Verification

Submitter Full Name:	Leonid Tanklevskiy
Organization:	Gefest Enterprise Group
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jun 01 05:24:58 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: These types of sprinklers have not been recognized for use in systems installed in accordance with NFPA 13.

Public Input No. 47-NFPA 25-2020 [New Section after 5.5.1]

Operation of air vent on wet sprinkler systems

Add a requirement to operate manual air vents on wet sprinkler systems when a system is re-filled with water.

Additional Proposed Changes

File Name	Description	Approved
.1588780416140		

Statement of Problem and Substantiation for Public Input

The manual air vents would be operated as intended in requiring their installation.

Submitter Information Verification

Submitter Full Name: Ralph Foster

Organization: Jensen Hughes

Street Address:

City:

State:

Zip:

Submittal Date: Wed May 06 11:52:07 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-59-NFPA 25-2020

Statement: This annex test is needed to recommend that manual air vents are opened any time a wet pipe system is refilled.

Public Input No. 64-NFPA 25-2020 [Section No. 5.5.1]

5.5.1

Whenever a component in a sprinkler system is adjusted, repaired, reconditioned, or replaced, the actions required in Table 5.5.1 shall be performed.

Table 5.5.1 Summary of Component Action Requirements

Component	Adjust	Repair/ Recondition	Replace	Required Action
Water Delivery Components				
- - - -				
Antifreeze solution				X
-				
		X		
~~Inspect~~				
				Test freezing point of solution
- - - -				
				Inspect for leaks at system working pressure
Fire department connections	X	X	X	See Chapter 13
Pipe and fittings affecting not more than 20 sprinklers	X	X	X	Inspect for leaks at system working pressure
Pipe and fittings affecting more than 20 sprinklers	X	X	X	Hydrostatic test in conformance with NFPA 13
Sprinklers, regardless of number	X			
-				
			X	Inspect for leaks at system working pressure
- - - - -				
Alarm and Supervisory Components				
- - - -				
Detection system (for deluge or preaction system)	X	X	X	Operational test for conformance with NFPA 13 and/or *NFPA 72*
High– and low– air pressure switch	X	X	X	Operational test of high and low settings
Pressure switch–type waterflow	X	X	X	Operational test using the inspector's test connection or alarm bypass test valve
Valve supervisory signal initiating device	X	X	X	Test for conformance with NFPA 13 and/or *NFPA 72*
Vane-type waterflow	X	X	X	Operational test using inspector's test connection
Water motor gong	X	X	X	Operational test using inspector's test connection
Testing and Maintenance Components				
- - - -				
Air compressor	X	X	X	Operational test for conformance with NFPA 13
Automatic air maintenance device	X	X	X	Operational test for conformance with NFPA 13
Auxiliary drains	X	X	X	Inspect for leaks at system working pressure; main drain test

Gauges	X			
-				
	X	Verify at 0 bar (0 psi) and system working pressure		
Inspector's test connection	X	X	X	Inspect for leaks at system working pressure; main drain test
Main drain	X	X	X	Main drain test
Structural Components				
- - - -				
Hanger/seismic bracing	X	X	X	Inspect for conformance with NFPA 13
Pipe stands	X	X	X	Inspect for conformance with NFPA 13
Informational Components				
- - - -				
Antifreeze information sign	X	X	X	Inspect for conformance with this standard
General information sign	X	X	X	Inspect for conformance with this standard
Hydraulic design information sign	X	X	X	Inspect for conformance with NFPA 13 and this standard
Identification sign	X	X	X	Inspect for conformance with NFPA 13 and this standard
Information sign	X	X	X	Inspect for conformance with this standard

Statement of Problem and Substantiation for Public Input

The checking of the freeze point of antifreeze is a test not an inspection.

Submitter Information Verification

Submitter Full Name: Grant Lobdell
Organization: Dyne Fire Protection Labs
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 19 14:49:36 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-92-NFPA 25-2020

Statement: The allowance to adjust the antifreeze solution has been deleted since solutions can no longer be adjusted. Checking the solution after installation is a test rather than an inspection, but to test for the freezing point is no longer applicable since the listed antifreeze solutions are premixed to achieve a set freezing point. The test is to determine that the solution hasn't been diluted with any remaining liquids in the system.

Public Input No. 222-NFPA 25-2020 [Section No. 6.3.1.2 [Excluding any Sub-Sections]]

For buildings that are less or equal to 80,000 ft2 (7432 m2) per floor, Class I and Class III standpipe system demand shall include 500 gpm (1892 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. For buildings that exceed 80,000 ft2 (7432 m2) per floor, Class I and Class III standpipe system demand shall include 500 gpm (1892 L/min) for the most remote standpipe and 500 gpm (1892 L/min) for the second standpipe and 250 gpm (946 L/min) for the third standpipe if the additional flow is needed for an unsprinklered building.

Statement of Problem and Substantiation for Public Input

For buildings with floor areas exceeding 80,ooo ft2, NFPA 14 has different requirements. Reference - NFPA 14 - 2019 edition, section 7.10.1.1.3.1.

If the technical committee desires, these two situations could be broken into two unique numbers. This might make it easier for the user of the standard.

Submitter Information Verification

Submitter Full Name:	John Denhardt
Organization:	American Fire Sprinkler Association
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 10:03:44 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Section 6.3.1.4 requires the user to research the edition of NFPA 14 when the standpipe system was installed for special testing criteria. The AHJ also needs to be involved to determine the correct installation and testing criteria.

Public Input No. 228-NFPA 25-2020 [Section No. 6.3.2.2.1]

6.3.2.2.1

The inside standpipe piping shall show no leakage. A drop in gauge pressure shall not be considered a failure.

Statement of Problem and Substantiation for Public Input

The hydrostatic testing of this system differs from the requirements of NFPA 13. Some AHJs are enforcing NFPA 13 requirements for this test.

Submitter Information Verification

Submitter Full Name:	John Denhardt
Organization:	American Fire Sprinkler Association
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 10:16:41 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-66-NFPA 25-2020

Statement: This clarification compliments the annex section A.6.3.2.1 that describes the intent of the hydrostatic test. This requirement only applies to manual dry and semiautomatic dry standpipes.

Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]

7.2.2.1.3

Piping installed in areas that ~~are inaccessible~~ cannot be entered for safety considerations due to process operations shall be inspected during each scheduled shutdown.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:

State:

Zip:

Submittal Date: Tue Jun 02 18:56:16 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The use of “cannot be entered” is too specific and is not necessarily addressing all situations where piping may be inaccessible.

Public Input No. 211-NFPA 25-2020 [Section No. 7.3.1.1]

7.3.1.1

Any flow test results that indicate deterioration of available ~~waterflow~~ water flow and pressure shall be investigated to the complete satisfaction of the authority having jurisdiction to ensure that the required flow and pressure are available for fire protection.

Statement of Problem and Substantiation for Public Input

Improper use and spelling, the term waterflow should be designated with the use of devices only.

Submitter Information Verification

Submitter Full Name:	Jeff Lewis
Organization:	VSC Fire Security
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 09:14:01 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-67-NFPA 25-2020

Statement: The term waterflow isn’t appropriate in this context and is changed to indicate that any deterioration in either water flow or water pressure shall be investigated.

Public Input No. 210-NFPA 25-2020 [New Section after 7.3.1.2]

TITLE OF NEW CONTENT

7.3.1.3 Including but not limited to, an annual fire pump test or standpipe flow test would meet the requirement of section 7.3.1

Statement of Problem and Substantiation for Public Input

During any flow test, any degradation in the water supply would show up in the test results (pump suction supply etc.) This section should take into account that there are other tests required by this standard that achieve the same results and can be substituted for this test.

Submitter Information Verification

Submitter Full Name: Jeff Lewis

Organization: VSC Fire Security

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 09:07:25 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-68-NFPA 25-2020

Statement: The flow test performed in accordance with NFPA 291 is to determine the flow available from individual hydrants and not to determine the water supply available for a water-based fire protection system. The procedure in NFPA 13 is appropriate to determine the water supply available for a water-based fire protection system.

While a fire pump test or standpipe test may also reveal a problem with the incoming water supply, these tests aren't specifically looking for deterioration of available water flow and pressure.

Public Input No. 96-NFPA 25-2020 [Section No. 7.5.1]

7.5.1

Whenever a component in a private fire service system is adjusted, repaired, reconditioned, or replaced, the action required in Table 7.5.1 shall be performed.

Table 7.5.1 Summary of Component Action Requirements

Component	Adjust	Repair/ Recondition	Replace	Test Criteria					
Water Delivery Components	-	-	-	-					
Pipe and fittings (exposed and underground)	X	X	X	~~Hydrostatic test in conformance with NFPA 24~~	-	-	-	-	Inspect for leaks at system pressure
				Flush in conformance with NFPA 24 or NFPA 20, as appropriate					
Hydrants	X	X	X	~~Hydrostatic test in conformance with NFPA 24~~	-	-	-	-	Inspect for leaks at system pressure
				Waterflow in conformance with NFPA 24					
				-	-	-	-	Inspect for proper drainage	
Monitor nozzles	X	X	X	Flow test to confirm required coverage					
-	-	-	-	-					
Mainline strainers	X	X	X	Flow test downstream of strainer					
Fire department connection	X	X	X	See Chapter 13					
Alarm and Supervisory Components	-	-	-	-					
Valve supervisory device	X	X	X	Operational test for conformance with NFPA 24 and/or *NFPA 72*					

Component	Adjust	Repair/ Recondition	Replace	Test Criteria	
System-Indicating Components	-	-	-	-	
Gauges	-	-		X	Verify at 0 psi (0 bar) and system working pressure
System Housing and Protection Components	-	-	-	-	
Hose houses	X	X	X	Verify integrity of hose house and hose house components	
Hose	-		X	-	Repair and test hose in accordance with NFPA 1962
Hose	-	-		X	No action required
Structural Components	-	-	-	-	
Thrust blocks	X	X	X	Test at system working pressure	
Tie rods	X	X	X	Test at system working pressure	
Retainer glands	X	X	X	Test at system working pressure	
Informational Components	-	-	-	-	
Identification signs	X	X	X	Verify conformance with NFPA 24	

Statement of Problem and Substantiation for Public Input

The current hydrostatic test requirement for repaired pipe or replaced/repaired hydrant is often difficult due to challenges in isolation from the rest of the system (using the existing valves). The criterion is not consistent with that specified for structural component replacement (Thrust blocks, tie rods, retainer glands) found further down in the same table. The current test criterion is also not consistent with the Chapter 13 criterion specified for replacement of Post Indicator Valves and other control valves found in water main piping (Chapter 13 specifies “Inspect for leaks at system pressure”).

Submitter Information Verification

Submitter Full Name: Neal Hara

Organization: Battelle-Pacific Northwest National Laboratory

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 03 15:50:15 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Although these tests may be difficult to perform after replacing pipe, fittings, and/or hydrants there may be some instances when it is necessary. Where large sections of piping are repaired or replaced a hydrostatic test is needed. The technical committee would like additional input on when a hydrostatic test is necessary and when it is not. Inspecting for leaks at system pressure as is permitted for wall post valves isn’t practical for underground components since they may be buried before system pressure is restored.

Public Input No. 24-NFPA 25-2020 [Section No. 8.1.1.2.1]

8. ~~1~~ 3 . ~~1~~ 3 . ~~2.1~~ * ~~–~~

~~Shaft movement or end play shall be inspected annually with the pump operating~~

10(2)(d) Verify that there is no objectionable noise or vibration .

Statement of Problem and Substantiation for Public Input

Inspection of end play, to within 1/8 in, for rotating shafts for vertical turbine and horizontal split-case pumps would appear to require significant effort, given that shaft ends are typically enclosed. It would seem that issues causing shafts to move axially or radially would be captured during the evaluation of fire pump test results (section 8.3.7.2.4(4) requires excessive vibration to be deemed a deficiency, and 8.3.2.9(1)(e) requires inspection for unusual vibration). Because Section 8.3.2.9(1)(e) is under the weekly no-flow test section, and 8.3.3 (annual tests) does not appear to have any requirement to evaluate vibration, recommended text is added to section 8.3.3.10(2) to observe the vibration at all flow conditions.

Submitter Information Verification

Submitter Full Name: John Woycheese
Organization: Saudi Aramco
Street Address:
City:
State:
Zip:
Submittal Date: Sun Apr 05 06:22:20 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: “Objectionable” is a subjective term and not enforceable.

Public Input No. 36-NFPA 25-2020 [Section No. 8.1.1.2.1]

8.~~1~~ 3 .~~1.~~ 2.~~1~~ 9 (j) *

~~Shaft movement or end play~~ Horizontal pump and driver shall be inspected annually ~~with the pump operating.~~ for excess movement (i.e. end play) to manufacturer specifications.

Statement of Problem and Substantiation for Public Input

This inspection is in the wrong place. Wording is also poor- not describing where and what is actually being inspected tested. The "when operating" comment was deleted as, this cannot be done without operating. I also added a revised Annex for section.

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

Street Address:

City:

State:

Zip:

Submittal Date: Fri May 01 15:06:39 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The proposed change does not provide the necessary guidance of what to measure.

Public Input No. 41-NFPA 25-2020 [Section No. 8.1.1.2.15]

8.1.1.2.15~~–~~

~~Batteries~~

: Battery connections on diesel-driven engines shall be

~~checked annually as follows:~~

- ~~Test the specific gravity, state of charge, and charger rates of the batteries~~
- ~~Clean the terminals of any corrosion~~

~~Ensure that the cranking voltage exceeds 9 V~~

verified annually of the following :

(1) Charger rates to batteries maintain an acceptable state of charge to batteries.

(2) Engine cranking voltage exceeds 9 V on a 12 V system or 18 V on a 24 V ~~system~~

(3) ~~Ensure that only distilled water is used in batteries~~

(4) systems.

Statement of Problem and Substantiation for Public Input

The section as written made no sense. A "check" is not defined and the sub-items mix inspections and testing. Additionally, item (2) should not just be done annually and not sure how (4) would be done... other than reviewing some records for the past year. Parts also seem to contract or replicate 8.2.2(4) (k & l).

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

Street Address:

City:

State:

Zip:

Submittal Date: Mon May 04 09:03:47 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: While battery technology continues to evolve, NFPA 25 applies to existing systems with lead/acid batteries.

Public Input No. 42-NFPA 25-2020 [Section No. 8.1.1.2.19]

8.1.1.2.19

Fuel filter(s) shall be changed ~~as needed, but~~ when fuel flow is restricted to affect engine performance and, at a minimum the lessor of every 50 hours of operation or annually.

Statement of Problem and Substantiation for Public Input

Wording did not make sense and "as needed" not defined. Also, wording gave a choice of annually or 50 hours- confusing which is more applicable.

Submitter Information Verification

Submitter Full Name: Bruce Clarke
Organization: American International Group,
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 04 09:34:07 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-71-NFPA 25-2020
Statement: Filters should be replaced annually or as needed as the minimum requirement.

Public Input No. 119-NFPA 25-2020 [Section No. 8.1.1.2.23]

8.1.1.2.23

Power transmitting components ~~used in pump drives that include elastomeric materials, such as torsional couplings,~~ that couple drivers and pumps shall be replaced ~~every 5 years or~~ as required by ~~the~~ component manufacturer ~~for a specific elastomeric material~~ specifications .

Statement of Problem and Substantiation for Public Input

This section has created quite a bit of confusion, particularly internationally. I have been unable to find any manufactures that have a set replacement schedule and, the five-year addition leads some to interpret this as all must then be replaced every five years. Elastomerics are not designated by material but by design too. Also, what would be the concern for 5-year replacements with shafts?

I also added a critical inspection section for elastomeric couplings, since these are prevalent in ~80% of all international pumps and NFPA 25 is the primary reference. These will never be changed to realistically, the best alternative is a weekly visual inspection to go along with 8.3.6.4

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 09 14:17:57 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The current language provides the guidance that the owner needs. The 5 year interval is based on recommendations of material properties as these components degrade over time and become more susceptible to failure.

Public Input No. 43-NFPA 25-2020 [Section No. 8.1.5.1]

8.~~1~~ 3 .~~5.1~~ – 7.2.3 (4)

The fire pump suspply ~~for the fire pump shall provide the required flow at~~ shall meet all supplied fire system flow and pressure requirements either:

a. At or above the lowest permissible suction pressure ~~to meet the system demand.~~ or permitted maximum negative suction pressure at the time of installation.

b. At the maximum negative pressure permitted by NFPA 20 at the time of installation.

Statement of Problem and Substantiation for Public Input

Sections 8.1.5.1 and 8.1.5.2 as written with the current location have nothing enforceable... no action word. These also belong in the section under pump test completion or review with wording this is part of an acceptable test to trigger the correction/investigation protocols for a test.

Submitter Information Verification

Submitter Full Name:	Bruce Clarke
Organization:	American International Group,
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon May 04 10:15:39 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-72-NFPA 25-2020

Statement: Consideration of the water supply should be included when evaluating fire pump test results. There are a range of requirements that regulate minimum suction pressure, current language provides for such variations.

Public Input No. 120-NFPA 25-2020 [Section No. 8.2.2]

8.2.2*

The pertinent visual observations specified in the following checklists shall be performed weekly:

(1) Pump house conditions are determined as follows:

 (2) Heat is adequate, not less than 40°F (4°C) for pump room with electric motor or diesel engine–driven pumps with engine heaters.

 (3) Heat is adequate, not less than 70°F (21°C) for pump room with diesel engine–driven pumps without engine heaters.

 (4) Ventilating louvers are free to operate.

 (5) Excessive water does not collect on the floor.

 (6) Coupling guard is in place.

(7) Pump system conditions are determined as follows:

 (8) Pump suction and discharge and bypass valves are fully open.

 (9) Piping is free of leaks.

 (10) Suction line pressure gauge reading is within acceptable range.

 (11) System line pressure gauge reading is within acceptable range.

 (12) Suction reservoir has the required water level.

 (13) Wet pit suction screens are unobstructed and in place.

 (14) Waterflow test valves are in the closed position, the hose connection valve is closed, and the line to test valves is free of water.

 (15) Couplings connecting drivers and pumps show no signs of abnormal wear or deterioration such as flaking or dusting from elastomeric type couplings.

(16) Electrical system conditions are determined as follows:

 (17) Controller pilot light (power on) is illuminated.

 (18) Transfer switch normal pilot light is illuminated.

 (19) Isolating switch is closed — standby (emergency) source.

 (20) Reverse phase alarm pilot light is off, or normal phase rotation pilot light is on.

 (21) Oil level in vertical motor sight glass is within acceptable range.

 (22) Power to pressure maintenance (jockey) pump is provided.

(23) Diesel engine system conditions are determined as follows:

 (24) Fuel tank is at least two-thirds full.

 (25) Controller selector switch is in auto position.

 (26) Batteries' (2) voltage readings are within acceptable range.

 (27) Batteries' (2) charging current readings are within acceptable range.

 (28) Batteries' (2) pilot lights are on or battery failure (2) pilot lights are off.

 (29) All alarm pilot lights are off.

 (30) Engine running time meter is reading.

 (31) Oil level in right angle gear drive is within acceptable range.

 (32) Crankcase oil level is within acceptable range.

(33) Cooling water level is within acceptable range.

(34) Electrolyte level in batteries is within acceptable range.

(35) Battery terminals are free from corrosion.

(36) Water-jacket heater is operating.

(37) Steam system conditions: Steam pressure gauge reading is within acceptable range.

Statement of Problem and Substantiation for Public Input

Elastomeric type couplings are prevalent in ~80% of all international pumps and, while not listed/approved NFPA 25 is the primary reference for maintenance of these pumps. These will never be changed realistically, thus the best alternative is a weekly visual inspection to go along with 8.3.6.4 to raise awareness of signs of failure. This section does that and could then point to Annex support.

Submitter Information Verification

Submitter Full Name: Bruce Clarke
Organization: American International Group,
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jun 09 14:40:16 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The examples are not appropriate for inclusion in the body of the standard. This is not something that needs to be done weekly as it requires removing the coupling guard.

Public Input No. 6-NFPA 25-2019 [Section No. 8.2.2]

8.2.2*

The pertinent visual observations specified in the following checklists shall be performed weekly:

(1) Pump house conditions are determined as follows:

(2) Heat is adequate, not less than 40°F (4°C) for pump room with electric motor or diesel engine–driven pumps with engine heaters.

(3) Heat is adequate, not less than 70°F (21°C) for pump room with diesel engine–driven pumps without engine heaters.

(4) Ventilating louvers are free to operate.

(5) Excessive water does not collect on the floor.

(6) Coupling guard is in place.

(7)

(a) Pump base plate is grouted in

(8) Pump system conditions are determined as follows:

(9) Pump suction and discharge and bypass valves are fully open.

(10) Piping is free of leaks.

(11) Suction line pressure gauge reading is within acceptable range.

(12) System line pressure gauge reading is within acceptable range.

(13) Suction reservoir has the required water level.

(14) Wet pit suction screens are unobstructed and in place.

(15) Waterflow test valves are in the closed position, the hose connection valve is closed, and the line to test valves is free of water.

(16) Electrical system conditions are determined as follows:

(17) Controller pilot light (power on) is illuminated.

(18) Transfer switch normal pilot light is illuminated.

(19) Isolating switch is closed — standby (emergency) source.

(20) Reverse phase alarm pilot light is off, or normal phase rotation pilot light is on.

(21) Oil level in vertical motor sight glass is within acceptable range.

(22) Power to pressure maintenance (jockey) pump is provided.

(23) Diesel engine system conditions are determined as follows:

(24) Fuel tank is at least two-thirds full.

(25) Controller selector switch is in auto position.

(26) Batteries' (2) voltage readings are within acceptable range.

(27) Batteries' (2) charging current readings are within acceptable range.

(28) Batteries' (2) pilot lights are on or battery failure (2) pilot lights are off.

(29) All alarm pilot lights are off.

(30) Engine running time meter is reading.

(31) Oil level in right angle gear drive is within acceptable range.

(32) Crankcase oil level is within acceptable range.

(33) Cooling water level is within acceptable range.

(34) Electrolyte level in batteries is within acceptable range.

(35) Battery terminals are free from corrosion.

(36) Water-jacket heater is operating.

(37) Steam system conditions: Steam pressure gauge reading is within acceptable range.

Statement of Problem and Substantiation for Public Input

(meant to be added as item (f) but Terra wouldn't allow

Many pumps are installed without proper grouting of the base plate as required by NFPA 20, sections 4.31.8, 6.4,8.8.1 and related Annex figures. Failure to grout the pump baseplate can result in misalignment over time due to vibration. Grouting the baseplate is necessary to ensure proper alignment and fire pump function.

The added annex material is in support of the requirement to verify the installation requirement and the need to grout the pump base after the fact.

Annex Table A.3.3.8 Chapter 8 should also be modified to show this additional inspection point as a non-critical deficiency.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 7-NFPA 25-2019 [Section No. A.8.2.2(5)]	
Public Input No. 7-NFPA 25-2019 [Section No. A.8.2.2(5)]	

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Affiliation: NFPA 13 Installation Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Dec 04 18:04:49 EST 2019
Committee: INM-AAA

Committee Statement

Resolution: This is an installation issue and should be enforced when pumps are installed.

Public Input No. 16-NFPA 25-2020 [Section No. 8.3.1.1.1]

8.3.1.1.1

Except as permitted in 8.3.1.1.2, a weekly test frequency shall be required.

Diesel engine-driven fire pumps shall be operated monthly.

Statement of Problem and Substantiation for Public Input

Operation of diesel-engine fire pumps on a weekly basis has violated environmental air quality permits of external combustion.
By switching to operation on a monthly basis, it would be compliant with current environmental air quality requirements.

Submitter Information Verification

Submitter Full Name: Aileen Pettinger
Organization: Saginaw Fire Department
Street Address:
City:
State:
Zip:
Submittal Date: Sat Feb 08 22:24:39 EST 2020
Committee: INM-AAA

Committee Statement

Resolution: Diesel engines must run weekly to ensure reliability for starting mechanisms, running and the consumption of fuel in the fuel tank. Section 8.3.1.2.4 allows for alternate ITM based on approved risk analysis.

Public Input No. 45-NFPA 25-2020 [Section No. 8.3.2.1.1.2]

8.3.2.1.1.2

The circulation relief valve ~~shall not operate~~ can close off to no flow when the flow through the main pressure relief valve is ~~greater than weeping~~ a constant small flow of water .

Statement of Problem and Substantiation for Public Input

While a small flow of water is recognizable to most, a weep has been very confusing to international users. Also, by definition a "weep" would not be acceptable thus "more than a weep" becomes very confusing on the correct intent. Also, the CRV can still operate. As was written it implies one must shut off the CRV when the MPRV drips... weeps.... flows... which would be a very dangerous understanding of this section and, has been internationally.

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

Street Address:

City:

State:

Zip:

Submittal Date: Mon May 04 14:42:36 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-73-NFPA 25-2020

Statement: As submitted the PI is not appropriate code language ("can") for the body of the standard but it is good annex material.

Public Input No. 124-NFPA 25-2020 [Section No. 8.3.2.1.2.1]

8.3.2.1.2.1*

~~The pressure readings on the discharge~~ Discharge and suction ~~gauges~~ gauge pressures shall be recorded ~~,~~ and a pressure difference ~~that is greater than 95 percent of the rated pump pressure~~ between gage readings and as compared to the pump no-flow pressure rating shall be investigated ~~and corrected~~ .

Statement of Problem and Substantiation for Public Input

This section has caused confusion in the field and generated a lot of questions. It does not fully make sense as written. Also, correction should not be mandatory. The 95% comment is somewhat relative to the pump pressure rating. The rewrite helps indicate we are looking for both gauge calibration issues relief valve issues. As both are also covered in other sections, this could also just be deleted.

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 11 09:26:57 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: This section is comparing results as they relate to active pressure relief valves.

Public Input No. 46-NFPA 25-2020 [Section No. 8.3.2.8]

8.3.2.8

The pertinent visual observations and/ or adjustments specified in the following checklists shall be conducted while the pump is ~~idle~~ not running :

(1) Record the system suction pressure gage and, the discharge pressure ~~gauge readings~~ from a gauge located after the discharge check valve (i.e. to read system pressure).

(2) For pumps ~~that use electronic pressure sensors to control the fire pump operation, record the current pressure and the highest and the lowest pressure shown on the fire pump controller event log where such information is available~~ with controllers having electromechanical water pressure sensor devices, record the high and low pressure settings shown on the mercoid switch dial for comparison to system pressure and, pump start and stop pressures during flow testing, where possible without having to open an energized electric motor–driven fire pump controller

(3) For pumps with controllers having electronic water pressure sensor devices, record the high and low pressure settings shown on on the controller display panel for comparison to system pressure and, pump start and stop pressures during flow testing, where possible without having to open an energized electric motor–driven fire pump controller

(4) ~~If the highest~~ Investigate and correct any high (start) or lowest pressure is outside of the expected range, record all information from the event log that helps identify the abnormality

Statement of Problem and Substantiation for Public Input

This section had limited enforceable wording with action guidance matching the true intent section. A critical inspection of batteries was added due to resent incidents in this section.

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

Street Address:

City:

State:

Zip:

Submittal Date: Mon May 04 14:50:33 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-76-NFPA 25-2020

Statement: Adding “not running” provides clarity and consistency over the word, “idle”. The remainder of the PI was not accepted there is no benefit to knowing the system pressure during the fire pump churn test and NFPA 20 dictates the location of suction and discharge gauges.

Public Input No. 125-NFPA 25-2020 [Section No. 8.3.2.9]

8.3.2.9 * _

~~The pertinent visual observations or adjustments specified in the following checklists shall be conducted while the pump is running:~~

(1) ~~Pump system procedure is as follows:~~

(2) ~~Record the pump starting pressure from the pressure switch or pressure transducer.~~

(3) ~~Record the system suction and discharge pressure gauge readings.~~

(4) ~~Inspect the pump packing glands for slight discharge.~~

(5) ~~Adjust gland nuts if necessary.~~

(6) ~~Inspect for unusual noise or vibration.~~

(7) ~~Inspect packing boxes, bearings, or pump casing for overheating.~~

(8) ~~Record pressure switch or pressure transducer reading and compare to the pump discharge gauge.~~

(9) ~~For pumps that use electronic pressure sensors to control the fire pump operation, record the current pressure and the highest and the lowest pressure shown on the fire pump controller event log.~~

(10) ~~For electric motor and radiator cooled diesel pumps, check the circulation relief valve for operation to discharge water.~~

(11) ~~Electrical system procedure is as follows:~~

(12) ~~Observe the time for motor to accelerate to full speed.~~

(13) ~~Record the time controller is on first step (for reduced voltage or reduced current starting).~~

(14) ~~Record the time pump runs after starting (for automatic stop controllers).~~

(15) ~~Diesel engine system procedure is as follows:~~

(16) ~~Observe the time for engine to crank.~~

(17) ~~Observe the time for engine to reach running speed.~~

(18) ~~Observe the engine oil pressure gauge, speed indicator, water, and oil temperature indicators periodically while engine is running.~~

(19) ~~Record any abnormalities.~~

(20) ~~Inspect the heat exchanger for cooling waterflow.~~

(21) ~~Steam system procedure is as follows:~~

(22) ~~Record the steam pressure gauge reading.~~

(23) ~~Observe the time for turbine to reach running speed.~~

Additional Proposed Changes

File Name	Description	Approved
NFPA13Section8329.docx	Section wording rewrite- could not get it corrected in TerraView.	

Statement of Problem and Substantiation for Public Input

This section had limited enforceable wording matching the intent section (most sections had limited guidance). Several sections also mixed actions taken at start up- which realistically could not be done “while running.” Some sections as noted had pump requirements which were actually actions around the controller. Comments on opening energized controller cabinets was also missing.

Submitter Information Verification

Submitter Full Name: Bruce Clarke
Organization: American International Group,
Street Address:
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Submittal Date: Thu Jun 11 09:45:17 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The current language provides minimum pertinent visual observations and adjustments required for inspections whenever the pump is running. The pump, driver and controller are considered a fire pump unit so the mixing of required observations is appropriate.

8.3.2.9*

Conduct the following visual observations (to record abnormalities and make applicable corrections or adjustments) during pump start and while running:

1. System pump and controller procedures are as follows:

    a) At start, record the pump start pressure (from the controller pressure gage or display) for controller start settings outside of acceptable ranges that could create a water hammer condition (see recommended settings in NFPA 20).
    b) Record pump suction and discharge pressure gauge readings for accuracy 8.3.2.1.2.1 review.
    c) Inspect pump packing glands for slight water discharge. Adjust as necessary to manufacturer specifications.
    d) Listen for unusual noise and observe for unusual vibration that may warrant investigation.
    e) Inspect pump packing boxes, bearings, and casing for signs of overheating that may warrant adjustment.
    f) Record controller pressure switch or pressure transducer readings and compare to pump gauges for consistency.
    g) For controllers with electronic pressure sensors, where possible without opening cabinet doors that expose high voltage energized electric circuits, record the current, low and high pressure maximum controller event log readings for conditions outside of acceptable ranges.
    h) At start and throughout test, for electric motor and radiator-cooled diesel engine driven pumps check for continuous circulation relief valve water discharge beginning at pump start.
    i) Record total pump run time. For automatic stop controllers, confirm total run times meet 8.3.2.3 or 8,3,2,4 requirements.

2. Electrical system procedures are as follows:

    a) At start, observe the time for motor to accelerate to full speed for abnormal conditions (see NFPA 20 for normal conditions).
    b) At start, for pumps with soft starts ECM's or controllers, record the time to first step for abnormal conditions (see NFPA 20 for normal conditions).

3. Diesel engine driver system procedures is as follows:

    a) At start, observe engine crank time for abnormal conditions (see NFPA 20 for normal conditions).
    b) Observe the time from engine start to reach running speed for abnormal conditions (see NFPA 20 for normal conditions).
    c) Throughout test, observe engine oil pressure, speed, water, and oil temperature indicators (on driver or controller for abnormal conditions (see NFPA 20 for normal conditions).

d) At start and throughout test, inspect heat exchanger discharge for sufficient cooling water flow (see NFPA 20 for normal conditions).

4. Steam system procedure is as follows:

   a) Record steam pressure gauge readings for signs of over-pressurization that may warrant adjustment.
   b) At start, observe the time for turbine to accelerate to full speed for abnormal conditions (see NFPA 20 for normal conditions).

Public Input No. 129-NFPA 25-2020 [Section No. 8.3.2.10.3]

~~**8.3.2.10.3**~~ –

~~The controller for a diesel engine–driven fire pump shall be equipped with automatic engine shutdown as referenced in 12.7.2.7 of NFPA 20.~~

Statement of Problem and Substantiation for Public Input

Section should be deleted as this is not actionable and is a design issue from NFPA 20.

Submitter Information Verification

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Submittal Date:	Thu Jun 11 14:07:52 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: For remote monitoring the controller must be designed in accordance with NFPA 20, 12.7.2.7. The requirement for automatic shutdown is an important feature as there is no one physically in the fire pump room during automated testing.

Public Input No. 279-NFPA 25-2020 [Section No. 8.3.2.10.4]

~~**8.3.2.10.4**~~ –

~~Qualified personnel shall be able to respond to the pump location upon abnormal condition within 5 minutes.~~

Statement of Problem and Substantiation for Public Input

Requiring qualified personnel to be able to respond to the pump location when an abnormal condition exists defeats the purpose of having the technology to perform automated inspections and tests. As long as all of the equipment being used for these purposes is installed and tested in accordance with section 4.6.6, including the required supervisory and trouble signals required, there isn't the need to have a qualified person respond within 5 minutes.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
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Submittal Date: Tue Jun 30 15:14:31 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-78-NFPA 25-2020

Statement: Rather than deleting the entire requirement the time for a qualified person has been increased. This requirement is part of remote monitoring, the purpose of having remote monitoring installed is so that the various ITM activities can take place without a qualified person in the room. The remote monitoring also will identify abnormal conditions of the conditions it is monitoring, as such, the remote monitoring company can notify appropriate parties so that corrective action can be taken within a reasonable time frame.

Public Input No. 31-NFPA 25-2020 [Section No. 8.3.3]

8.3.3 Annual Flow Testing.

8.3.3.1*

Except as permitted in 8.3.3.4, an annual test of each constant speed pump assembly shall be conducted by qualified personnel under no-flow (churn), rated flow, and 150 percent of the pump rated capacity flow of the fire pump by controlling the quantity of water discharged through approved test devices.

8.3.3.2*

Except as permitted in 8.3.3.4, an annual test of each variable-speed pump assembly shall be conducted by qualified personnel under variable-speed control under no-flow (churn), 25 percent, 50 percent, 75 percent, 100 percent, 125 percent, and 150 percent of the rated pump capacity flow of the fire pump by controlling the quantity of water discharge through approved test devices.

8.3.3.3

Except as permitted in 8.3.3.4, an annual test of each variable speed pump assembly shall be conducted by qualified personnel under constant speed control under no-flow (churn), 100 percent rate, and 150 percent of the pump rated capacity flow of the fire pump by controlling the quantity of water discharged through approved test devices.

8.3.3.4

If available suction supplies do not allow flowing of 150 percent of the rated pump capacity, the fire pump shall be tested at flow rates at 100 percent of the rated pump flow rate, and at the maximum flow allowed at the lowest permissible suction pressure.

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.

For vertical turbine fire pumps installed in a well shaft, see NFPA 20 Section 7.3.5.3, Section A.7.3.5.3 and Figure A.7.3.5.3 for requirements to determine net pump pressures.

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 other devices, with the exception of flow meters, used for measurement during the test shall be calibrated a minimum of 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.

8.3.3.6

Discharge and sensing orifices that can be visually observed without disassembling equipment, piping, or valves shall be visually inspected and be free of damage and obstructions that could affect the accuracy of the measurement.

8.3.3.7

The sensing/measuring elements in a flow meter shall be calibrated in accordance with 8.3.3.5.

8.3.3.8

Discharge orifices shall be listed or constructed to a recognized standard with a known discharge coefficient.

8.3.3.9

The annual test shall be conducted as follows:

(1) The arrangement described in 8.3.3.9.1 or 8.3.3.9.2 shall be used at a minimum of every third year.

(2) * The arrangement described in 8.3.3.9.3 shall be permitted to be used 2 out of every 3 years.

8.3.3.9.1 Use of Pump Discharge via Hose Streams.

8.3.3.9.1.1

Pump suction and discharge pressures and the flow measurements of each hose stream shall determine the total pump output.

8.3.3.9.1.2*

Prior to flow testing, the entity performing testing shall make the owner or their representative aware of the location, approximate flow rate, and duration of flow testing.

8.3.3.9.2 Use of Pump Discharge via Bypass Flowmeter to Drain or Suction Reservoir.

Pump suction and discharge pressures and the flowmeter measurements shall determine the total pump output.

8.3.3.9.3 Use of Pump Discharge via Bypass Flowmeter to Pump Suction (Closed-Loop Metering).

8.3.3.9.3.1

Pump suction and discharge pressures and the flowmeter measurements shall determine the total pump output.

8.3.3.9.3.2

When testing includes recirculating water back to the fire pump suction, the temperature of the recirculating water shall be monitored to verify that it remains below temperatures that could result in equipment damage as defined by the pump and engine manufacturers.

8.3.3.9.3.3

If the test results are not consistent with the previous annual test, the test shall be repeated using the test arrangement described in 8.3.3.9.1.

8.3.3.9.3.4

If testing in accordance with 8.3.3.9.1 is not possible, a flowmeter calibration shall be performed and the test shall be repeated.

8.3.3.10

The pertinent visual observations, measurements, and adjustments specified in the following checklists shall be conducted annually while the pump is running and flowing water under the specified output condition:

(1) At no-flow condition (churn), the procedure is as follows:

 (2) <u>Inspect the circulation relief valve for operation to discharge water</u>

 (3) <u>Inspect the pressure relief valve (if installed) for proper operation</u>

(4) At each flow condition, the procedure is as follows:

 (5) <u>Where an external means is provided on the controller, record the electric motor voltage and current (all lines)</u>

 (6) <u>Record the pump speed in rpm</u>

 (7) <u>Record the simultaneous (approximate) readings of pump suction and discharge pressures and pump discharge flow</u>

(8)* For electric motor–driven pumps, do not shut down the pump until it has run for 10 minutes

(9) For diesel motor–driven pumps, do not shut down the pump until it has run for 30 minutes

8.3.3.11*

For installations having a pressure relief valve, the operation of the relief valve shall be closely observed during each flow condition to determine whether the pump discharge pressure exceeds the normal operating pressure of the system components.

8.3.3.11.1*

The pressure relief valve shall also be observed during each flow condition to determine whether the pressure relief valve closes at the proper pressure.

8.3.3.11.2

The pressure relief valve shall be closed during flow conditions if necessary to achieve minimum rated characteristics for the pump and reset to normal position at the conclusion of the pump test.

8.3.3.11.2.1

When it is necessary to close the relief valve to achieve minimum rated characteristics for the pump, the pump discharge control valve shall be closed if the pump churn pressure exceeds the system rated pressure.

8.3.3.11.3

When pressure relief valves are piped back to the fire pump suction, the temperature of the recirculating water shall be monitored to verify that it remains below temperatures that could result in equipment damage as defined by the pump and engine manufacturers.

8.3.3.12

For installations having an automatic transfer switch, the following test shall be performed to ensure that the overcurrent protective devices (i.e., fuses or circuit breakers) do not open:

(1) Simulate a power failure condition while the pump is operating at peak load

(2) Verify that the transfer switch transfers power to the alternate power source

(3) While the pump is operating at peak load and alternate power, record the following to include in the pump test results:

  (4) <u>The voltage where an external means is provided on the controller</u>

  (5) <u>The amperage where an external means is provided on the controller</u>

  (6) <u>The rpm</u>

  (7) <u>Suction pressure</u>

  (8) <u>Discharge pressure</u>

(9) Verify that the pump continues to perform at peak horsepower load on the alternate power source for a minimum of 2 minutes

(10) Remove the power failure condition and verify that, after a time delay, the pump is reconnected to the normal power source

8.3.3.13*

Alarm conditions shall be simulated by activating alarm circuits at alarm sensor locations and confirmed for proper operation.

8.3.3.13.1*

Alarm sensors located within electric motor–driven fire pump controllers that cannot be accessed without opening an energized electric motor–driven fire pump controller shall be tested at an alternative location outside of the controller.

8.3.3.14 Safety.

(See also A.4.9.6.)

8.3.3.14.1

Section 4.9 shall be followed for safety requirements while working near electric motor–driven fire pumps.

8.3.3.15* Suction Screens.

After the waterflow portions of the annual test or fire protection system activations, the suction screens shall be inspected and cleared of any debris or obstructions.

8.3.3.16*

Where engines utilize electronic fuel management control systems, the backup electronic control module (ECM) and the primary and redundant sensors for the ECM shall be tested annually.

Statement of Problem and Substantiation for Public Input

NFPA 25 currently has no explicit requirement that the water supply provided by a well ever be tested on an ongoing basis. There is also no explicit requirement to determine the net pressure generated by a vertical turbine pump installed in a well shaft, since determining this net performance is dependent upon knowing the water level below the pump discharge at east test point. The required test method is addressed in NFPA 20.

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Submittal Date: Wed Apr 08 12:36:45 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-79-NFPA 25-2020

Statement: NFPA 25 does not provide a requirement to verify the water level in a well pit which is required to determine the net pressures generated by a vertical turbine fire pump. Pointing testers back to NFPA 20 with added annex language will provide needed guidance.

Public Input No. 244-NFPA 25-2020 [Section No. 8.3.3.1]

8.3.3.1*

Except as permitted in 8.3.3.4, an annual test of each constant speed pump assembly shall be conducted by qualified personnel under no-flow (churn), 95 to 105 percent of rated flow, and 145 to 150 percent of the pump rated capacity flow of the fire pump by controlling the quantity of water discharged through approved test devices.

Statement of Problem and Substantiation for Public Input

Achieving exactly 100% and 150% of rated pump flow is nearly impossible. Some AHJs have interpreted the current language to mean you have to flow the exact demand. From a technical standpoint, as long as the test points follow the pump curve, the test method s valid.

If the technical committee wants the existing language to remain the same, an annex explanation would be helpful.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
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Submittal Date: Tue Jun 30 11:05:48 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: When testing a fire pump the intent is to develop a curve at the points identified in 8.3.3.1, but it is understood throughout the industry that these points may not be hit exactly and are nominal.

Public Input No. 25-NFPA 25-2020 [Sections 8.3.3.9.2, 8.3.3.9.3]

Sections 8.3.3.9.2, 8.3.3.9.3

8.3.3.9.2 Use of Pump Discharge via Bypass Flowmeter ~~to Drain or Suction Reservoir.~~

~~Pump suction and discharge pressures and the flowmeter measurements shall determine the total pump output.~~

8.3.3.9. ~~3~~ ~~Use of Pump Discharge via Bypass Flowmeter to Pump Suction (Closed-Loop Metering).~~ ~~8.3.3.9.3.~~ 2. 1

Pump suction and discharge pressures and the flowmeter measurements shall determine the total pump output.

8.3.3.9. ~~3~~ 2 .2

When testing includes recirculating water back to the fire pump suction, the temperature of the recirculating water shall be monitored to verify that it remains below temperatures that could result in equipment damage as defined by the pump and engine manufacturers.

8.3.3.9. ~~3~~ 2 .3

If the test results are not consistent with the previous annual test, the test shall be repeated using the test arrangement described in 8.3.3.9.1.

8.3.3.9. ~~3~~ 2 .4

If testing in accordance with 8.3.3.9.1 is not possible, a flowmeter calibration shall be performed and the test shall be repeated.

Statement of Problem and Substantiation for Public Input

Fire pump tests with flow meters in "closed-loop metering" -- a term that is undefined -- requires verification against previous annual tests, per 8.3.3.9.3.3. Commentary for the 2017 edition states that "Flowmeters are used only once a year and, as a result, must be adjusted and calibrated prior to conducting the annual flow test. If a test using a flowmeter shows a material deviation from the previous year's test, the pump is required to be retested using hose streams."

This requirement does not currently apply to flow meters that return water to drain or suction reservoirs. Numerous pump tests have been conducted where the water is returned to suction reservoir (one or more tanks) and where the results varied significantly from previous years. Because the flow path is closed -- the tanks hold more than 1 million gallons for industrial fire protection and the recycle line nozzle to the tank is remote from manholes -- it is unclear whether the performance of the flowmeter has changed, and discharging water cannot be observed.

The current language permits flowmeters with different arrangements of closed loops (e.g., discharging to tanks) or that discharge without opportunity for observation (e.g., to closed drains) to be treated differently from those discharging directly to pump suction. It is understood that the requirement for temperature monitoring differs between the configurations, but that is currently addressed by the language in 8.3.3.9.3.2.

Removing section 8.3.3.9.2, and changing the title of section 8.3.3.9.3 to remove the limitation (i.e., deleting "to Pump Suction (Closed-Loop Metering)" to have the section apply to all bypass flowmeters), addresses the concern.

Submitter Information Verification

Submitter Full Name: John Woycheese
Organization: Saudi Aramco
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City:
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Submittal Date: Sun Apr 05 08:25:26 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The existing language provides allowances for flow meter testing with multiple solutions for observing water flow to verify the water supply in the third-year cycle testing. The submitter's PI would add design requirements to an ITM standard. Original installation or subsequent modifications can provide alternates to re-circulation of water downstream of a flow meter to meet the requirements of 8.3.3.9(1) using the calibrated flow meter to measure flow and calibrated suction and discharge gauges to measure pressures.

Public Input No. 26-NFPA 25-2020 [New Section after 8.3.3.10]

Multiple Duty Pumps

Where simultaneous operation of multiple pumps is possible or required as part of a system design, the requirements of 8.3.3.10(2) shall be repeated at each flow condition with all pumps operating simultaneously.

Statement of Problem and Substantiation for Public Input

NFPA 20 (2019 and earlier), 4.22.1.2.3, requires the flow measurement device (and other piping) to be sized for the combined flow rate of all fire pumps required to operate simultaneously. NFPA 20, 14.2.6.3.3.1, requires the acceptance test to include a flow test of all pumps operating simultaneously.

Thus, NFPA 20 requires equipment to be installed to allow testing of multiple pumps, operating simultaneously.

NFPA 25 does not currently require performance tests of multiple duty pumps (although the test equipment capability must exist, for NFPA 20 acceptance tests). Note, however, that Figure A.8.4.1 includes space to record data for multiple pump operation.

Where more than one duty pump has been installed to operate in parallel to meet a specific demand, degradation of the supply line that would impact the multiple-pump performance may not be observed when only one pump is operating. (Some industrial facilities require more than 12,000 gpm, which might be provided by 4 pumps in parallel.)

Adding the requirement for testing of multiple pumps in parallel serves multiple purposes, as it aligns NFPA 25 with the requirements from NFPA 20, using equipment mandated therein, and it allows the evaluation of parallel pump performance at the actual required demand.

Submitter Information Verification

Submitter Full Name: John Woycheese
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Submittal Date: Sun Apr 05 08:39:23 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-80-NFPA 25-2020

Statement: Adding a requirement to test multiple fire pumps simultaneously where designed to operate simultaneously in order to meet the system demand will align NFPA 25 testing requirements with NFPA 20 acceptance testing requirements.

Public Input No. 130-NFPA 25-2020 [New Section after 8.3.3.13]

8.3.3.13.2

For fire pump systems with remote alarm and trouble signal monitoring, all monitored signals shall be tested for both proper signal and identification receipt at the remote monitoring facility or remote monitored annunciator every three years. Signals must be generated from the driver monotiring device where possible.

Statement of Problem and Substantiation for Public Input

By far, on both new construction commissioning and existing systems, one of our biggest deficiencies is fire pump alarm signals not annunciation or with wrong designations at central stations. The current requirement annex information inherently says this is never the intent of testing- only to controllers which has not value in most pump rooms which are not occupied. When done, this is only done by shorting controller contacts. And when sent to monitoring stations, may times this is only done by sending a signal from the controller which bypasses testing of the actual devices on the driver and, the wiring from driver to controller.

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

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Submittal Date: Thu Jun 11 14:53:41 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The submitter is encouraged to submit this PI to the NFPA 4 committee as noted in the submitter's substantiation, the PI addresses new system installations.

Public Input No. 14-NFPA 25-2020 [Section No. 8.3.4.1 [Excluding any Sub-Sections]]

Diesel fuel shall be tested for degradation no less than annually.

A.8.3.4.1 Biodiesel fuel may need to be tested for degradation more frequently.

Statement of Problem and Substantiation for Public Input

An annex section should be added to note that biodiesel fuel may need to be tested more frequently. Most biodiesel manufacturers have concerns over the lifespan of the current biodiesel formulations. Some have indicated the lifespan to be less than a year.

Submitter Information Verification

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Submittal Date: Wed Feb 05 09:14:11 EST 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-82-NFPA 25-2020

Statement: Biodiesel has a tendency to attract more moisture causing it to gel, which might necessitate more frequent testing.

Public Input No. 13-NFPA 25-2020 [Section No. 8.3.4.1.1]

8.3.4.1.1*

Fuel degradation testing shall ~~comply with~~ include at least the tests for fuel quality recommended for stored fuel as specified in ASTM D975, *Standard Specification for Diesel Fuel Oils,* or ASTM D6751, *Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels*, ~~as approved by the engine manufacturer, using ASTM D7462, *Standard Test Method for Oxidation Stability of Biodiesel (B100) and Blends of Biodiesel with Middle Distillate Petroleum Fuel (Accelerated Method)*~~ depending on the fuel type .

Statement of Problem and Substantiation for Public Input

ASTM D7462 which is referenced in this section is now a withdrawn standard with no replacement. Withdrawn rationale by ASTM:
"this test method was withdrawn in July 2016 because the method has limited use; efforts to obtain sufficient laboratories to conduct an interlaboratory study and develop a precision statement have not been successful since the test method was first approved in 2009."

The tests used to evaluate diesel fuel may be outside the expertise of the NFPA 25 committee. Instead of stating which tests must be conducted to evaluate stored diesel fuel, I propose NFPA 25 simply point to the tests that are currently being recommended for stored fuel in the current ASTM D975 or ASTM D6751 methods which are ASTM standard specifications for diesel and biodiesel fuels respectively. In this way, NFPA 25 also is not constantly having to change with changing analytical techniques. Laboratories can consult the current, appropriate ASTM standard for the most up to date analytical methods and requirements.

Note ASTM D975 and ASTM D6751 are extensive testing standards. It is not reasonable to complete all the tests and comply with all the requirements in ASTM D975 or ASTM 6751 annually. As is the case with all the periodical laboratory testing, the laboratory is only checking a few benchmarks. ASTM D975 and ASTM D6751 each contain an annex on stored diesel fuel applications which includes a section suggesting which tests should be completed as these benchmarks.

Submitter Information Verification

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Submittal Date: Wed Feb 05 08:32:11 EST 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-81-NFPA 25-2020

Statement: The standard should not reference withdrawn or outdated standards however, manufacturers recommendations should still be a factor in fuel testing requirements.

Public Input No. 131-NFPA 25-2020 [Section No. 8.3.7.1.1]

8.3.7.1.1

The interpretation of the net flow test performance relative to the manufacturer's original performance and gross flow test performance relative to acceptably meeting demands of all connected fire protection systems shall be the basis for determining acceptable performance of the pump assembly.

Statement of Problem and Substantiation for Public Input

As written, wording was confusing in intent. Additionally, the second critical part of data interpretation was missing.

Submitter Information Verification

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Submittal Date: Thu Jun 11 16:05:21 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-83-NFPA 25-2020

Statement: Breaking each requirement into a separate section will eliminate confusion while adding the requirement to evaluate both the net and the gross fire pump performance criteria. The verification of both the net and gross flow tests helps to verify that the pump is still performing as designed by the manufacture, as well, the pump and water supply in combination, meet the original system design.

Public Input No. 268-NFPA 25-2020 [Section No. 8.3.7.1.2]

8.3.7.1.2

Qualified ~~individuals~~ person shall interpret the test results.

Statement of Problem and Substantiation for Public Input

changed individual to person to be consistent with the standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 269-NFPA 25-2020 [Section No. 13.7.3]	

Submitter Information Verification

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Zip:	
Submittal Date:	Tue Jun 30 14:08:48 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: FR-84-NFPA 25-2020

Statement: Editorial correction.

Public Input No. 100-NFPA 25-2020 [New Section after 8.3.7.2.2]

8.3.7.2.2.1 Increasing the engine speed on engines provide with a governor capable of regulating engine speed within a range of 10 percent between shutoff and maximum load condition of the pump shall be permitted.

Statement of Problem and Substantiation for Public Input

NFPA 20 allows for a 10% variance from the rated engine speed for a diesel fire pump:
11.2.4.1.1 Engines shall be provided with a governor capable of regulating engine speed within a range of 10 percent between shutoff and maximum load condition of the pump.
However, NFPA 25 does not allow for the use of this range when testing a pump in 8.3.7.2.2
8.3.7.2.2 Increasing the engine speed beyond the rated speed of the pump shall not be permitted as a method for meeting the rated pump performance.

By adding this to NFPA 25 it will allow for a successful annual fire pump test in some instances.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 122-NFPA 25-2020 [New Section after 8.3.7.2.2]	
Public Input No. 122-NFPA 25-2020 [New Section after 8.3.7.2.2]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
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Zip:
Submittal Date: Wed Jun 03 16:11:49 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The 10 percent identified in NFPA 20 is only intended for use during listing. It is not intended that you can go to the field and adjust the diesel driver speed by 10 percent. Section 8.3.7.2.2 also states that engine speed shall not be increased to meet the rated pump performance.

Public Input No. 122-NFPA 25-2020 [New Section after 8.3.7.2.2]

8.3.7.2.2.2 For diesel driven fire pumps with a governor installed in accordance with NFPA 20 allowance over rated speed shall be permitted as a method for achieving rated pump performance.

Statement of Problem and Substantiation for Public Input

NFPA 20 allows for a 10% variance from the rated engine speed for a diesel fire pump:
11.2.4.1.1 Engines shall be provided with a governor capable of regulating engine speed within a range of 10 percent between shutoff and maximum load condition of the pump.
However, NFPA 25 does not allow for the use of this range when testing a pump in 8.3.7.2.2
8.3.7.2.2 Increasing the engine speed beyond the rated speed of the pump shall not be permitted as a method for meeting the rated pump performance.

By adding this to NFPA 25 it will allow for a successful annual fire pump test in some instances.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 100-NFPA 25-2020 [New Section after 8.3.7.2.2]	
Public Input No. 100-NFPA 25-2020 [New Section after 8.3.7.2.2]	

Submitter Information Verification

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State:	
Zip:	
Submittal Date:	Wed Jun 10 09:42:02 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Adjusting the governor to pass the pump test is not acceptable.

Public Input No. 121-NFPA 25-2020 [Section No. 8.3.7.2.3]

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~~ gross discharge flow and pressure exceeds the flow and pressure requirements of ~~the most demanding~~ each system(s) being supplied by the fire pump based on owner-provided system design information

(2)* Fire pump supplies 100 percent of rated flow

(3)* The net pressure at each flow point is at least 95 percent and not over 105% of one of the following:

(4) Original manufacturer's pump curve

(5) Original unadjusted field test curve

(6) Test curve generated from the fire pump nameplate

Statement of Problem and Substantiation for Public Input

Part 1 was clarified as it is not the pump but it's discharge that must meet the system demands.The criteria for concern over pump tests showing over 105% of the curve was removed in a previous edition. While there is annex verbiage about this, AIG continues to see 15-20% of tests reviewed where performance is 110-125% of above the manufacturer's curve where comments are made such as "acceptable- running better than new." This is of concern for obvious reasons that then all the actual conditions have to be questions including gauges used.

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 09 14:45:41 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 requires flowing the fire pump to 3 (minimum) test points as opposed to a maximum capacity evaluation. NFPA 25 requires the pump test performance results to be evaluated by qualified persons who can determine the acceptability of the test results and express concerns observed to the owner.

Public Input No. 27-NFPA 25-2020 [Section No. 8.3.7.2.3]

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) being supplied by the fire pump based on owner-provided system design information

(2)* Fire pump supplies 100 percent of rated flow

(3)* The net pressure at each flow point is at least 95 percent of one of the following:

(4) Original manufacturer's pump curve

~~Original unadjusted~~

(a) Most recent, adjusted field test curve

(b) Test curve generated from the fire pump nameplate

(c) * Other data, as acceptable to the Authority Having Jurisdiction

A.3.7.2.3(3)(d) Under certain conditions, other comparison data may be unavailable or no longer valid. An additional comparison has been identified, to data acceptable to the AHJ, to allow comparison to such sources as a model-generic pump curve (generated from the manufacturer's data, but not specific to the pump in question); test data from a repairing company, which may not be the manufacturer and which may have used components providing slightly different performance; or pump data sheets or other specifying documentation that indicates the expected design performance of the pump.

Statement of Problem and Substantiation for Public Input

The annual performance tests should be evaluating three things: whether the pump performance has degraded to a concernable degree, whether the driver performance has degraded to a concernable degree, and whether the pump system (pump and driver) are capable of meeting the system demand.

NFPA 25 (2020), Section 8.3.7.2.3(1) addresses the demand question.

Section 8.3.7.2.3(3), requires comparison against one of three data sources: the original manufacturer's pump curve (typically adjusted to rated speed and accounting for velocity pressure and specific gravity), original unadjusted field test curve (per the definition in 3.6.2.11, not adjusted for speed or velocity pressure), or nameplate data (adjusted data).

Thus, only one of the three is not adjusted for speed or velocity pressure; thus, the pressure and flow data for the acceptance (field) test may significantly differ from the manufacturer's data. (Hence, why NFPA 20 (2019), 14.2.4.2, requires comparison of adjusted data to the manufacturer's curve.) The annual pump performance data is collected at the (field) speed; over time, this speed can vary considerably from the speeds measured at acceptance.

This section would address the pump performance question, if the second comparison were revised to "adjusted field acceptance".

Furthermore, Section 8.6 requires a re-acceptance test in accordance with NFPA 20 when certain parts or components are rebuilt, replaced, or repaired. In this case, it would seem that a new acceptance test curve would need to be used for comparison.

These two elements -- the need to conduct comparisons to adjusted data, and the need to accommodate re-acceptance data -- are the basis for the changes to 8.3.7.2.3(3).

An additional comparison has been identified, to allow evaluation against data acceptable to the AHJAs indicated in the recommended annex text, this is intended to include such information as a model-generic pump curve (from the manufacturer); data from the company that conducted an overhaul, or original specification information. This will aid in the testing of older pumps, where the manufacturer's certified curve and the acceptance test curve may have been lost.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 29-NFPA 25-2020 [Section No. 8.3.7.2.3]	

Submitter Information Verification

Submitter Full Name:	John Woycheese
Organization:	Saudi Aramco
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Sun Apr 05 08:58:23 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: One of the three existing requirements is available when considering acceptability of fire pump tests. The standard should not be written for exceptions.

Public Input No. 29-NFPA 25-2020 [Section No. 8.3.7.2.3]

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) being supplied by the fire pump based on owner-provided system design information

(2)* Fire pump supplies 100 percent of rated flow

(3)* The net pressure at each flow point is at least 95 percent of one of the following:

(4) Original manufacturer's pump curve

(5) Original unadjusted field test curve

(6) Test curve generated from the fire pump nameplate

(7) For pumps without variable speed control systems, shaft speed of fire pump driver varies by no more than

(8) 1 % of rated speed from churn to maximum flow for electric motors

(9) 10% of rated speed from churn to maximum flow for diesel engines

Statement of Problem and Substantiation for Public Input

As noted elsewhere, annual performance tests should be evaluating three things: whether the pump performance has degraded to a concernable degree, whether the driver performance has degraded to a concernable degree, and whether the pump system (pump and driver) are capable of meeting the system demand.

PI 27 addressed pump performance and system demand, and decoupled the performance of the driver from the evaluation. That input recommends comparison of (adjusted) annual pump performance data against data that was adjusted to account for speed, velocity pressure, and specific gravity variations. As a result, depending on the safety factor between pump curves and system demands, underperformance of the driver may not be identified. (The adjusted data comparison removes variations in driver speed and, for pumps that perform well above system demands, the system demands may be satisfied even if the driver is running at inappropriate speeds.

This input addresses driver performance where the system is not designed with a variable speed control system. Electric motors should perform at stable speeds close to the rated speed of the motor. Diesel engines perform over a wider speed range; however, NFPA 20 (2019), 11.2.4.1.2, requires that the engine speed be set to rated pump speed at maximum pump load, and NFPA 20, 11.2.4.4.2, requires overspeed devices to shut down the engine in a speed range of 10 to 20 percent over rated engine speed. Presumably, then, the pump should be maintained within 10 percent of the rated speed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 27-NFPA 25-2020 [Section No. 8.3.7.2.3]	

Submitter Information Verification

Submitter Full Name: John Woycheese
Organization: Saudi Aramco
Street Address:
City:
State:
Zip:
Submittal Date: Sun Apr 05 09:37:11 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The identified parameters are too restrictive for the electric motor and the number referenced for the diesel engine is only used when the engine is reviewed for listing.

Public Input No. 141-NFPA 25-2020 [Section No. 8.3.7.2.4]

8.3.7.2.4*

The following actions shall be required upon failure to meet the criteria in 8.3.7.2.3:

(1) The owner shall be notified in writing of the unacceptable test results.

(2) An investigation shall be conducted into the cause of the unacceptable test results.

(3) Failure to provide the maximum system demand shall be deemed an impairment.

(4) Excessive vibration and/or excessively worn or loose components shall be deemed a deficiency.

(5) <u>Degraded performance that still provides the maximum system demand shall be deemed a noncritical deficiency.</u>

(6) The owner shall be notified in writing of corrections completed.

<u>(5) This goes against table A.3.3.7 chapter 8 2nd to the last item which states Flow test results not within 5% of acceptance test or nameplate should be investigated further and lists it as a critical Deficiency and section 8.3.7.2.3 (2) that states fire pump test results are no less than 95 percent of the flow rates and pressures at each point for either a or b: (a) Original unadjusted field test curve (b) Fire pump nameplate</u>

Statement of Problem and Substantiation for Public Input

Remove line item #5 or change it to match the previous testing section stating it is a critical deficiency, vs non critical

Submitter Information Verification

Submitter Full Name: Darrell Underwood
Organization: Underwood Fire Equipment, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 16 15:17:42 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The fire pump test evaluation requirements of section 8.3.7.2.4 provide the minimum required actions when the pump fails to meet the requirements of 8.3.7.2.3. Where the pump performance is degraded, the owner should be advised so plans can be made for an evaluation and budgeting for potential repair costs, even where the system demand is being met. The technical committee recommends the submitter consider submitting this as potential annex material in the second draft.

Public Input No. 74-NFPA 25-2020 [Section No. 8.3.7.2.4]

8.3.7.2.4*

The following actions shall be required upon failure to meet the criteria in 8.3.7.2.3:

(1) The owner shall be notified in writing of the unacceptable test results.

(2) An investigation shall be conducted into the cause of the unacceptable test results.

(3) Failure to provide the maximum system demand shall be deemed an impairment.

(4) Excessive vibration and/or excessively worn or loose components shall be deemed a deficiency.

(5) ~~Degraded performance that still provides the maximum system demand shall be deemed a noncritical deficiency.~~

(6) The owner shall be notified in writing of corrections completed.

Statement of Problem and Substantiation for Public Input

A fire pump that meets system demand even though its performance has degraded is not deficient in my opinion. Stating that it is a non-critical deficiency is problematic, particularly in jurisdictions where specific time lines are set for correcting deficiencies. I have first hand experience where fire pumps and/or drivers were required to be replaced even though performance tests indicated that system demand(s) were met. We need to permit judgement to be exercised by the qualified individual in determining the level of deficiency (if any) to assign where the 95 percent mark is not met.

Submitter Information Verification

Submitter Full Name: Russell Leavitt

Organization: Telgian Corporation

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 01 17:49:26 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The fire pump test evaluation requirements of section 8.3.7.2.4 provide the minimum required actions when the pump fails to meet the requirements of 8.3.7.2.3. Where the pump performance is degraded, the owner should be advised so plans can be made for an evaluation and budgeting for potential repair costs, even where the system demand is being met. The technical committee recommends the submitter consider submitting this as potential annex material in the second draft.

Public Input No. 23-NFPA 25-2020 [Section No. 8.4.1.1]

8.4.1.1

At a minimum, the report shall contain the following information:

(1) All raw data necessary for a complete evaluation of the fire pump performance, including suction and discharge pressures, voltage and amperage readings to the extent that such work can be completed without opening an energizrd electric motor driven fire pump controller , and pump speed at each flow rate tested

(2) The fire protection system demand as furnished by the owner

(3) Pump performance, whether satisfactory or unsatisfactory

(4) Deficiencies noted during the testing and identified during analysis, with recommendations to address deficiencies as appropriate

(5) Manufacturer's performance data, actual performance, and the available pump discharge curves required by this standard

(6) Time delay intervals associated with the pump's starting, stopping, and energy source transfer

(7) Where applicable, comparison with previous test results

Statement of Problem and Substantiation for Public Input

This section should have been included in the changes to chapter 8 along with the changes in the previous edition to correlate with 8.1.1.2.2.1, 8.3.3.10, 8.3.3.12 etc.

Submitter Information Verification

Submitter Full Name: David Baron

Organization: Global Fire Protection Company

Street Address:

City:

State:

Zip:

Submittal Date: Tue Mar 24 11:24:09 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-85-NFPA 25-2020

Statement: This section has been changed to align with the changes made to chapter 8 in the previous edition, this correlates with 8.1.1.2.2.1, 8.3.3.10, 8.3.3.12 etc.

Public Input No. 75-NFPA 25-2020 [Section No. 8.4.1.1]

8.4.1.1

At a minimum, the report shall contain the following information:

(1) All raw data necessary for a complete evaluation of the fire pump performance, including suction and discharge pressures, voltage and amperage readings (where an external means is provided on the controller) , and pump speed at each flow rate tested

(2) The fire protection system demand as furnished by the owner

(3) Pump performance, whether satisfactory or unsatisfactory

(4) Deficiencies noted during the testing and identified during analysis, with recommendations to address deficiencies as appropriate

(5) Manufacturer's performance data, actual performance, and the available pump discharge curves required by this standard

(6) Time delay intervals associated with the pump's starting, stopping, and energy source transfer

(7) Where applicable, comparison with previous test results

Statement of Problem and Substantiation for Public Input

the voltage and amp readings are not always available. The recording of voltage and current is only required where the controller has an external means for collecting the information 8.3.3.10 (2) (b).

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 01 18:13:39 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-85-NFPA 25-2020

Statement: This section has been changed to align with the changes made to chapter 8 in the previous edition, this correlates with 8.1.1.2.2.1, 8.3.3.10, 8.3.3.12 etc.

Public Input No. 101-NFPA 25-2020 [Section No. 10.1.3]

~~**10.1.3** * – Design and Installation.~~

~~NFPA 15 shall be consulted to determine the requirements for design and installation, including acceptance testing.~~

Statement of Problem and Substantiation for Public Input

Section 10.1.3 –requires inspector to refer to installation and design requirements which are outside the scope of NFPA 25.

Submitter Information Verification

Submitter Full Name:	Vincent Powers
Organization:	National Fire Sprinkler Associ
Affiliation:	NFSA Engineering and Standards Committee
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 03 16:18:56 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Water spray fixed systems are specially designed systems for very specific protection schemes, for example, a transformer or vessel. It is important to verify nozzle placement as specified in NFPA 15.

Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]

10.2.1.1

Items in areas that ~~are inaccessible for~~ cannot be entered for safety considerations due to factors such as continuous process operations and energized electrical equipment shall be inspected during each scheduled shutdown but not more than every 18 months.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:

City:
State:
Zip:
Submittal Date: Tue Jun 02 18:59:01 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The use of “cannot be entered” is too specific and is not necessarily addressing all situations where items in areas may be inaccessible.

Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]

10.2.1.3

Items in areas that ~~are inaccessible~~ cannot be entered for safety considerations shall be tested at longer intervals in accordance with 13.4.4.2.3.2.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and standards Committee

Street Address:

City:

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Zip:

Submittal Date: Tue Jun 02 19:04:18 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The use of “cannot be entered” is too specific and is not necessarily addressing all situations where items in areas may be inaccessible.

Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]

10.3.3.4.3.1

Where the hydraulically most remote nozzle is ~~inaccessible~~ not capable of being reached for quick or easy replacement , nozzles shall be permitted to be checked visually without taking a pressure reading on the most remote nozzle.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:
State:
Zip:
Submittal Date: Tue Jun 02 19:08:07 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Inaccessible is the term used throughout the standard and understood.

Public Input No. 184-NFPA 25-2020 [Chapter 11]

Chapter 11 Foam ~~-Water Sprinkler~~ Systems

11.1 General.

11.1.1 Minimum Requirements.

11.1.1.1

This chapter shall provide the minimum requirements for the routine inspection, testing, and maintenance of foam-water sprinkler systems.

11.1.1.2

Table 11.1.1.2 shall be used to determine the minimum required frequencies for inspection, testing, and maintenance.

Table 11.1.1.2 Summary of Foam-Water Sprinkler System Inspection, Testing, and Maintenance

System/Component	Frequency	Reference	
Inspection			
Control valve(s)	–		Chapter 13
Deluge/preaction valve(s)	–		Chapter 13
Discharge device location (spray nozzle)	Monthly	11.2.4	
Discharge device location (sprinkler)	Annually	11.2.4	
Discharge device position (spray nozzle)	Monthly	11.2.4	
Discharge device position (sprinkler)	Annually	11.2.4	
Drainage in system area	Quarterly	11.2.7	
Fire pump system	–		Chapter 8
Fittings corrosion	Annually	11.2.2	
Fittings damage	Annually	11.2.2	
Foam concentrate strainer(s)	Quarterly	11.2.6.4	
Gauges	–		Chapter 13
Hangers/braces/supports	Annually	11.2.3	
Pipe corrosion	Annually	11.2.2	
Pipe damage	Annually	11.2.2	
Proportioning system(s) — all	Monthly	11.2.8	
Strainer(s) — Mainline	5 years	11.2.6.1	
Water supply piping	–		11.2.5.1
Water supply tank(s)	–		Chapter 9
Waterflow alarm devices	–		Chapter 13
Test			
Backflow preventer(s)	–		Chapter 13
Complete foam-water sprinkler system(s) (operational test)	Annually	11.3.2, 11.3.3	
Control valve(s)	–		Chapter 13
Deluge/preaction valve(s)	–		Chapter 13
Discharge device location	Annually	11.3.2.6	
Discharge device obstruction	Annually	11.3.2.6	
Discharge device position	Annually	11.3.2.6	
Fire pump system	–		Chapter 8
Foam-water solution	Annually	11.3.5	
Manual actuation device(s)	Annually	11.3.4	
Valve status test	–		Chapter 13
Water supply flow test	–		Chapter 7
–	–	–	
Water supply tank(s)	–		Chapter 9
Waterflow alarm devices	–		Chapter 13
Maintenance			

System/Component	Frequency	Reference
Backflow preventer(s)	–	Chapter 13
Bladder tank type	–	–
Foam concentrate tank — hydrostatic test	10 years	11.4.5.2
Sight glass	10 years	11.4.5.1
Check valve(s)	–	Chapter 13
Control valve(s)	–	Chapter 13
Deluge/preaction valves	–	Chapter 13
Detector check valve(s)	–	Chapter 13
Fire pump system	–	Chapter 8
Foam concentrate pump operation	Monthly	11.4.7.1
Foam concentrate samples	Per manufacturer's recommendation	11.4.2
Foam concentrate strainer(s)	Quarterly	Section 11.4
In-line balanced pressure type	–	–
Balancing valve diaphragm	5 years	11.4.8.3
Foam concentrate pump(s)	5 years*	11.4.8.2
Foam concentrate tank	10 years	11.4.8.4
Line type	–	–
Foam concentrate tank — corrosion and pickup pipes	10 years	11.4.6.1
Foam concentrate tank — drain and flush	10 years	11.4.6.2
Pressure vacuum vents	5 years	11.4.9
Proportioning system(s) standard pressure type	–	–
Ball drip (automatic type) drain valves	5 years	11.4.4.1
Corrosion and hydrostatic test	10 years	11.4.4.4
Foam concentrate tank — drain and flush	10 years	11.4.4.2
Standard balanced pressure type	–	–
Balancing valve diaphragm	5 years	11.4.7.3
Foam concentrate pump(s)	5 years*	11.4.7.2
Foam concentrate tank	10 years	11.4.7.4
Strainer(s) — mainline	5 years	11.2.6.1
Water supply	Annually	11.2.5.2
Water supply tank(s)	–	Chapter 9

*Also refer to manufacturer's instructions and frequency. Maintenance intervals other than preventive maintenance are not provided, as they depend on the results of the visual inspections and operational tests. For foam-water sprinkler systems in aircraft hangars, refer to the inspection, test, and maintenance requirements of Table 11.1.1 in NFPA 409.

11.1.2 Other System Components.

Fire pumps, water storage tanks, common components, and valves common to other types of water-based fire protection systems shall be inspected, tested, and maintained in accordance with Chapters 8, 9, and 13, respectively, and as specified in Table 11.1.1.2.

11.1.3 Foam-Water Sprinkler Systems.

11.1.3.1

This section shall apply to foam-water sprinkler systems as specified in NFPA 16.

11.1.3.2

This section shall not include systems detailed in NFPA 11.

11.1.4 Foam-Water Sprinkler System.

11.1.4.1

If during routine inspection and testing the foam-water sprinkler system is determined to have been altered or replaced (e.g., equipment replaced, relocated, or foam concentrate replaced), it shall be determined whether the system operates properly.

11.1.5 Obstruction Investigations.

The procedures outlined in Chapter 14 shall be followed where there is a need to conduct an obstruction investigation.

11.1.6 Impairments.

The procedures outlined in Chapter 15 shall be followed where an impairment to protection occurs.

11.2 Inspection.

Systems shall be inspected in accordance with the frequency specified in Table 11.1.1.2.

11.2.1 Deluge Valves.

Deluge valves shall be inspected in accordance with the provisions of Chapter 13.

11.2.2 System Piping and Fittings.

System piping and fittings shall be inspected for the following:

(1) Mechanical damage (e.g., broken piping or cracked fittings)

(2) External conditions (e.g., missing or damaged paint or coatings, rust, and corrosion)

(3) Misalignment or trapped sections

(4) Low-point drains (automatic or manual)

(5) Location and condition of rubber-gasketed fittings

11.2.3 Hangers, Braces, and Supports.

Hangers, braces, and supports shall be inspected for the following and repaired or replaced as necessary:

(1) Condition (e.g., missing or damaged paint or coating, rust, and corrosion)

(2) Secure attachment to structural supports and piping

(3) Damaged or missing hangers, braces, and supports

11.2.4* Foam-Water Discharge Devices.

11.2.4.1

Foam-water discharge devices shall be inspected visually and maintained to ensure that they are in place, continue to be aimed or pointed in the direction intended in the system design, and are free from external loading and corrosion.

11.2.4.2

Where caps or plugs are required, the inspection shall confirm they are in place and free to operate as intended.

11.2.4.3

Misaligned discharge devices shall be adjusted (aimed) by visual means, and the discharge patterns shall be inspected at the next scheduled flow test.

11.2.4.4 *

Inspection shall verify that unlisted combinations of discharge devices and foam concentrate have not been substituted.

11.2.5 Water Supply.

11.2.5.1

The dependability of the water supply shall be ensured by regular inspection and maintenance, whether furnished by a municipal source, on-site storage tanks, a fire pump, or private underground piping systems.

11.2.5.2 *

Water supply piping shall be maintained free of internal obstructions.

11.2.6 Strainers.

11.2.6.1

Mainline and individual discharge device strainers (basket or screen) shall be inspected every 5 years for damaged and corroded parts.

11.2.6.2

Other maintenance intervals shall be permitted, depending on the results of the visual inspection and operating tests.

11.2.6.3

Discharge device strainers shall be removed, inspected, and cleaned during the flushing procedure for the mainline strainer.

11.2.6.4

Foam concentrate strainers shall be inspected visually to ensure the blowdown valve is closed and plugged.

11.2.6.5

Baskets or screens shall be removed and inspected after each operation or flow test.

11.2.7 Drainage.

The area beneath and surrounding a foam-water spray system shall be inspected to ensure that drainage facilities, such as trap sumps and drainage trenches, are not blocked, and retention embankments or dikes are in good repair.

11.2.8 * Proportioning Systems.

11.2.8.1

The components of the various proportioning systems described in 11.2.8 shall be inspected in accordance with the frequency specified in Table 11.1.1.2 .

11.2.8.2 _

Valves specified to be inspected shall be permitted to be open or closed, depending on specific functions within each foam-water sprinkler system.

11.2.8.3 _

The position (open or closed) of valves shall be verified in accordance with specified operating conditions.

11.2.8.4 * _

Inspection of the concentrate tank shall include verification that the quantity of foam concentrate satisfies the requirements of the original design.

11.2.8.5 _

Additional inspection requirements shall be performed as detailed for the proportioning systems specified in 11.2.8 .

11.2.8.5.1 _ Standard Pressure Proportioner.

11.2.8.5.1.1 * _

The pressure shall be removed before the inspection to prevent injury.

11.2.8.5.1.2 _

The inspection shall verify the following:

(1) Ball drip valves (automatic drains) are free and opened.

(2) External corrosion on foam concentrate storage tanks is not present.

11.2.8.5.2 _ Bladder Tank Proportioner.

11.2.8.5.2.1 * _

The pressure shall be removed before the inspection to prevent injury.

11.2.8.5.2.2 _

The inspection shall include the following:

(1) Water control valves to foam concentrate tank

(2) An inspection for external corrosion on foam concentrate storage tanks

(3) An inspection for the presence of foam in the water surrounding the bladder (annual)

11.2.8.5.3 _ Line Proportioner.

The inspection shall include the following:

(1)* Strainers

(2)* Verification that pressure vacuum vent is operating freely

(3) An inspection for external corrosion on foam concentrate storage tanks

11.2.8.5.4 _ Standard Balanced Pressure Proportioner.

The inspection shall include the following:

(1)* Strainers

(2)* Verification that pressure vacuum vent is operating freely

(3) Verification that gauges are in good operating condition

(4) Verification that sensing line valves are open

(5) Verification that power is available to foam liquid pump

11.2.8.5.5 _ In-Line Balanced Pressure Proportioner.

The inspection shall include the following:

(1)* Strainers

(2)* Verification that pressure vacuum vent is operating freely

(3) Verification that gauges are in good working condition

(4) Verification that sensing line valves at pump unit and individual proportioner stations are open

(5) Verification that power is available to foam liquid pump

11.2.8.5.6 _ Orifice Plate Proportioner.

The inspection shall include the following:

(1)* Strainers

(2)* Verification that pressure vacuum vent is operating freely

(3) Verification that gauges are in good working condition

(4) Verification that power is available to foam liquid pump

11.3 * _ Operational Tests.

Frequency of system tests shall be in accordance with Table 11.1.1.2 .

11.3.1 * Test Preparation.

Precautions shall be taken to prevent damage to property during the test.

11.3.2 * Operational Test Performance.

11.3.2.1

Operational tests shall be conducted to ensure that the foam-water sprinkler system(s) responds as designed, both automatically and manually.

11.3.2.2

The test procedures shall simulate anticipated emergency events so the response of the foam-water sprinkler system(s) can be evaluated.

11.3.2.3

Where discharge from the system discharge devices would create a hazardous condition or conflict with local requirements, an approved alternate method to achieve full flow conditions shall be permitted.

11.3.2.4 Response Time.

Under test conditions, the automatic fire detection systems, when exposed to a test source, shall operate within the requirements of *NFPA 72* for the type of detector provided, and the response time shall be recorded.

11.3.2.5 Discharge Time.

The time lapse between operation of detection systems and water delivery time to the protected area shall be recorded for open discharge devices.

11.3.2.6 Discharge Patterns.

11.3.2.6.1

The discharge patterns from all of the open spray devices shall be observed to ensure that patterns are not impeded by plugged discharge devices and to ensure that discharge devices are correctly positioned and that obstructions do not prevent discharge patterns from covering surfaces to be protected.

11.3.2.6.2

Where obstructions occur, the piping and discharge devices shall be cleaned and the system retested.

11.3.2.6.3

Discharge devices shall be permitted to be of different orifice sizes and types.

11.3.2.7 * Pressure Readings.

11.3.2.7.1

Pressure readings shall be recorded at the highest, most remote discharge device.

11.3.2.7.2

It shall be permissible to test the full flow discharge from foam-water deluge systems using water only in lieu of foam.

11.3.2.7.3

A second pressure reading shall be recorded at the main control valve.

11.3.2.7.4

Readings shall be compared to the hydraulic design pressures to ensure the original system design requirements are met.

11.3.3 Multiple Systems.

The maximum number of systems expected to operate in case of fire shall be tested simultaneously to inspect the adequacy of the water supply and concentrate pump.

11.3.4 _ Manual Actuation Devices.

Manual actuation devices shall be tested annually.

11.3.5 _ Concentration Testing.

11.3.5.1 _

During the operational test, a foam sample shall be taken.

11.3.5.2 _

Where approved by the authority having jurisdiction, simulated foam concentrates or alternative test systems shall be permitted to be substituted for actual foam concentrate, but system pressures and flows shall remain as described above and meet manufacturer's system requirements and recommendations. [**16:** 8.4.1.6]

11.3.5.3 _

The foam sample shall be inspected by refractometric or other methods to verify concentration of the solution.

11.3.5.4 _

The foam concentrate induction rate of a proportioner, expressed as a percentage of the foam solution flow (water plus foam concentrate), shall be within minus 0 percent to plus 30 percent of the manufacturer's listed concentration, or plus 1 percentage point, whichever is less. [**16:** 8.4.1.4]

11.3.6 _ Return to Service.

After the full flow test, the foam-water sprinkler shall be returned to service and the foam concentrate tank shall be replenished to design level.

11.4 * _ Maintenance.

11.4.1 _

Maintenance of foam-water sprinkler systems shall be in accordance with the requirements of those chapters covering the specific component parts.

11.4.2 _ Foam Concentrate Samples.

Samples of foam concentrates shall be sent to the manufacturer or qualified laboratory for quality condition testing at the frequency recommended by the manufacturer.

11.4.3 _ Foam Components.

Maintenance of specific foam components shall be in accordance with 11.4.4 through 11.4.8 .

11.4.4 _ Standard Pressure Proportioner.

11.4.4.1 _

The ball drip (automatic-type) drain valves shall be disassembled, cleaned, and reassembled.

11.4.4.2 * _

The foam liquid storage tank shall be drained of foam liquid and flushed.

11.4.4.3 _

Foam liquid shall be permitted to be salvaged and reused.

11.4.4.4 _

The foam liquid tank shall be inspected for internal and external corrosion and hydrostatically tested to the specified working pressure.

11.4.5 _ Bladder Tank Proportioner.

11.4.5.1 _

Sight glass, where provided, shall be removed and cleaned.

11.4.5.2 * _

The foam concentrate bladder tank shall be hydrostatically tested at system working pressure.

11.4.5.2.1 _

The hydrostatic test shall not create a pressure differential across the diaphragm.

11.4.5.2.2 _

While under system working pressure, the exterior of the foam concentration bladder tank shall be inspected for leaks.

11.4.6 _ Line Proportioner.

11.4.6.1 _

The foam concentrate tank shall be inspected for internal corrosion.

11.4.6.2 _

Pickup pipes inside the tank shall be inspected for corrosion, separation, or plugging.

11.4.6.3 _

The foam concentrate tank shall be drained and flushed.

11.4.6.4 _

Foam concentrate shall be permitted to be salvaged and reused.

11.4.7 _ Standard Balanced Pressure Proportioner.

11.4.7.1 _ Pump Operation.

11.4.7.1.1 _

The foam concentrate pump shall be operated.

11.4.7.1.2 _

Foam concentrate shall be circulated back to the tank.

11.4.7.2 _ Servicing.

Foam pumps, drive train, and drivers shall be serviced in accordance with the manufacturer’s instructions and frequency but not at intervals of more than 5 years.

11.4.7.3 _ Flushing.

The diaphragm balancing valve shall be flushed through the diaphragm section with water or foam concentrate until fluid appears clear or new.

11.4.7.4 _ Corrosion and Sediment.

11.4.7.4.1 _

The foam concentrate tank shall be inspected internally for corrosion and sediment.

11.4.7.4.2 _

Excessive sediment shall require draining and flushing of the tank.

11.4.8 _ In-Line Balanced Pressure Proportioner.

11.4.8.1 _ Pump Operation.

11.4.8.1.1 _

The foam concentrate pump shall be operated.

11.4.8.1.2

Foam concentrate shall be circulated back to the tank.

11.4.8.2 Servicing.

Foam pumps, drive train, and drivers shall be serviced in accordance with the manufacturer's instructions and frequency but not at intervals of more than 5 years.

11.4.8.3 Flushing.

The diaphragm balancing valve shall be flushed through the diaphragm section with water or foam concentrate until fluid appears clear or new.

11.4.8.4 Corrosion and Sediment.

11.4.8.4.1

The foam concentrate tank shall be inspected internally for corrosion and sediment.

11.4.8.4.2

Excessive sediment shall require draining and flushing of the tank.

11.4.9 Pressure Vacuum Vents.

The procedures specified in 11.4.9.1 through 11.4.9.13 shall be performed on pressure vacuum vents every 5 years.

11.4.9.1

The vent shall be removed from the expansion dome.

11.4.9.2

The vent shall be inspected to ensure that the opening is not blocked and that dirt or other foreign objects do not enter the tank.

11.4.9.3

The vent bonnet shall be removed.

11.4.9.4

The vacuum valve and pressure valve shall be lifted out.

11.4.9.5

The vent body shall be flushed internally, and the vacuum valve and the pressure valve shall be washed thoroughly.

11.4.9.6

The vent shall be inspected to ensure that the screen is not clogged, and the use of any hard, pointed objects to clear the screen shall be avoided.

11.4.9.7

If the liquid has become excessively gummy or solidified, the vent body and parts shall be soaked in hot soapy water.

11.4.9.8

The vent body shall be turned upside down and drained thoroughly.

11.4.9.9

Parts shall be dried by placing them in a warm and dry area or by using an air hose.

11.4.9.10

Parts shall be sprayed with a light Teflon® coating, and the vent shall be reassembled.

11.4.9.11

The use of any type of oil for lubrication purposes shall not be permitted.

11.4.9.12 _

The vent bonnet shall be replaced, and the vent shall be turned upside down slowly a few times to ensure proper freedom of the movable parts.

11.4.9.13 _

The vent shall be attached to the liquid storage tank expansion dome.

11.5 _ Component Action Requirements.

11.5.1 _

Whenever a component in a foam-water sprinkler system is adjusted, repaired, reconditioned, or replaced, the action required in Table 11.5.1 shall be performed.

Table 11.5.1 Summary of Component Action Requirements

Component	**Adjust**	**Repair/Recondition**	**Replace**	**Required Action**
Water Delivery Components				

- - - -

Discharge devices	X	

_

	X	(1) Inspect for leaks at system working pressure

- - - -

				(2) Inspect for impairments at orifice
Fire department connections	X	X	X	See Chapter 13
Manual release	X	X	X	(1) Operational test

- - - -

			(2) Inspect for leaks at system working pressure

- - - -

				(3) Test all alarms
Pipe and fittings on closed-head system	X	X	X	Hydrostatic test in conformance with NFPA 16
Pipe and fittings on open-head system	X	X	X	Operational flow test
Foam Components				

- - - -

Ball drip (automatic-type) drain valves	

- - -

			See Chapter 13	
Bladder tank	X	X	X	Inspect water jacket for presence of foam concentrate
Foam concentrate	X			

-

Foam concentrate pump	X	Submit a sample for laboratory analysis for conformance with manufacturer's specifications

- - -

Foam concentrate strainer(s)		See Chapter 8

- - -

			See Chapter 13		
Foam concentrate tank	X	X		X	Inspect for condition; repair as appropriate
Proportioning system(s)	X	X		X	Conduct flow test and inspect proportioning by refractometer test or equivalent
Water supply tank(s)					

- - -

	See Chapter 9
Alarm and Supervisory Components	

- - - -

Detection system	X	X	X	Operational test for conformance with NFPA 16 and/or *NFPA 72*
Pressure-switch-type waterflow	X	X	X	Operational test using inspector's test connection
Valve supervisory device				

- -

		X	Test for conformance with NFPA 16 and/or *NFPA 72*		
Vane-type waterflow	X	X		X	Operational test using inspector's test connection
Water motor gong					

- -

	X	Operational test using inspector's test connection
Status-Indicating Components		

- - - -

Gauges	X	

-

	X			Verify at 0 psi (0 bar) and system working pressure; see Chapter 13 regarding calibration
Testing and Maintenance Components				

- - - -

Auxiliary drains	X	X	X	Inspect for leaks at system working pressure
Inspector's test connection	X	X	X	Inspect for leaks at system working pressure
Main drain	X	X	X	Full-flow main drain test
Structural Components				

- - - -

Hanger/seismic bracing	X	X	X	Inspect for conformance with NFPA 16 and/or NFPA 13
Pipe stands	X	X	X	Inspect for conformance with NFPA 16 and/or NFPA 13
Informational Components				

- - - -

General information sign	X	X	X	Inspect for conformance with NFPA 16 and/or NFPA 13
Hydraulic information sign	X	X	X	Inspect for conformance with NFPA 16 and/or NFPA 13
Valve signs	X	X	X	Inspect for conformance with NFPA 16 and/or NFPA 13

11.5.2

Where the original installation standard is different from the cited standard, the use of the appropriate installing standard shall be permitted.

11.5.3

The actions of 11.5.1 and 11.5.2 shall not require a design review, which is outside the scope of this standard.

Additional Proposed Changes

File Name	Description	Approved
NFPA_25_Ch_11_With_Task_Group_Changes.pdf	New additions from the NFPA 11 Task Group (including the ITM Chapter from NFPA 11) are shown in red font. Existing text from NFPA 25 Chapter 11 is shown in black font. Omitted or relocated text from NFPA 25 Chapter 11 is shown in blue font.	
NFPA_25_CH_11_FINAL.pdf	This is an identical document with all changes included, but all text is black font and does not designate new content from existing content.	

Statement of Problem and Substantiation for Public Input

NFPA 25 Chapter 11 provides IT&M requirements for Foam-Water Sprinkler Systems. The inclusion of NFPA 16 into NFPA 11 now leaves a gap between foam-water sprinkler system requirements in NFPA 25 and other foam systems covered by NFPA 11. The NFPA 11 TC organized an IT&M Task Group to address this gap. The proposed PI is the work of the NFPA 11 Task Group and has been reviewed by the NFPA 11 TC. The revised Chapter 11 retains existing IT&M requirements from NFPA 25 Chapter 11 and also provides new IT&M requirements for other types of foam systems from NFPA 11 (see attached documents for all revisions).

Task Group members were as follows: Tracey Bellamy, Richard Coppola, Mark Fessenden, Steven Fox, Martin Hawkes, Robert Kasiski, Fay Purvis, Martin Workman, and Adam Hofman (chair).

Submitter Information Verification

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Committee:	INM-AAA

Committee Statement

Resolution: FR-143-NFPA 25-2020

Statement: Delete the current Chapter 11 in its entirety and replace it with the new text prepared by the NFPA 11 task group, in its entirety. Note the group was assigned by NFPA 11 Chair, Joan Leedy and met frequently over many months to develop the new text. The TG was comprised of a cross section of the committee, to include end users, foam manufacturer's PE's and FPE's as well as ITM service providers and foam testers. This action was the result of discontinuing NFPA 16 (Foam & Water) by folding it into a chapter of NFPA 11, so that all foam related requirements will exist in a single document.

Red Text = New Additions from NFPA 11 Task Group (includes all of ITM Chapter from NFPA 11)

Black Text = Existing text in NFPA 25 Chapter 11

Blue Text = Omitted or re-located text from NFPA 25 Chapter 11 (Foam Water Sprinkler Systems)

Additions to NFPA 25 Chapter 3

Vapor Seal. A device used in a fixed foam discharge outlet to prevent flammable liquid vapors being released from a product storage tank.

Rupture Disk. A device used in a subsurface foam injection line to prevent backflow of hydrocarbon liquids to pressure foam makers (high back pressure or forcing type). Disk is designed to burst when foam pressure builds at foam maker discharge.

Pressure Proportioning Head. An Assembly of components that forms an integral part of a pressure proportioning tank. It creates a differential pressure in the water line causing foam concentrate to be metered by an orifice into the water stream.

Wide Range or Variable Range Proportioner. A foam proportioner for use in closed head foam-water sprinkler systems where accurate foam injection rate (% concentration) must be held over a wide range of anticipated flow rates.

Ch 11 Foam-~~Water Sprinkler~~ Systems

11.1 General.

11.1.1 Minimum Requirements.

11.1.1.1 This chapter shall provide the minimum requirements for the routine inspection, testing, and maintenance of Foam Systems.

A.11.1.1.1 An inspection contract for the equipment service tests and operation at regular intervals is recommended.

11.1.1.2 Table 11.1.1.2 shall be used to determine the minimum required frequencies for inspection, testing, and maintenance.

11.1.1.3* An Inspection, Testing, and Maintenance Service program shall be implemented.

A.11.1.1.3 The goal of this inspection testing and maintenance service should be to ensure that the system is in full operating condition and that it remains in that condition until the next inspection. Refer to A.3.3.25 for further explanation.

11.1.1.4* Systems shall be so arranged that tests and inspections can be made without discharging foam solution to the system piping in order to check operation of all mechanical and electrical components of the system.

A.11.1.1.4 To provide a means of periodically checking the performance of the proportioners used in foam sprinkler systems, a test connection should be provided. Typical test connections are illustrated in Figure A.6.12. Two options are possible in locating the proportioning controller in the sprinkler riser: before the main sprinkler valve or after the main sprinkler valve. If the proportioning controller is located after the main sprinkler valve, an additional supervised OS&Y valve is needed to isolate the sprinkler overhead during the proportioner test. This is done to eliminate the problems caused by air cushions in wet pipe sprinkler systems or the servicing delays caused during charging and draining of preaction or deluge sprinkler systems. The test connection should be routed to a drain area for easy disposal of the solution produced during the test. The manufacturer's test procedures should be followed closely.

11.1.2 Other System Components. Fire pumps, water storage tanks, common components, and valves common to other types of water-based fire protection systems shall be inspected, tested, and maintained in accordance with Chapters 8, 9, and 13, respectively, and as specified in Table 11.1.1.2.

11.1.3 Alarm and detection devices. Alarms and detection devices shall be tested and inspected in accordance with NFPA 72.

11.1.4 Obstruction Investigations. The procedures outlined in Chapter 14 shall be followed where there is a need to conduct an obstruction investigation.

11.1.5* Impairments, Critical Deficiencies, and Noncritical Deficiencies

A.11.1.5 See Table A.3.3.8

11.1.5.1 Impairments. The procedures outlined in Chapter 15 shall be followed where an impairment to protection occurs.

11.1.5.2 Critical Deficiencies. Where a critical deficiency is noted, the appropriate action shall be taken.

11.1.5.3 Noncritical deficiencies. Where a noncritical deficiency is noted, the appropriate corrective action shall be taken.

11.1.6 Hose Connections. Hose connections shall be inspected, tested, and maintained in accordance with Chapters 6 and 13.

11.1.7 System Changes. If during routine inspection and testing the system is determined to have been altered or replaced (e.g., equipment replaced, relocated, or foam concentrate replaced) such that the components are not compatible, the system shall be considered impaired.

> A.11.1.7. New providers of inspection, testing, and maintenance service programs should begin by reviewing the documentation for a system as required by 11.2.13. The review of this documentation may warrant a design review.

11.2 Inspection. Systems shall be inspected in accordance with the frequency specified in Table 11.1.1.2. Where any of the following testing requirements are found deficient the results shall be documented, corrected, and re-tested in accordance with 11.1.5.

11.2.1 *Minimum Requirements

A.11.2.1 Regular service contracts are recommended.

11.2.2 Foam Discharge Devices

11.2.2.1* Foam-Water Discharge Devices

A.11.2.2.1 Directional-type foam-water discharge devices are quite often located in heavy traffic areas and are more apt to be dislocated compared to ordinary sprinkler locations. Of particular concern are low-level discharge devices in loading racks in and around low-level tankage and monitor-mounted devices that have been pushed out of the way for convenience. Inspection frequency might have to be increased accordingly.

11.2.2.1.1 Foam-water discharge devices shall be inspected visually to ensure that they are in place, continue to be aimed or pointed in the direction intended in the system design, and are free from external loading and corrosion.

11.2.2.1.2 Where caps or plugs are required, the inspection shall confirm they are in place.

11.2.2.1.3 Misaligned discharge devices shall be adjusted (aimed) by visual means.

A.11.2.2.1.3 Installers may provide reference marks on unions or fittings to identify proper nozzle placement.

11.2.2.1.4.1 The alignment and adequacy of coverage of the intended hazard of adjusted discharge devices shall be observed and verified during the next scheduled flow test.

11.2.2.1.4* Inspection shall verify that unlisted combinations of discharge devices and foam concentrate have not been substituted.

A.11.2.2.1.4 Discharge devices are listed or approved for use with particular foam concentrates.

11.2.2.2. Fixed foam discharge outlets. Fixed foam discharge outlets shall be inspected annually.

11.2.2.2.1 Fixed foam discharge outlets inaccessible for inspection due to safety considerations due to process operations or personnel hazards shall be inspected during each scheduled shut down.

11.2.2.2.2 Fixed foam discharge outlets installed on the tanks shall be visually inspected from the ground level or other means.

A.11.2.2.2.2. The visual inspection should look for the following.

(1) Presence of orifice plate at fixed foam discharge inlet if provided
(2) Corrosion
  (a) The top of fixed foam discharge outlets are subject to corrosion and may require accessing another tank or inspection by other means.
(3) Damage (example bug/screen)
(4) Air Inlet Blockages

11.2.2.2.3 *Fixed foam discharge outlets installed external floating roofs shall be visually inspected from the ground level and from the top of the stairs

A.11.2.2.2.3 Inspection of the system by accessing the floating roof is often considered to be a confined space, especially for cantilever type foam systems, and require additional resources. Scheduling inspections during annual roof inspections can facilitate closer inspection of these systems and reduce inspection costs.

11.2.2.2.4 Vapor Seals.

11.2.2.2.4.1 Where vapor seals are provided the inspection shall verify the seal is present through one of the following means:

1) *Visual Inspection.
  a) Visual inspection of vapor seals shall be approved by the AHJ prior to the inspection.
    1. Tank operations may or may not facilitate an inspection of a vapor seal.
    2. Where a visual inspection is not possible, other means listed below shall be acceptable.
  b) Where provided with an inert gas system, the owner shall verify that the makeup gas is sufficient to account for the removal of a fixed foam discharge outlet lid
    1. Where inadequate makeup gas is provided, visual inspection may not occur until the next tank outage.

A.11.2.2.1.1(1). Fixed foam discharge outlets installed on cone roof tanks require vapor seals. In some instances, cone roof tanks are provided with an inert gas blanket, such as nitrogen. The blanket can be used for the following

- Mitigation of a flammable atmosphere due to elevated product temperatures
- Mitigation of gum formation or other product quality issues in finished product tanks.

A visual inspection of tanks equipped with these systems may cause costly product quality issues due to air ingress, or potential for pyrophoric reaction and fire due to air ingress into the tank.

If a visual inspection is accomplished, the installation of an inner tube, or other means to prevent the loss of the inert blanket is good practice.

2) Infrared Camera.
    a) Infrared Cameras can be used to verify if a vapor seal is intact or not.
3) Gas Monitoring
    a) Where access to the chamber is provided, gas monitoring may be done around the fixed foam discharge outlet lid and the air inlet to verify that the vapor seal is intact.
    b) Monitoring can be conducted at the fire department connection on semi-fixed foam systems as a means to verify that the vapor seal is intact.
    c) Monitoring can be conducted at low point drains of foam solution piping as a means to verify that the vapor seal is intact.
4) Other means as allowed by the AHJ and operator approval.

11.2.2.2.5 Pressure Foam Makers. Inspection shall follow manufacturer's recommendations.

11.2.2.2.5.1 Check Valves shall be inspected per NFPA 25 13.4.2.

11.2.2.2.5.1.1 Prior to inspection, air monitoring shall be conducted at truck connections and at valved test connections.

A.11.2.2.2.5.1.1 Inspections of check valves may result in a spill to grade if the downstream gate valve is not fully closed. Product from the tank may be in the line between the check valve and the gate valve, if the gate valve has been tested.

11.2.2.2.5.2 Proper PPE shall be utilized.

11.2.2.2.5.3 Gate Valves shall be inspected per NFPA 25 13.3.2.1

11.2.2.2.5.4 Low Point Drains shall be inspected per 11.2.8.2.3.

A.11.2.2.2.5.4 Prior to inspection or manipulation of the low point drain the gate valve downstream of the check valve shall be verified closed. There is potential for product to be discharged from the low point drain if the rupture disc has been ruptured and the check valve experiences a failure.

11.2.2.2.5.5 Rupture disks, where provided, shall be inspected in accordance with manufacturer's requirements.

12.2.2.2.5.6 Confirm that all system operating valves are stored in proper positions as determined by the system design.

12.2.2.2.5.7 Confirm that the water level in the base of the storage tank is below the bottom of the foam injection line. This will require consultation with the tank operator.

12.2.2.2.5.8 Inspect the foam maker for signs of physical damage.

11.2.2.2.5.9 Air Inlet

11.2.2.2.5.9.1 Inspection shall verify that the chamber air inlet is free and clear of paint, debris, or other items which may impede the proper operation of the chamber or foam maker. The screen shall not be damaged or missing.

11.2.2.2.5.10 Strainers. Where equipped with a strainer, the strainer shall be inspected per 11.2.4.

11.2.2.3. Monitors. Monitors, including self-educting monitors, shall be inspected in accordance with NFPA 25 7.2.2.6.

11.2.2.3.1 Where pickup tubes are provided on self-educting monitors the tube shall be inspected for cracking and dry rot.

11.2.2.4 Hoselines

11.2.2.4.1 Hoselines shall be inspected annually in accordance with NFPA 25 6.2.5, or manufacturer's recommendations where applicable.

11.2.2.5 Hose Nozzles

11.2.2.5.1 Nozzles shall be inspected annually in accordance with NFPA 25 6.2.6

11.2.3 Water Supply.

11.2.3.1 Water supply systems which supply foam systems shall be inspected in accordance with NFPA 25 Chapter 7, 8, and 9.

11.2.4 Strainers.

11.2.4.1 Individual discharge device strainers (basket or screen) shall be inspected for damaged and corroded parts as follows

- After each system activation
- After each operational test
- After a flushing test

11.2.4.2 Mainline strainers shall be inspected in accordance with 7.2.2.3.

11.2.4.3 Strainers shall be inspected in accordance with manufacturer's instructions and shall be cleaned after each use and flow test.

11.2.4.4 Foam concentrate strainers shall be inspected visually to ensure the blowdown valve is closed and plugged.

11.2.4.4.1 Foam concentrate strainers provided on foam concentrate pump skids shall be inspected in accordance with Chapter 8

11.2.5 Drainage. The area beneath and surrounding a foam-water spray system shall be inspected to ensure that drainage facilities, such as trap sumps and drainage trenches, are not blocked, and retention embankments or dikes are in good repair.

~~**11.1.3 Foam-Water Sprinkler Systems.**~~

~~**11.1.3.1** This section shall apply to foam-water sprinkler systems as specified in NFPA 16.~~

~~**11.1.3.2** This section shall not include systems detailed in NFPA 11.~~

~~**11.1.4 Foam-Water Sprinkler System.**~~

~~**11.1.4.1** If during routine inspection and testing the foam water sprinkler system is determined to have been altered or replaced (e.g., equipment replaced, relocated, or foam concentrate replaced), it shall be determined whether the system operates properly.~~

~~**11.2.2 System Piping and Fittings.** System piping and fittings shall be inspected for the following:~~

~~(1) Mechanical damage (e.g., broken piping or cracked fittings)~~

~~(2) External conditions (e.g., missing or damaged paint or coatings, rust, and corrosion)~~

~~(3) Misalignment or trapped sections~~

~~(4) Low-point drains (automatic or manual)~~

~~(5) Location and condition of rubber-gasketed fittings~~

~~**11.2.3 Hangers, Braces, and Supports.** Hangers, braces, and supports shall be inspected for the following and repaired or replaced as necessary:~~

~~(1) Condition (e.g., missing or damaged paint or coating, rust, and corrosion)~~

~~(2) Secure attachment to structural supports and piping~~

~~(3) Damaged or missing hangers, braces, and supports~~

~~**11.2.5 Water Supply.**~~

~~**11.2.5.1** The dependability of the water supply shall be ensured by regular inspection and maintenance, whether furnished by a municipal source, on-site storage tanks, a fire pump, or private underground piping systems.~~

~~**11.2.5.2*** Water supply piping shall be maintained free of internal obstructions.~~

~~**11.2.6 Strainers.**~~

~~**11.2.6.1** Mainline and individual discharge device strainers (basket or screen) shall be inspected every 5 years for damaged and corroded parts.~~

~~**11.2.6.2** Other maintenance intervals shall be permitted, depending on the results of the visual inspection and operating tests.~~

~~**11.2.6.3** Discharge device strainers shall be removed, inspected, and cleaned during the flushing procedure for the mainline strainer.~~

~~**11.2.6.4** Foam concentrate strainers shall be inspected visually to ensure the blowdown valve is closed and plugged.~~

~~**11.2.6.5** Baskets or screens shall be removed and inspected after each operation or flow test.~~

11.2.6* Proportioning Systems.

> **A.11.2.6** Proportioning systems might or might not include foam concentrate pumps. If pumps are part of the proportioning system, the driver, pump and gear reducer should be inspected in accordance with the manufacturer's recommendations, and the inspection can include items such as lubrication, fuel, filters, oil levels, and clutches.

11.2.6.1 The components of the various proportioning systems described in 11.2.8 shall be inspected in accordance with the frequency specified in Table 11.1.1.2.

11.2.6.2 Valves specified to be inspected shall be permitted to be open or closed, depending on specific functions within each ~~foam-water sprinkler~~ system.

11.2.6.3 The position (open or closed) of valves shall be verified in accordance with specified operating conditions.

11.2.6.4 Additional inspection requirements shall be performed as detailed for the proportioning systems specified in 11.2.6.

11.2.6.5 Standard Pressure Proportioner.

11.2.6.5.1* The pressure shall be removed before the inspection to prevent injury.

> A.11.2.6.5.1 The standard pressure proportioner is a pressure vessel. Although under normal standby conditions this type of proportioning system should not be pressurized, some installations allow for inadvertent pressurization. Pressure should be removed before inspection.

11.2.6.5.2 The inspection shall verify the following:

(1) Ball drip valves (automatic drains) are free and opened.

(2) Remove the proportioning head and inspect the foam concentrate pickup tube to verify it is intact, not damaged, or clogged.

~~(2) External corrosion on foam concentrate storage tanks is~~

~~not present.~~

11.2.6.6 Bladder Tank Proportioner.

11.2.6.6.1* The pressure shall be removed before the inspection to prevent injury.

A.11.2.6.6.1 The bladder tank proportioner is a pressure vessel. Where inspecting for a full liquid tank, the manufacturer's instructions should be followed. If inspected incorrectly, the tank sight gauges could indicate a full tank when the tank actually is empty of foam liquid. Some foam liquids, due to their viscosity, might not indicate true levels of foam liquid in the tank where inspected via the sight glass.

11.2.6.6.2 The inspection shall include the following:

(1) Water control valves to foam concentrate tank

~~(2) An inspection for external corrosion on foam concentrate storage tanks~~

~~(3) An inspection for the presence of foam in the water surrounding the bladder (annual)~~

11.2.6.6.3 Line Proportioner. The inspection shall include the following:

(1)* Strainers

(2) Pickup tubes inside the tank shall be inspected for corrosion and plugging.

~~(2)* Verification that pressure vacuum vent is operating freely~~

~~(3) An inspection for external corrosion on foam concentrate storage tanks~~

11.2.6.6.4 Standard Balanced Pressure Proportioner. The inspection shall include the following:

(1)* Strainers

~~(2)* Verification that pressure vacuum vent is operating freely~~

(3) Verification that gauges are in good operating condition

(4) Verification that sensing line valves are open

(5) Verification that power is available to foam liquid pump

11.2.6.6.5 In-Line Balanced Pressure Proportioner. The inspection shall include the following:

(1)* Strainers

~~(2)* Verification that pressure vacuum vent is operating freely~~

(3) Verification that gauges are in good working condition

(4) Verification that sensing line valves at pump unit and individual proportioner stations are open

(5) Verification that power is available to foam liquid pump

11.2.6.6.6 Orifice Plate Proportioner. The inspection shall include the following:

(1)* Strainers

~~(2)* Verification that pressure vacuum vent is operating freely~~

(3) Verification that gauges are in good working condition

(4) Verification that power is available to foam liquid pump

11.2.6.6.7 Wide Range Proportioner. The inspection shall include the following.

1. Confirm that reference marks between foam inlet nipple and proportioner body are aligned to indicate proper factory setting for internal foam metering valve.

2. Check flow direction arrow to indicate the proportioner is properly installed.

3. Confirm that type of foam marking on nameplate is consistent with the system design requirements and the foam contained in the foam tank.

11.2.6.6.8 Water Powered Foam Concentrate Proportioner Pump. The inspection shall include the following:

1. Verify valves are in the proper operational position in accordance with the manufacturer's specification

2. Verify there are is no leakage on the unit or connections

3. Verify oil level to appropriate mark to water driven pump

4. Evaluate shock absorbers for wear at coupling between water motor and proportioning pump

11.2.6.6.9 Mobile Apparatus Proportioner

11.2.6.6.9.1* The foam proportioning system certification shall be reviewed annually.

1. The review shall verify that the foam concentrate type and viscosity has not changed from the foam concentrate used to obtain the system certification.
2. If the foam concentrate has changed, the change shall be considered an impairment until a new proportioning system certification can be received from the proportioner manufacture.

A.11.2.6.6.9.1 This inspection is specific to foam concentrate carried in front line apparatus. In large scale incidents it is common for mutual aid groups to bring foam concentrate from different manufacturers which may not be of the same type and viscosity of the foam carried in front line apparatus.

11.2.7 Foam Concentrate Storage

11.2.7.1* Foam concentrate storage shall verify that the quantity of foam concentrate satisfies the requirements of the original design.

> A.11.2.7.1 In some cases, an adequate supply of foam liquid is available without a full tank. This is particularly true of foam liquid stored in nonmetallic tanks. If liquid is stored in metallic tanks, the proper liquid level should be one-half the distance into the expansion dome.

11.2.7.2 Foam Concentrate Storage Tanks shall be inspected annually in accordance with 9.2.4 for external corrosion and/or damage.

> A.11.2.7.2 Polyethylene tanks can be subject to stress cracking. External inspection should look for this type of failure. These stress cracks can generally be identified by utilizing high intensity light.

11.2.7.3 The internal of expansion domes on foam concentrate storage tanks shall be inspected annually.

11.2.7.4 Tanks shall be inspected for sediment.

11.2.7.5 Excessive sediment shall require draining and flushing of the tank.

11.2.7.5.1 Foam Concentrate Storage Tanks shall have internal inspections performed when the tank is drained and flushed for maintenance.

11.2.7.6 Where provided with pressure vacuum vents, the vent shall be inspected and verify that the vent is operating freely.

11.2.7.7 Where applicable, verify that the tank hydro is current and not out of date.

11.2.7.8 Where applicable, through the wall fittings shall be inspected for mechanical damage and leakage.

> A.11.2.7.8 Through the wall fittings are typically utilized on polyethylene storage tanks. Leaks often occur due to bolts being over tightened. Failures of these types of fittings can also occur due to insufficient pipe supports provided to reduce stress on the through the wall fitting.

11.2.7.9 Bladder Tanks

> 1. An inspection for the presence of foam in the water surrounding the bladder shall be conducted annually

11.2.8 Compressed Air Foam-Producing Equipment

11.2.8.1 Compressed air foam-generating equipment and accessories shall be inspected annually.

11.2.8.2 Discharge devices shall be visually inspected annually for evidence of mechanical damage.

11.2.9 Pipe and Fittings*. Foam system pipe and fittings shall be inspected annually.

A.11.2.9 Pipe and fittings installed on floating roof tanks should align the inspection with additional roof inspection work to reduce costs associated with confined space entry, etc.

11.2.9.1 Pipe and fittings installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shut down.

11.2.9.2 System pipe and fittings shall be inspected for the following.

11.2.9.2.1 System pipe and fittings shall be free of mechanical damage, leakage, and corrosion.

11.2.9.2.2 System pipe shall not be subjected to external loads by materials either resting on the pipe or hung from the pipe.

(1) Inspections which identify corrosion or mechanical damage shall be documented and corrected in accordance with 11.1.5.
(2) Pressure tests of normally dry piping shall be made when visual inspection indicates questionable strength due to corrosion or mechanical damage.

11.2.9.2.3 System pipe shall be inspected for misalignment or trapped sections

11.2.9.2.4 System auxiliary drain signage shall be inspected per 13.4.5.1.2

11.2.9.2.5 The location and condition of rubber gasketed fittings

(1) A.11.2.9.2.5 Red rubber gaskets are not suitable for use with foam concentrate.

11.2.9.2.6 Above ground system piping shall be examined to determine its condition and to verify that proper drainage pitch is maintained.

11.2.9.2.7 Underground foam solution and foam concentrate piping shall be pressure tested at the system design pressure of the installation standard at least every 10 years.

11.2.9.2.7.1 Other frequencies shall be allowed when approved by the AHJ
11.2.9.2.7.2 Other inspection means in accordance with Chapter 14 shall be allowed

11.2.9.2.8 NFPA 11 Section 4.7.1.3 provides guidance for foam system piping and states that galvanized pipe shall not be used for foam concentrate lines.

11.2.10 Hangers, Braces, and Supports. Foam system hangers, braces, and supports shall be inspected annually from the floor level.

11.2.10.1 Hangers, braces, and supports installed in areas that are inaccessible for safety considerations due to process operating shall be inspected during each scheduled shutdown.

11.2.10.2 Hangers, braces, and supports shall not be damaged, loose, or unattached.

(1) Condition (e.g., missing or damaged paint or coating, rust, and corrosion)
(2) Secure attachment to structural supports and piping
(3) Damaged or missing hangers, braces, and supports

11.2.10.3 Hangers, braces, and supports that are damaged, loose, or unattached shall be replaced or refastened.

11.2.11 Foam Concentrate

11.2.11.1 Foam Concentrate Inspection shall verify that the foam concentrate type and viscosity has not changed from the foam concentrate used to obtain the system certification and is suitable for the current hazard (i.e., alcohol resistant, etc.). Reference NFPA 11 4.3.1.4 for the physiochemical properties to be inspected.

11.2.11.1.1 Inspection shall verify that different brands or types of foam concentrates have not been mixed.

11.2.11.1.2 Where different brands or types of foam concentrates have been mixed, inspection shall verify with the manufacturer(s) that the concentrates can be mixed, and accepted by the AHJ to prove that they are compatible.

11.2.11.2 At least annually, an inspection shall be made of foam concentrates for evidence of excessive sludging or deterioration.

11.2.11.3 Quantity of concentrate in storage shall meet design requirements, and tanks or containers shall normally be kept full, with space allowed for expansion.

11.2.12 High-Pressure Cylinders.

11.2.12.1 Cylinder Pressures

11.2.12.1.1 Inspection shall verify that the pressure within the cylinder(s) is in accordance with the manufacturer recommendation for the system.

11.2.12.2 High pressure cylinders used in compressed air foam systems hydrostatic test date shall be inspected.

11.2.12.2.1 High-pressure cylinders used in compressed air foam systems shall not be recharged without a hydrostatic test (and remarking) if more than 5 years have elapsed from the date of the last test.

11.2.12.2.2 Cylinders that have been in continuous service without discharging shall be permitted to be retained in service for a maximum of 12 years, after which they shall be discharged and retested before being returned to service.

11.2.13 Foam Dams

11.2.13.1 Foam Dams inspections shall follow the requirements below for the applicable tank construction.

11.2.13.2 Foam Dams installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shut down.

11.2.13.3* External Floating Roof. At least annually the foam dam shall be visually inspected for the following:

1. Foam Dam integrity is sound and properly attached to the roof.
2. The foam dam drainage slots are free and clear and not restricted by debris
3. Earthing shunts shall be inspected for corrosion, and damage

   A.11.2.13.3 Accessing the roof of an external floating roof may be considered a confined space and require confined space attendants, etc. If possible, foam dam inspections should be coordinated with annual tank seal inspections in order to minimize cost the cost of inspection. Additional cost savings may be realized by performing the annual water flow test on these systems when personnel are already on the roof to observe the water flow.

11.2.13.4 Internal Floating Roof.

1. Foam Dam inspection shall be conducted when the tank is brought down for required inspection and maintenance per industry standards.
2. Earthing shunts shall be inspected for corrosion, and damage.

   A.11.2.13.4 In some instances personnel may be inserted into the interstitial space of an internal floating roof while the tank is in service, which could allow for a foam dam to be inspected; however, this is not common practice. Accessing the roof while the tank is in service will require proper planning and will be designated as a confined space entry. Proper safety precautions and compliance with confined space entry standards will apply. Foam dam inspection intervals may range based on the tank life, however the average inspection interval is 20 years.

11.2.14 Deluge Valves. Deluge valve shall be inspected in accordance with the provisions of Chapter 13.

11.2.15 Operating Instructions and Training. Inspection shall verify that the operation, system deactivation, acceptance test/commissioning test results, maintenance instructions, and layouts are in place at control equipment with copies of each on file.

11.3* ~~Operational Tests~~. Testing

11.3.1 Minimum requirements. Where any of the following testing requirements are found deficient the results shall be documented, corrected, and re-tested in accordance with 11.1.5.
Frequency of system tests shall be in accordance with Table 11.1.1.2.

11.3.1.1 Foam concentrate testing shall be conducted annually.

11.3.1.2 Samples of foam concentrates shall be sent to the manufacturer or qualified laboratory for quality condition testing.

11.3.1.3 When the foam type and brand of foam are known, the quality testing shall confirm the product meets the manufacturer's specifications.

11.3.2 Proportioner Tests. An operational test of the foam proportioner shall be conducted annually.

(1) A foam flow test to verify solution concentration can be performed through a test outlet when it cannot be flowed due to occupancy

11.3.2.1* Where approved by the authority having jurisdiction, surrogate test liquids shall be permitted to be used in lieu of foam concentrates. Alternative test methods shall be permitted to enable use of surrogate test liquids but system pressures and flows shall remain as described above and meet the system design requirements.

A. 11.3.2.1 Refer to NFPA-11 Annex Section D.5.2 for further information regarding foam system testing using surrogate liquid test methods.

11.3.2.2 The concentration of the foam solution sample shall be verified by one of the following measurement devices.

1. Digital refractometer
2. Digital electric conductivity using handheld or on-line instrumentation connected to electronic data acquisition equipment
3. Calibrated Listed digital flow meters (total flow and foam concentrate)
4. Other means acceptable to the AHJ.

11.3.2.3 The following data shall be required:

1. Static water pressure
2. Residual water pressure at the control valve and at the remote reference point in the system
3. Actual discharge rate
4. Consumption rate of foam producing material
5. Concentration of the foam solution

A.11.3.2.3 Collecting expansion ratio and drain time of SFFF can be useful in ensuring system performance in comparison to manufacturers listing report or manufacturers specifications. See Annex H.

11.3.2.4 For compressed air foam systems, the following data shall be recorded as part of any discharge test.

1. Static water pressure
2. Residual water pressure at the control device
3. System air pressure
4. Concentration of the foam solution.

11.3.2.4.1 Where foam solution/premix testing is conducted the following shall apply

1. The system shall be arranged so that tests are performed with as little loss of foam concentrate as possible.

11.3.2.5 Proportioning equipment for foam-water sprinkler systems shall be verified by flow tests.

11.3.2.5.1 Flow testing through suitable test outlet connections shall be permitted if determined to meet the required system design flow conditions and found to be acceptable by the authority having jurisdiction. Testing using alternative methods as described in 11.3.2.1 shall also be permitted.

11.3.2.5.2 Verify that the water pressure at the proportioner inlet meets the system design condition at the maximum required system flow condition. Verify that the maximum water supply pressure does not exceed the maximum allowable working pressure of any proportioning system components.

11.3.2.5.3 For closed head type systems including wet pipe, preaction, and dry pipe the foam concentrate induction rate (% concentration) shall be verified at the maximum system design flow and at a flow equal to the (4) most hydraulically located sprinkler heads discharging.

11.3.2.5.3.1 When wide range or variable range proportioners are used in closed head sprinkler systems they shall be tested for foam concentrate induction rate (% concentration) at the maximum design flow and at a flow equal to the (4) most hydraulically located sprinkler heads discharging.

11.3.2.5.4 For open head deluge type systems the foam concentrate induction rate (% concentration) shall be verified at the maximum system design flow condition.

11.3.2.5.5 For systems with multiple foam proportioners designed to be operated individually the foam induction rate (% concentration) for each proportioner shall be verified by a separate flow test.

11.3.2.5.6 For systems designed with multiple proportioners to be operated simultaneously, the foam concentrate induction rate (% concentration) for each proportioner shall be verified as the required number of proportioners are discharged simultaneously.

11.3.2.5.7 The foam concentrate induction rate, expressed as a percentage of the foam solution flow (water plus foam concentrate), shall be within minus 0 percent to plus 30 percent of the manufacturer's listed concentrations, or plus 1 percentage point, whichever is less.

11.3.3 Mobile Apparatus Proportioner - Testing shall include the following

1) Verification the foam proportioning system meets the requirements of NFPA 1901 20.11.2
2) If inspection determines that the foam concentrate type or viscosity has been changed without re-certification of the system per NFPA 1901 20.10.1, the system shall be type tested and re-certified by the foam proportioning system manufacturer.

11.3.4 Water Powered Foam Concentrate Proportioner Pump The testing shall include the following:

1. Operate the water motor driven pump in accordance with manufacturer's specification

2. Operate manual air bleed valve, pressure relief valves and operational valves in accordance with the manufacturer's specification

3. Check filters for contamination in accordance with manufacturer's specification

4. Check screwed connection for tightness

5. Operate the water powered foam concentrate proportioner pump to the installed specifications for rate of flow and conduct a proportioning test in accordance with manufacturer's recommended procedures and specifications.

11.3.5 Hydrostatic Testing

11.3.5.1 Standard Pressure Proportioner tanks and bladder tanks shall undergo hydrostatic testing per Table 11.1.1.2.

> A.11.3.5.1 When hydrostatically testing bladder tanks, the generation of a pressure differential across the bladder could cause damage to the bladder. Tanks should be filled with agent to no less than the normal fill capacity and air should be vented from inside and outside the bladder before pressurizing.

11.3.5.1.2 When performing hydrostatic testing on bladder tanks, the hydrostatic test shall not create a pressure differential across the bladder.

11.3.5.1.3 When performing hydrostatic testing on bladder tanks, while under system working pressure, the exterior of the foam concentration bladder tank shall be inspected for leaks.

11.3.5.2 High Pressure Cylinders.

11.3.5.2.1 After system activation, high pressure cylinders shall be hydrostatically tested if more than 5 years have passed since the last hydrostatic test.

11.3.5.2.2 High Pressure Cylinders shall undergo a hydrostatic test every 12 years if no discharge has occurred.

11.3.6. Water Supply. The water supply for foam systems shall be tested in accordance with NFPA 25 Chapter 7, 8, and 9.

11.3.7 Monitors

11.3.7.1 Monitors and monitor nozzles shall be tested in accordance with Section 7.3.3.

11.3.7.2 Where water powered oscillating monitors are provided, testing shall be in accordance with manufacturer recommendations.

11.3.7.3 Full flow testing of oscillating monitors shall occur every 5 years and verify the range of travel and the set spray pattern are correct.

11.3.7.3.1 Alternate frequencies where approved by the AHJ are allowed.

11.3.8 Hose

11.3.8.1 Supplementary hoses shall be tested in accordance with NFPA 1962.

11.3.8.2 Hoses manufactured in accordance with standards other than NFPA 1962 shall be tested per the manufacturer guidelines.

11.3.9 Hose Nozzle

11.3.9.1 Hose Nozzles shall be tested in accordance with NFPA 1962 Ch. 5.

11.3.10* Discharge Device Operational Tests Frequency of system tests shall be in accordance with Table 11.1.1.2.

A.11.3.10 Operational tests generally should be comprised of the following:
(1) A detection/actuation test with no flow to verify that all components such as automated valves, foam and water pumps, and alarms operate properly
(2) A water-only flow test to inspect piping continuity, discharge patterns, pressures, and line flushing or a physical internal pipe and discharge device inspection if water cannot be flowed due to occupancy. Recommended water flow when occupancy is restricted is every 5 years.
(3) Resetting of system to its normal standby condition, including draining of lines and filling of foam liquid tank

11.3.10* Test Preparation. Precautions shall be taken to prevent damage to property during the test.

A.11.3.10 The property owner or designated representative should take care to prevent damage to equipment or the structure during the test. Damage could be caused by the system discharge or by runoff from the test site. It should be verified that there is adequate and unobstructed drainage. Equipment should be removed or covered as necessary to prevent damage. Means such as curbing or sandbagging should be used to prevent entry of the foam-water solution.

11.3.10.1.1 Where discharge from the system discharge devices would create a hazardous condition or conflict with local requirements, an approved alternate method to achieve full flow conditions shall be permitted.

11.3.10.2* Operational Test Performance.

A.11.3.10.2 An alternative method for achieving flow can be permitted to be an installation as shown in Figure A.12.3.3.2. This type of testing does not verify system pipe conditions or discharge device performance but only the water supply, foam concentrate supply, and proportioning accuracy.

11.3.10.2.1 Operational tests shall be conducted to ensure that the foam-water sprinkler system(s) responds as designed, both automatically and manually.

11.3.10.2.2 The test procedures shall simulate anticipated emergency events so the response of the foam-water sprinkler system(s) can be evaluated.

11.3.10.2.3 It shall be permissible to test the full flow discharge from foam-water deluge systems using water only in lieu of foam.

11.3.10.2.4 Where plugs or caps are provided on discharge devices, the full flow test shall verify that all plugs or caps release as intended.

11.3.10.2.5 Response Time. Under test conditions, the automatic fire detection systems, when exposed to a test source, shall operate within the requirements of NFPA 72 for the type of detector provided, and the response time shall be recorded.

11.3.10.2.6 Discharge Time. The time lapse between operation of detection systems and water delivery time to the protected area shall be recorded for open discharge devices.
11.3.10.2.7 Discharge Patterns.

11.3.10.2.7.1 The discharge patterns from all of the open discharge devices shall be observed to ensure that patterns are not impeded by debris and to ensure that discharge devices are correctly positioned and provide adequate coverage.

11.3.10.2.7.2 Discharge devices shall be permitted to be of different orifice sizes and types.

11.3.10.2.8* Pressure Readings.

> A.11.10.2.8 Specific foam concentrates typically are listed or approved with specific sprinklers. Part of the approval and listing is a minimum sprinkler operating pressure. Sprinkler operating pressure affects foam quality, discharge patterns, and fire extinguishment (control) capabilities. Discharge pressures less than this specified minimum pressure should be corrected immediately; therefore, it is necessary to test under full flow conditions.

11.3.10.2.8.1 Pressure readings shall be recorded at the ~~highest,~~ most ~~remote~~ hydraulically demanding discharge device.

11.3.10.2.8.2 A second pressure reading shall be recorded at the main control valve.

11.3.10.2.8.3 Readings shall be compared to the hydraulic design pressures to ensure the original system design requirements are met.

11.3.10.3 Multiple Systems. The maximum number of systems expected to operate in case of fire shall be tested simultaneously to inspect the adequacy of the water supply and foam concentrate pump.

11.3.10.4 Manual Actuation Devices. Manual actuation devices shall be tested annually.

11.3.10.5 Return to Service. After the full flow test, the foam-water sprinkler system shall be returned to service and the foam concentrate tank shall be replenished to design level.

11.3.11* Fixed Foam Discharge Outlets

> A.11.3.11. Fixed Foam Discharge Outlets are devices permanently attached to a tank, dike, or other containment structure, designed to introduce foam. Typical devices include, fixed foam discharge outlets.

11.3.11.1 Annual Water Flow. At least annually water shall be discharged through each fixed foam discharge outlet to confirm that fixed foam discharge outlets and foam solution feed lines are not obstructed.

11.3.11.1.2 Alternative test methods and frequencies as identified in this standard or where approved by the AHJ shall be permitted.

11.3.11.1.3 Where water flow from the fixed foam discharge outlet occurs, the most remote device residual pressure shall be recorded and compared with the original hydraulic calculations to ensure the correct amount of foam will be delivered to the system.

11.3.11.1.4 Observe the air inlet for indications of water back flow**.**

11.3.11.2 Cone Roof Tanks. Where cone roof tanks are provided with fixed foam discharge outlets, the following testing requirements shall apply.

11.3.11.2.1 Fixed foam discharge outlets installed in areas that are inaccessible for safety considerations due to process operations shall be tested during each scheduled shut down.

11.3.11.2.2 The AHJ shall review and approve the plans for a water flow test through the fixed foam discharge outlet.

a) Where means to isolate a fixed foam discharge outlet are provided, water flow tests through test connections on the risers of foam solution pipe at the tank shell shall be permitted pending approval from the AHJ.
b) Tank operations may or may not facilitate a water flow test.
   1. Where a water flow test is not possible visual inspection of supply piping can be conducted in accordance with Ch. 14
b) Where provided with an inert gas blanketing system, a water flow test may not be feasible until the next tank outage.

   1. Where determined feasible, the AHJ shall verify that the makeup gas is sufficient to account for the removal of a fixed foam discharge outlet lid through the duration of the flow test.

      A.11.3.11.2.2. Fixed foam discharge outlets installed on cone roof tanks require vapor seals. In some instances, cone roof tanks are provided with an inert gas blanket, such as nitrogen. The blanket can be used for the following
      - Mitigation of a flammable atmosphere due to elevated product temperatures
      - Mitigation of gum formation or other product quality issues in finished product tanks.

      A visual inspection of tanks equipped with these systems may cause costly product quality issues due to oxygen ingress, or potential for pyrophoric reaction and fire due to oxygen ingress into the tank.

c) Proper personal protective equipment shall be provided for personnel accessing fixed foam discharge outlets on in-service product tanks.
d) Where water flow testing is possible, water shall not be allowed to enter the storage tank.
e) Consideration should be given to conducting flow tests on tanks operating at elevated temperatures.
   A.11.3.9.2 (e) The following can be done to prevent water intrusion.
   - Fixed foam discharge outlets can be rotated 180 degrees to discharge water away from the tank.

- Inflatable inner tubes can be installed inside the fixed foam discharge outlet to prevent water intrusion.
- Fabricated directional elbows can be installed on the discharge tube to direct water away from the chamber.
- Installation of blinds between the chamber and the tank.
- Other means of preventing water flow from the chamber into the tank may be feasible.

11.3.11.3 Internal Floating Roofs / Geodesic Dome Roofs. Where tanks with Internal Floating roofs/geodesic domes are provided with fixed foam discharge outlets the following testing requirements shall apply.

1. Fixed foam discharge outlets installed in areas that are inaccessible for safety considerations due to process operations shall be tested during each scheduled shut down.
2. Proper personnel protection equipment shall be provided for personnel accessing fixed foam discharge outlets on in-service product tanks.
3. Where water flow testing is possible, water shall not be allowed to enter the storage tank.
    a. Where means to isolate a fixed foam discharge outlet are provided, water flow tests through test connections on the risers of foam solution pipe at the tank shell shall be permitted pending approval from the AHJ.

    A.11.3.11.3. Internal Floating roofs may or may not be provided with roof drains depending on the tank construction. The following can be done to prevent water intrusion.

    - Fixed foam discharge outlets can be rotated 180 degrees to discharge water away from the tank.
    - Inflatable inner tubes can be installed inside the fixed foam discharge outlet to prevent water intrusion.
    - Fabricated directional elbows can be installed on the discharge tube to direct water away from the fixed foam discharge outlet.
    - Installation of blinds between the fixed foam discharge outlet and the tank
    - Other means of preventing water flow from the fixed foam discharge outlet into the tank may be feasible.

4. Water flow testing frequency involving discharge onto the tank roof shall align with tank outages and industry tank inspection frequencies.
    a. Short outages where product is not removed from the tank and the roof is not accessible shall not require a water flow test.
    b. Water flow testing shall be done when the tank outage permits visual observation of water discharge and foam dam operation during the test.
    c. Foam Dam Testing shall be in accordance with 11.3.9.5

11.3.11.4 External Floating Roofs. External floating roofs are commonly provided with rim seal protection via above the seal foam application or below the seal foam application.

11.3.11.4.1 Below the Seal Foam Systems. Testing requirements for below the seal foam systems shall be as follows:

1. Fixed foam discharge outlets installed in areas that are inaccessible for safety considerations due to process operations shall be tested during each scheduled shut down.

2. Proper personnel protection equipment shall be provided for personnel accessing fixed foam discharge outlets on in-service product tanks.
3. *Water flow injection between the seal shall not be permitted on an in-service tank.
    a. Where systems are provided with proper isolation and flow test means, water flow tests can be conducted with water discharge on the roof
    b. Tank roof drains must be open and monitored.

    A.11.3.11.4.1(3) Existing systems may not be equipped with a means to isolate fixed foam discharge outlets and direct flow away from the seal in order to facilitate an annual flow test. Water flow on these systems may result in seal fabric failures which can result in water entering the tanks, or product discharge onto the roof.

4. Water flow testing frequency involving discharge between the roof seals shall align with tank outages and industry tank inspection frequencies.
    a. The AHJ shall review and approve the water flow test plan. The plan shall consider the operating pressure of the fixed foam discharge outlets, potential seal damage due to water flow/water impingement on the tank seal, and drainage.
    b. Short outages where product is not removed from the tank and the roof is not accessible shall not require a water flow test.
    c. Water flow testing shall be done when the tank outage permits visual observation of water discharge and foam dam operation (when provided) during the test.
    d. Foam Dam Testing shall be in accordance with 11.3.9.5

11.3.11.4.2 Above the Seal Foam Systems. Testing requirements for above the seal foam systems shall be as follows:

1. Water flow tests shall be conducted annually with discharge onto the roof.
2. Prior to testing, verify that the roof drains are open.
3. Test requirements for foam dams are provided in Section 11.3.9.5.

11.3.11.5 Foam Dam

11.3.11.5.1 During the water flow test, foam dams shall be observed for proper retention of water

A.11.3.11.5.1 This observation does not show adequate foam travel between foam makers, but rather verifies the integrity and function of the foam dam.

11.3.11.5.2 Verify roof drains function properly during the test.

11.3.11.6 Pressure Foam Makers. Testing shall follow manufacturer's recommendations.

11.3.11.6.1 Gate Valves shall be tested per 13.3.3.1

11.3.11.6.1.1 The AHJ shall approve the operation of the gate valve downstream of the rupture disk or check valve.

A.11.3.11.6.1.1 The operation of the gate valve closest to the tank may result in product becoming trapped between the rupture disk, check valve, and gate valve if no low point drain or bleeder is provided.

11.3.11.6.2 Annual Water Flow. At least annually water shall be discharged through each fixed foam discharge outlet to confirm that fixed foam discharge outlet and foam solution feed lines are not obstructed.

11.3.11.6.2.1 Alternative test methods and frequencies as identified in this standard or where approved by the AHJ shall be permitted.

> A.11.3.11.6.2.1 Annual water flow tests may result in a release of product to atmosphere if product is trapped between the check valve and the gate valve as product may become entrained in the water and discharged out of the test connection.

11.3.11.6.2.2 Rupture discs shall be removed prior to the flow test.

11.3.11.6.2.3 Gate valves downstream of the check valve shall be verified to be closed.

> A.11.3.11.6.2.3 Additional measures, i.e., slip blinds, may be required prior to the water flow test

11.3.11.6.2.4 During the water flow test the inlet and outlet pressure at the pressure foam maker shall be noted and confirmed to be within the acceptable range per the system design and the manufacturer's recommendations.

11.3.11.6.2.5 Observe the air inlet for indications of water back flow**.**

11.4* Maintenance.

> A.11.4 The maintenance items specified in the body of this standard are in addition to the typical inspection and test procedures indicated. Foam systems are, as are all fire protection systems, designed to be basically maintenance free. There are, however, some areas that need special attention. Foam concentrate shelf life varies between liquids and is affected by factors such as heat, cold, dilution, contamination, and many others. As with all systems, common sense dictates those maintenance-sensitive areas that should be given attention. Routine testing and inspection generally dictate the need for additional maintenance items. Those maintenance items specified are key procedures that should be performed routinely.

11.4.1 Maintenance of foam-~~water sprinkler~~ systems shall be in accordance with the requirements of those chapters covering the specific component parts. Where any of the following testing requirements are found deficient the results shall be documented, corrected, and re-tested in accordance with 11.1.5.

~~**11.4.2 Foam Concentrate Samples.** Samples of foam concentrates shall be sent to the manufacturer or qualified laboratory for quality condition testing at the frequency recommended by the manufacturer.~~

11.4.2* Water Supply. The water supply for foam systems shall be maintained in accordance with NFPA 25 Chapter 7, 8, and 9.

A.11.4.2 * Water supply piping should be free of internal obstructions that can be caused by debris (e.g., rocks, mud, tubercles) or by closed or partially closed control valves. See Chapter 7, 8, and 9 for maintenance requirements.

11.4.3 Foam Concentrate Tanks. Foam concentrate tanks shall be maintained as follows.

11.4.3.1. Metallic Atmospheric and Pressure Vessel Storage Tanks

11.4.3.1.1 Excessive sediment shall require draining and flushing the tank

11.4.3.1.2* The foam concentrate storage tank shall be drained of foam concentrate and flushed.

A.11.4.3.1.2 Foam concentrates tend to settle out over time. Depending on the specific characteristics of the foam concentrate, sedimentation accumulates in the bottom of the storage vessel. This sediment can affect proportioning and foam concentrate integrity. Some concentrates tend to settle out more rapidly than others. If the annual samples indicate excessive sediment, flushing the tank could be required more frequently.

11.4.3.1.3 Foam concentrate shall be permitted to be salvaged and reused.

11.4.3.2 Bladder Tanks

11.4.3.2.1 Sight glass, where provided, shall be removed and cleaned.

11.4.4 Foam Components. Maintenance of specific foam components shall be in accordance with 11.4.4 through 11.4.8.

11.4.4.1 Standard Pressure Proportioner.

11.4.4.1.1 The ball drip (automatic-type) drain valves shall be disassembled, cleaned, and reassembled.

~~**11.4.4.2*** The foam liquid storage tank shall be drained of foam liquid and flushed.~~

~~**11.4.4.3** Foam liquid shall be permitted to be salvaged and reused.~~

~~**11.4.4.4** The foam liquid tank shall be inspected for internal and external corrosion and hydrostatically tested to the specified working pressure.~~

11.4.4.2 Standard Balanced Pressure Proportioner.

11.4.4.2.1 Pump Operation.

11.4.4.2.1.1 The foam concentrate pump shall be operated.

11.4.4.2.1.2 Foam concentrate shall be circulated back to the tank.

11.4.4.2.2 Servicing. Foam pumps, drive train, and drivers shall be serviced in accordance with the manufacturer's instructions and frequency but not at intervals of more than 5 years.

11.4.4.2.3 Flushing. The diaphragm balancing valve shall be flushed through the diaphragm section with water or foam concentrate until fluid appears clear or new.

11.4.4.3 In-Line Balanced Pressure Proportioner.

11.4.4.3.1 Pump Operation.

11.4.4.3.1.1 The foam concentrate pump shall be operated.

11.4.4.3.1.2 Foam concentrate shall be circulated back to the tank.

11.4.4.3.2 Servicing. Foam pumps, drive train, and drivers shall be serviced in accordance with the manufacturer's instructions and frequency but not at intervals of more than 5 years.

11.4.4.3.3 Flushing. The diaphragm balancing valve shall be flushed through the diaphragm section with water or foam concentrate until fluid appears clear or new.

11.4.4.4 Mobile Apparatus Proportioning

11.4.4.4.1 Mobile Apparatus Proportioning systems shall be maintained in accordance with NFPA 1901 20.9.4.2

11.4.4.5 Water Powered Foam Concentrate Proportioner Pump The maintenance shall include the following:

1. Provide lubrication to the shaft of the proportioning pump in accordance with the manufacturer's specification
2. Change oil to water driven pump
3. Change the vanes to the water driven pump, when appropriate, in accordance to the manufacturer's specification

11.4.4.6 Pressure Vacuum Vents. The procedures specified in 11.4.9.1 through 11.4.9.13 shall be performed on pressure vacuum vents every 5 years.

11.4.4.6.1 The vent shall be removed from the expansion dome.

11.4.4.6.2 The vent shall be inspected to ensure that the opening is not blocked and that dirt or other foreign objects do not enter the tank.

11.4.4.6.3 The vent bonnet shall be removed.

11.4.4.6.4 The vacuum valve and pressure valve shall be lifted out.

11.4.4.6.5 The vent body shall be flushed internally, and the vacuum valve and the pressure valve shall be washed thoroughly.

11.4.4.6.6 The vent shall be inspected to ensure that the screen is not clogged, and the use of any hard, pointed objects to clear the screen shall be avoided.

11.4.4.6.7 If the liquid has become excessively gummy or solidified, the vent body and parts shall be soaked in hot soapy water.

11.4.4.6.8 The vent body shall be turned upside down and drained thoroughly.

11.4.4.6.9 Parts shall be dried by placing them in a warm and dry area or by using an air hose.

11.4.4.6.10 Parts shall be sprayed with a light Teflon coating, and the vent shall be reassembled.

11.4.4.6.11 The use of any type of oil for lubrication purposes shall not be permitted.

11.4.4.6.12 The vent bonnet shall be replaced, and the vent shall be turned upside down slowly a few times to ensure proper freedom of the movable parts.

11.4.4.6.13 The vent shall be attached to the liquid storage tank expansion dome.

~~**11.4.7.4 Corrosion and Sediment.**~~

~~**11.4.7.4.1** The foam concentrate tank shall be inspected internally for corrosion and sediment.~~

~~**11.4.7.4.2** Excessive sediment shall require draining and flushing of the tank.~~

~~**11.4.8.4 Corrosion and Sediment.**~~

~~**11.4.8.4.1** The foam concentrate tank shall be inspected internally for corrosion and sediment.~~

~~**11.4.8.4.2** Excessive sediment shall require draining and flushing of the tank.~~

~~**11.4.5 Bladder Tank Proportioner.**~~

~~**11.4.5.2*** The foam concentrate bladder tank shall be hydrostatically tested at system working pressure.~~

~~***N* 11.4.5.2.1** The hydrostatic test shall not create a pressure differential across the diaphragm.~~

~~***N* 11.4.5.2.2** While under system working pressure, the exterior of the foam concentration bladder tank shall be inspected for leaks.~~

~~**11.4.6 Line Proportioner.**~~

~~**11.4.6.1** The foam concentrate tank shall be inspected for internal corrosion.~~

~~**11.4.6.2** Pickup pipes inside the tank shall be inspected for corrosion, separation, or plugging.~~

~~**11.4.6.3** The foam concentrate tank shall be drained and flushed.~~

~~**11.4.6.4** Foam concentrate shall be permitted to be salvaged and reused.~~

11.4.4.7 Monitor Maintenance. Monitor and Monitor nozzle maintenance shall be as specified in 7.4.3

11.4.4.8. Fixed foam discharge outlets. Foam chambers and foam makers shall be maintained in accordance with manufacturer recommendations.

11.4.4.8.1 Vapor Seals shall be maintained in accordance with manufacturer recommendations.

A.11.4.4.8.1 Vapor seals may have manufacturer specific torque specifications.

11.4.4.9 Pressure Foam Makers. Pressure foam makers shall be maintained in accordance with manufacturer recommendations

11.4.4.9.1 Rupture disks shall be maintained and replaced in accordance with disk manufacturer's recommendations.

11.4.4.10 Strainers. Strainers shall be maintained in accordance with Chapter 7.

11.4.4.11 Supplementary Hoses. Hoses shall be maintained in accordance with NFPA 1962 or manufacturer's recommendations.

11.4.4.12 Supplementary Hose Stream Nozzles. Nozzles shall be maintained in accordance with NFPA 1962.

11.4.4.13 Auxiliary Drains. Auxiliary drains shall be maintained in accordance with 13.4.5.3.2.

11.4.4.14 Component Action Requirements.

11.4.4.14.1 Whenever a component in a foam-~~water sprinkler~~ system is adjusted, repaired, reconditioned, or replaced, the action required in Table 11.5.1 shall be performed.

11.4.4.14.2 Where the original installation standard is different from the cited standard, the use of the appropriate installing standard shall be permitted.

11.4.4.14.3 The actions of 11.5.1 and 11.5.2 shall not require a design review, which is outside the scope of this standard.

	Table 11.1.1.2 Summary Foam Systems Inspection, Testing, and Maintenance	
System/Component	**Frequency**	**Reference**
Control Valve(s)		Chapter 13
Deluge/preaction valve(s)		Chapter 13
Discharge device location (spray nozzle)	Monthly	11.2.2.1.1
Discharge device location (sprinkler)	Annually	11.2.2.1.1
Discharge device position (spray nozzle)	Monthly	11.2.2.1.1
Discharge device position (sprinkler)	Annually	11.2.2.1.1
Drainage in system area	Quarterly	11.2.5
Fire Pump(s)		Chapter 8
Foam Concentrate Pumps(s)		Chapter 8
Fittings corrosion	Annually	11.2.9
Fittings damage	Annually	11.2.9
Foam concentrate storage	Annually	11.2.7
Gauges		Chapter 13
Hangers/braces/supports	Annually	11.2.9
Pipe Corrosion	Annually	11.2.9
Pipe Damage	Annually	11.2.9
Proportioning system(s) - all	Monthly	11.2.6
Standard Pressure Proportioning pick up tube	10 years	11.2.6.5.2
Line Proportioner Pickup Tube	Annually	11.2.6.6.3
Foam Tank Inspection	Annually	11.2.7
Proportioning Head	Annually	11.2.6.5.2
Water Powered Proportioner Pump leakage	Monthly	11.2.6.6.7
Water Powered Proportioner Pump valve position	Monthly	11.2.6.6.7
Water Powered Proportioner Pump Oil Level	6 months	11.2.6.6.7
Water Powered Proportioner Pump Shock Absorbers	6 months	11.2.6.6.7
Strainer(s) – Mainline	Annually	7.2.2.3
Strainer(s) – Discharge Device	Annually	11.2.4.1
Foam Concentrate Strainers	Annually	11.2.4.4
Water supply Piping	-	Chapter 7
Water supply tank(s)		Chapter 9
Waterflow devices		Chapter 13
Supplementary Hoses	Annually	11.2.2.4
Auxiliary Drain Signage	Annually	13.4.5.1.2
Supplementary Hose Stream Nozzles	Annually and after each use	6.2.6
Supplementary Hose Stream Storage	Annually	6.2.7
Fixed foam discharge outlet	Annually	11.2.2.2

Vapor Seals	Annually	11.2.2.2.4
Fire Department Hose Connections	Annually	6.2.3
Hydraulic design information sign	Annually	5.2.5
Underground Piping	10 years	11.2.9
Foam Dam		11.2.12
Pressure Foam Maker	Annual	11.2.2.2.5
Rupture Disk	Annual	11.2.2.2.5.5
Alarm Devices		11.1.3
Operating Instructions and Training	Annually	11.2.14
System Information documents	Annually	11.2.14
High Pressure Cylinders	Annually	11.2.11
Foam in surrounding space of bladder	Annually	11.2.7.8
Test		
Backflow preventer(s)	Annually	Chapter 13
Complete foam-water sprinkler system(s) (operational test)	Annually	11.3.8
Control valve(s)		Chapter 13
Deluge/preaction valve(s)		Chapter 13
Detection system		11.1.3
Discharge device location	Annually	11.3.9.2.7
Discharge device obstruction	Annually	11.3.9.2.7
Discharge device position	Annually	11.3.9.2.7
Fixed foam discharge outlet Water Flow	Annually	11.3.10
Pressure Foam Maker Water Flow	Annually	11.3.10.6
Fire pump(s)		Chapter 8
Foam Concentrate pump(s)		Chapter 8
Manual actuation device(s)	Annually	11.3.9.4
Proportioning system(s) – all	Annually	11.3.2
Valve status test		Chapter 13
Water supply flow test	5 years	Chapter 7
Water supply tank(s)		Chapter 9
Waterflow alarm devices		Chapter 13
Supplementary Hose Streams	5 years	6.3.1
Supplementary Hose Stream Nozzles		NFPA 1962 Ch 5
Foam Concentrate	Annually	11.3.1.1
Monitors	Annually	11.3.6
Oscillating Monitors Range of Motion	Annually	XXXXX
Oscillating Monitor Full Flow	5 years	XXXXXX
Water Powered Foam Proportioning Pump Operation	2 months	11.3.4
Water Powered Foam Proportioning Pump Filters	6 months	11.3.4
Water Powered Foam Proportioning Pump Operation at specified rate of flow	Annually	11.3.4

Water Powered Foam Proportioning Pump screwed connections	6 months	11.3.4
Water Powered Foam Proportioning Pump Valves	6 months	11.3.4
Bladder Tank Hydrostatic Test	10 years	11.3.5.1
Foam Concentrate Tank Hydrostatic Test	10 years	11.3.5.1
High Pressure Cylinder		11.3.5.2
Maintenance		
Backflow preventer(s)		Chapter 13
Bladder sight glass cleaning	10 years	11.4.3.5.1
Check valve(s)		Chapter 13
Control valve(s)		Chapter 13
Deluge/preaction valves		Chapter 13
Detection system		NFPA 72
Detector check valve(s)		Chapter 13
Fire pump(s)		Chapter 8
Foam concentrate strainer(s)	Annually	Chapter 8
Metallic Atmospheric and Pressure Vessel Storage Tanks drain/flush	10 years	11.4.3
Foam concentrate pump(s)	5 years	Chapter 8
In-line balanced pressure type		
Balancing valve diaphragm	5 year	11.4.4.3
Line type		
Pressure Vacuum vents	5 years	11.4.4.6
Proportioning system(s) standard pressure type		
Ball drip (automatic type) drain valves	5 years	11.4.4.3
Standard balanced pressure type		
Balancing valve diaphragm	5 years	11.4.4.3
Strainer(s) – mainline		11.4.4.10
Water Supply		11.4.2
Water supply tank(s)		Chapter 9
Hose Valves		Chapter 13
Pressure gauges		Chapter 13
Fixed foam discharge outlet		11.4.4.8
Pressure Foam Maker		11.4.4.9
Monitors		11.4.4.7
Monitor Nozzles		11.4.4.7
Supplementary Hoses		11.4.4.11
Supplementary Hose Nozzles		11.4.4.12
Rupture Disks		11.4.4.9.1
Water Powered Foam Concentrate Proportioning Pump Shaft Lubrication	6 months	11.4.4.6
Water Powered Foam Concentrate Proportioning Pump Oil Change	5 years	11.4.4.6

Water Powered Foam Concentrate Proportioning Pump Oil Change Vane replacement	Manufacturer Recommendation	11.4.4.6
Auxiliary Drains		13.4.5.3.2

Table XXXXXX Summary of Component Action Requirements

Component	Adjust	Repair/Recondition	Replace	Required Action
Water Delivery Components				
Discharge devices	X		X	Inspect for leaks at system working pressure Inspect for impairments at orifice
Fire department connections	X	X	X	See Chapter 13
Manual release	X	X	X	Operational test Inspect for leaks at system working pressure Test all alarms
Pipe and fittings on systems with automatic foam water sprinklers	X	X	X	Hydrostatic test in conformance with NFPA 13
Pipe and fittings on systems with Fixed Foam Discharge Outlets.	X	X	X	Operational flow test
Foam Components				
Ball drip (automatic-type) drain valves				See Chapter 13
Foam concentrate	X		X	Submit a sample for laboratory analysis for conformance with manufacturer's specifications
Foam concentrate pump				See Chapter 8
Foam concentrate strainer(s)				See Chapter 13

Atmospheric Foam concentrate tank	X	X	X	Inspect for condition, repair as appropriate
Foam Concentrate Bladder Tank	X	X	X	Inspect water jacket for presence of foam concentrate
Proportioning system(s)	X	X	X	Conduct flow test and inspect proportioning by an approved test device
Water supply tank(s)				See Chapter 9
Alarm and Supervisory Components				
Detection system	X	X	X	Operational test for conformance with NFPA 13 and/or NFPA 72
Pressure-switch-type waterflow	X	X	X	Operational test using inspector's test connection
Valve supervisory device			X	Test for conformance with NFPA 13 and/or NFPA 72
Vane-type waterflow	X	X	X	Operational test using inspector's test connections
Water motor gong			X	Operational test using inspector's test connection
Status-Indicating Components				
Gauges	X		X	Verify at 0 psi (0 bar) and system working pressure; see Chapter 13 regarding calibration
Testing and Maintenance Components				
Auxiliary drains	X	X	X	Inspect for leaks at system working pressure
Inspector's test connection	X	X	X	Inspect for leaks at system working pressure
Main drain	X	X	X	Full-flow main drain test
Structural Components				

Hanger/seismic bracing	X	X	X	Inspect for conformance with NFPA 13
Pipe stands	X	X	X	Inspect for conformance with NFPA NFPA 13
Informational Components				
General information	X	X	X	Inspect for conformance with NFPA 11 and NFPA 13
Hydraulic information sign	X	X	X	Inspect for conformance with NFPA 11 and NFPA 13
Valve signs	X	X	X	Inspect for conformance with NFPA 11 and NFPA 13

Table A.3.3.8

Chapter 11: Low-Medium and High Expansion Foam Systems – Inspection

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Alarm devices	Physical damage apparent	5.2.4			X
Pipe and Fittings	Mechanical damage, missing or damaged pain or coating, rusted or corroded, not properly aligned or trapped sections, low point drains not functioning, improper location or poor condition of rubber-gasketed fittings	11.2.2		X	
Hangers and seismic braces	Damaged or missing, not securely attached to structural or piping, missing or damaged paint or coating, rusted or corroded	11.2.3		X	
Foam-water discharge devices	Discharge devices missing	11.2.4.1	X		
Foam-water discharge devices	Discharge devices not properly positioned or pointed in design direction, loaded or corroded	11.2.4.1		X	

Foam-water discharge devices	Plugs or Caps not free to operate as intended	11.2.4.2		X	
Foam-water discharge devices	Missing caps or plugs if required	11.2.4.2		X	
Foam-water discharge devices	Incorrect foam concentrate for application and devices	11.2.4.4		X	
Foam concentrate strainers	Blowdown valve open or not plugged	11.2.6.4		X	
Drainage	Trap sumps and drainage trenches blocked, retention embankments or dikes in disrepair	11.2.7			X
Proportioning systems (all)	Proportioning system valves not in correct open/closed position in accordance with specified operating conditions	11.2.8.3	X		
Proportioning systems (all)	Concentrate tank does not have correct quantity required by original design	11.2.8.4		X	
Proportioning systems (all)	Concentrate tank empty	11.2.8.4	X		
Standard pressure proportioner	Automatic drains (ball drip valves) not free or open, external corrosion on	11.2.8.5.1			X

	foam concentrate tanks				
Bladder tank proportioner	Water control valve to foam concentrate in “closed” position	11.2.8.5.2	X		
Bladder tank proportioner	Foam in water surrounding bladder	11.2.8.5.2	X		
Bladder tank proportioner	External corrosion on foam concentrate tank	11.2.8.5.2			X
Line proportioner	Strainer damaged, corroded, pressure vacuum vent not operating freely	11.2.8.5.3		X	
Line proportioner	Strainer plugged or fouled	11.2.8.5.3	X		
Line proportioner	External corrosion on foam concentrate tank	11.2.8.5.4			X
Standard balanced pressure proportioner	Sensing line valves not open, no power to foam liquid pump	11.2.8.5.4	X		
Standard balanced pressure proportioner	Strainer damaged, corroded, plugged, or fouled, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures.	11.2.8.5.4		X	
In-line balanced pressure proportioner	Sensing line valves at pump unit or individual proportioner stations	11.2.8.5.5	X		

	not open, no power to foam liquid pump				
In-line balanced pressure proportioner	Strainer damaged, corroded, pressure vacuum vent no operating freely, gauges damaged or not showing proper pressures	11.2.8.5.5		X	
In-line balanced pressure proportioner	Strainer plugged or fouled	11.2.8.5.5	X		
Orifice plate proportioner	No power to foam liquid pump	11.2.8.5.6	X		
Orifice plate proportioner	Strainer damaged, corroded, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures	11.2.8.5.6		X	
Orifice plate proportioner	Strainer plugged or fouled	11.2.8.5.6	X		
Wide Range Proportioner	Reference Marks not aligned	11.2.6.6.7		X	
Wide Range Proportioner	Proportioner installed backwards	11.2.6.6.7	X		
Wide Range Proportioner	Foam marking aligns with system design and storage tank	11.2.6.6.7		X	
Foam Concentrate	Fails quality testing	11.4.2		X	
Fixed Foam Discharge Outlet	Inlet Orifice Clogging		X		

Fixed Foam Foam Discharge Outlet	Air Inlet, painted over, birds nest ec		X		
Fixed Foam Discharge Outlet	Vapor Seal			X	
Fixed Foam Discharge Outlet	Deflector not present		X		
Fixed Foam Discharge Outlet	Orifice Plate, or jet orifice missing		X		
Fixed Foam Discharge Outlet	Corrosion				X
Foam Dam	Foam Dam damaged, clogged drains within dam		X		
Pressure Foam Maker	Orifice Clogged		X		
Pressure Foam Maker	Air Intake		X		
Pressure Foam Maker	Corrosion				X
Pressure Foam Maker	Rupture Disc Burst			X	
Pressure Foam Maker	Check Valve – not operating freely		X		
Pressure Foam Maker	Bottoms Water level			X	
Fire Department Connection	Damaged threads/fittings			X	
Monitor	Lack of rotation			X	
Monitor	Missing nozzle		X		
Supplementary Hose	Hose dry rot, fitting damage, etc.		X		
Supplementary Hose Reel	Failure to rotate		X		

Supplementary Hose Reel	Failure of water swivel joint		X		
Supplementary Hose Nozzle	Damage, corrosion, etc.			X	
Oscillating Monitor	Failure of oscillating mechanism (i.e., swivel joints not operating properly		X		

Chapter 11: Low-Medium and High Expansion Foam Systems - Testing

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Alarm Devices	Water motor and gong not functioning	13.2.4.1		X	
Alarm Devices	Pressure switch or vane-type switch not functioning or no alarm	13.2.4.2		X	
Operational test	Fire detection system did not operate within requirements of NFPA 72	11.3.2.4		X	
Operational test	Nozzles Plugged	11.3.2.6.1	X		
Operational test	Nozzles not correctly positioned	11.3.2.6.1		X	
Operational test	Pressure readings not comparable to original design requirements	11.3.2.7		X	
Operational test	Manual activation devices not working properly	11.3.4	X		
Operational test	Foam sample failed concentration test	11.3.5	X		

Main drain	More than 10% drop in full flow pressure	13.2.3.3		X	
Assessment of internal condition	Inspection revealed presence of MIC, zebra mussels, rust and scale	13.2.1		X	
Fixed Foam Discharge Outlet	Orifice Plugged		X		
Pressure Foam Maker	Plugged		X		
Foam Dam	Failed to retain water		X		
Monitor	Nozzle patterns not adequate/adjustable				X
Oscillating Monitor	Failure of oscillation			X	
Hydro Test	Bladder Tank fails the hydro		X		
Hydro Test	Balanced Pressure Tank fails the hydro		X		
Foam Concentrate	Foam Concentrate failure report from the lab		X		
Foam Contamination	Foam Types Mixed or Water Intrusion			X	

Additions to NFPA 25 Chapter 3

Vapor Seal. A device used in a fixed foam discharge outlet to prevent flammable liquid vapors being released from a product storage tank.

Rupture Disk. A device used in a subsurface foam injection line to prevent backflow of hydrocarbon liquids to pressure foam makers (high back pressure or forcing type). Disk is designed to burst when foam pressure builds at foam maker discharge.

Pressure Proportioning Head. An Assembly of components that forms an integral part of a pressure proportioning tank. It creates a differential pressure in the water line causing foam concentrate to be metered by an orifice into the water stream.

Wide Range or Variable Range Proportioner. A foam proportioner for use in closed head foam-water sprinkler systems where accurate foam injection rate (% concentration) must be held over a wide range of anticipated flow rates.

NFPA 25 Foam System IT&M Chapter

Chapter 11 Foam Systems

11.1 General

11.1.1 Minimum Requirements

11.1.1.1* This chapter shall provide the minimum requirements for the routine inspection, testing, and maintenance of Foam Systems.

> A. 11.1.1.1 An inspection contract for the equipment service tests and operation at regular intervals is recommended.

11.1.1.2 Table 11.1.1.2 shall be used to determine the minimum required frequencies for inspection, testing, and maintenance.

11.1.1.3*. An Inspection, Testing, and Maintenance Service program shall be implemented.

> A.11.1.1.3 The goal of this inspection testing and maintenance service should be to ensure that the system is in full operating condition and that it remains in that condition until the next inspection refer A.3.3.25 for further explanation.

11.1.1.4* Systems shall be so arranged that tests and inspections can be made without discharging foam solution to the system piping in order to check operation of all mechanical and electrical components of the system.

> A.11.1.1.4 To provide a means of periodically checking proportioning performance, a test connection should be provided. Typical test connections are illustrated in Figure A.6.12. Two options are possible in locating the proportioner in the riser: before the main valve or after the main valve. If the proportioner is located after the main valve, an additional supervised OS&Y valve is needed to isolate the system during the proportioning test. This is done to eliminate the problems caused by air cushions in wet pipe sprinkler systems or the servicing delays caused during charging and draining of preaction or deluge sprinkler systems. The test connection should be routed to a drain area for easy disposal of the solution produced during the test. The manufacturer's test procedures should be followed closely.

11.1.2 Other System Components. Fire pumps, water storage tanks, common components, and valves common to other types of water-based fire protection systems shall be inspected, tested, and maintained in accordance with Chapter 8, 9, 13, respectively, and as specified in Table 11.1.1.2.

11.1.3 Alarm and detection devices. Alarms and detection devices shall be tested and inspected in accordance with NFPA 72.

11.1.4 Obstruction Investigations. The procedures outlined in Chapter 14 shall be followed where there is a need to conduct an obstruction investigation.

11.1.5* Impairments, Critical Deficiencies, and Noncritical Deficiencies.

> A.11.1.5 See Table A.3.3.8

11.1.5.1 Impairments. The procedures outlined in Chapter 15 shall be followed where an impairment to protection occurs.

11.1.5.2 Critical Deficiencies. Where a critical deficiency is noted, the appropriate action shall be taken.

11.1.5.3 Noncritical Deficiencies. Where a noncritical deficiency is noted, the appropriate corrective action shall be taken.

11.1.6 Hose Connections. Hose connections shall be inspected, tested, and maintained in accordance with Chapters 6 and 13.

11.1.7 System Changes. If during routine inspection and testing the system is determined to have been altered or replaced (e.g., equipment replaced, relocated, or foam concentrate replaced) such that the components are not compatible, the system shall be considered impaired.

> A.11.1.7. New providers of inspection, testing, and maintenance service programs should begin by reviewing the documentation for a system as required by 11.2.13. The review of this documentation may warrant a design review.

11.2 Inspection. Systems shall be inspected in accordance with the frequency specified in Table 11.1.1.2. Where any of the following testing requirements are found deficient the results shall be documented, corrected, and re-tested in accordance with 11.1.5.

11.2.1 *Minimum Requirements

A.11.2.1 Regular service contracts are recommended.

11.2.2 Foam Discharge Devices

11.2.2.1* Foam-Water Discharge Devices

A.11.2.2.1 Directional-type foam-water discharge devices are quite often located in heavy traffic areas and are more apt to be dislocated compared to ordinary sprinkler locations. Of particular concern are low-level discharge devices in loading racks in and around low-level tankage and monitor-mounted devices that have been pushed out of the way for convenience. Inspection frequency might have to be increased accordingly.

11.2.2.1.1 Foam-water discharge devices shall be inspected visually to ensure that they are in place, continue to be aimed or pointed in the direction intended in the system design, and are free from external loading and corrosion.

11.2.2.1.2 Where caps or plugs are required, the inspection shall confirm they are in place.

11.2.2.1.3 Misaligned discharge devices shall be adjusted (aimed) by visual means.

A.11.2.2.1.3 Installers may provide reference marks on unions or fittings to identify proper nozzle placement.

11.2.2.1.3.1 The alignment and adequacy of coverage of the intended hazard of adjusted discharge devices shall be observed and verified during the next scheduled flow test.

11.2.2.1.4* Inspection shall verify that unlisted combinations of discharge devices and foam concentrate have not been substituted.

A.11.2.2.1.4 Discharge devices are listed or approved for use with particular foam concentrates.

11.2.2.2. Fixed foam discharge outlets. Fixed foam discharge outlets shall be inspected annually.

11.2.2.2.1 Fixed foam discharge outlets inaccessible for inspection due to safety considerations due to process operations or personnel hazards shall be inspected during each scheduled shut down.

11.2.2.2.2 * Fixed foam discharge outlets installed on the tanks shall be visually inspected from the ground level or other means.

A.11.2.2.2.2. The visual inspection should look for the following.

(1) Presence of orifice plate at fixed foam discharge inlet if provided
(2) Corrosion
    (a) The top of fixed foam discharge outlets are subject to corrosion and may require accessing another tank or inspection by other means.
(3) Damage (example bug/screen)
(4) Air Inlet Blockages

11.2.2.2.3 * Fixed foam discharge outlets installed external floating roofs shall be visually inspected from the ground level and from the top of the stairs

A.11.2.2.2.3 Inspection of the system by accessing the floating roof is often considered to be a confined space, especially for cantilever type foam systems, and require additional resources. Scheduling inspections during annual roof inspections can facilitate closer inspection of these systems and reduce inspection costs.

11.2.2.2.4 Vapor Seal.

11.2.2.2.4.1 Where vapor seals are provided the inspection shall verify the seal is present through one of the following means:

1) *Visual Inspection.
    a) Visual inspection of vapor seals shall be approved by the AHJ prior to the inspection.
        1. Tank operations may or may not facilitate an inspection of a vapor seal.
        2. Where a visual inspection is not possible, other means listed below shall be acceptable.
    b) Where provided with an inert gas system, the owner shall verify that the makeup gas is sufficient to account for the removal of a fixed foam discharge outlet lid
        1. Where inadequate makeup of inert gas is provided, visual inspection may not occur until the next tank outage.

A.11.2.2.1.1(1). Fixed foam discharge outlets installed on cone roof tanks require vapor seals. In some instances, cone roof tanks are provided with an inert gas blanket, such as nitrogen. The blanket can be used for the following

- Mitigation of a flammable atmosphere due to elevated product temperatures
- Mitigation of gum formation or other product quality issues in finished product tanks.

A visual inspection of tanks equipped with these systems may cause costly product quality issues due to air ingress, or potential for pyrophoric reaction and fire due to air ingress into the tank.

If a visual inspection is accomplished, the installation of an inner tube, or other means to prevent the loss of the inert blanket is good practice.

2) Infrared Camera.
   a) Infrared Cameras can be used to verify if a vapor seal is intact or not.
3) Gas Monitoring
   a) Where access to the chamber is provided, gas monitoring may be done around the fixed foam discharge outlet lid and the air inlet to verify that the vapor seal is intact.
   b) Monitoring can be conducted at the fire department connection on semi-fixed foam systems as a means to verify that the vapor seal is intact.
   c) Monitoring can be conducted at low point drains of foam solution piping as a means to verify that the vapor seal is intact.
4) Other means as allowed by the AHJ and operator approval.

11.2.2.2.5 Pressure Foam Makers. Inspection shall follow manufacturer's recommendations.

11.2.2.2.5.1 Check Valves shall be inspected per NFPA 25 13.4.2.

11.2.2.2.5.1.1 Prior to inspection, air monitoring shall be conducted at truck connections and at valved test connections.

A.11.2.2.2.5.1.1 Inspections of check valves may result in a spill to grade if the downstream gate valve is not fully closed. Product from the tank may be in the line between the check valve and the gate valve, if the gate valve has been tested.

11.2.2.2.5.2. Proper PPE shall be utilized.

11.2.2.2.5.3. Gate Valves shall be inspected per NFPA 25 13.3.2.1

11.2.2.2.5.4 Auxiliary Drains shall be inspected per 11.2.8.2.3.

A.11.2.2.2.5.4 Prior to inspection or manipulation of the low point drain the gate valve downstream of the check valve shall be verified closed. There is potential for product to be discharged from the low point drain if the rupture disc has been ruptured and the check valve experiences a failure.

11.2.2.2.5.5 Rupture disks, where provided, shall be inspected in accordance with manufacturer's requirements.

12.2.2.2.5.6 Confirm that all system operating valves are stored in proper positions as determined by the system design.

12.2.2.2.5.7 Confirm that the water level in the base of the storage tank is below the bottom of the foam injection line. This will require consultation with the tank operator.

12.2.2.2.5.8 Inspect the foam maker for signs of physical damage.

11.2.2.2.5.9 Air Inlet

11.2.2.2.5.9.1 Inspection shall verify that the air inlet is free and clear of paint, debris, or other items which may impede the proper operation of the chamber or foam maker. The screen shall not be damaged or missing.

11.2.2.2.5.10 Strainers. Where equipped with a strainer, the strainer shall be inspected per 11.2.4.

11.2.2.3. Monitors. Monitors, including self-educting monitors, shall be inspected in accordance with NFPA 25 7.2.2.6.

11.2.2.3.1 Where pickup tubes are provided on self-educting monitors the tube shall be inspected for cracking and dry rot.

11.2.2.4 Hoselines

11.2.2.4.1 Hoselines shall be inspected annually in accordance with NFPA 25 6.2.5, or manufacturer's recommendations where applicable.

11.2.2.5 Hose Nozzles

11.2.2.5.1 Nozzles shall be inspected annually in accordance with NFPA 25 6.2.6.

11.2.3 Water Supply.

11.2.3.1 Water supply systems which supply foam systems shall be inspected in accordance with NFPA 25 Chapter 7, 8, and 9.

11.2.4 Strainers.

11.2.4.1 Individual discharge device strainers (basket or screen) shall be inspected for damaged and corroded parts as follows

- After each system activation
- After each operational test
- After a flushing test

11.2.4.2 Mainline strainers shall be inspected in accordance with 7.2.2.3.

11.2.4.3 Strainers shall be inspected in accordance with manufacturer's instructions and shall be cleaned after each use and flow test.

11.2.4.4 Foam concentrate strainers shall be inspected visually to ensure the blowdown valve is closed and plugged.

11.2.4.4.1 Foam concentrate strainers provided on foam concentrate pump skids shall be inspected in accordance with Chapter 8.

11.2.5 Drainage. The area beneath and surrounding a foam-water spray system shall be inspected to ensure that drainage facilities, such as trap sumps and drainage trenches, are not blocked, and retention embankments or dikes are in good repair.

11.2.6* Proportioning Systems.

> A.11.2.6 Proportioning systems might or might not include foam concentrate pumps. If pumps are part of the proportioning system, the driver, pump, and gear reducer should be inspected in accordance with the manufacturer's recommendations, and the inspection can include items such as lubrication, fuel, filters, oil levels, and clutches.

11.2.6.1 The components of the various proportioning systems described in 11.2.6.1 shall be inspected in accordance with the frequency specified in Table 11.1.1.2.

11.2.6.2 Valves specified to be inspected shall be permitted to be open or closed, depending on specific functions within each system.

11.2.6.3 The position (open or closed) of valves shall be verified in accordance with specified operating conditions.

11.2.6.4 Additional inspection requirements shall be performed as detailed for the proportioning systems specified in 11.2.6.

11.2.6.5 Standard Pressure Proportioner.

11.2.6.5.1* The pressure shall be removed before the inspection to prevent injury.

> A.11.2.6.5.1 The standard pressure proportioner is a pressure vessel. Although under normal standby conditions this type of proportioning system should not be pressurized, some installations allow for inadvertent pressurization. Pressure should be removed before inspection.

11.2.6.5.2 The inspection shall verify the following:

1. Ball drip valves (automatic drains) are free and opened.
2. Remove the proportioning head and inspect the foam concentrate pickup tube to verify it is intact, not damaged, or clogged.

11.2.6.6 Bladder Tank Proportioner.

11.2.6.6.1* The pressure shall be removed before the inspection to prevent injury.

> A.11.2.6.6.1 The bladder tank proportioner is a pressure vessel. Where inspecting for a full liquid tank, the manufacturer's instructions should be followed. If inspected incorrectly, the tank sight gauges could indicate a full tank when the tank actually is empty of foam liquid. Some foam

liquids, due to their viscosity, might not indicate true levels of foam liquid in the tank where inspected via the sight glass.

11.2.6.6.2 The inspection shall include the following:

1. Water control valves to foam concentrate tank

11.2.6.6.3 Line Proportioner. The inspection shall include the following:

1. *Strainers
2. Pickup pipes inside the tank shall be inspected for corrosion and plugging.

A.12.3.2.5.5.3(1) See 12.3.2.3.1
A.12.3.2.5.5.3(2) See Figure A.12.3.2.5.5.3(2)
Figure A.12.3.2.5.5.3(2)

11.2.6.6.4 Standard Balanced Pressure Proportioner. The inspection shall include the following:

1. *Strainers
2. Verification that gauges are in good operating condition
3. Verification that sensing line valves are open
4. Verification that power is available to foam concentrate pump

A.12.3.2.5.5.4(1) See 12.3.2.3.1
A.12.3.2.5.5.4(2) See Figure A.12.3.2.5.5.3(2)

11.2.6.6.5 In-Line Balanced Pressure Proportioner. The inspection shall include the following:

1. *Strainers
2. Verification that gauges are in good working condition
3. Verification that sensing line valves at pump unit and individual proportioner stations are open
4. Verification that power is available to foam concentrate pump

A.12.3.2.5.5.5(1) See 12.3.2.3.1
A.12.3.2.5.5.5(2) See Figure A.12.3.2.5.5.3(2)

11.2.6.6.6 Orifice Plate Proportioner. The inspection shall include the following:

1. *Strainers
2. Verification that gauges are in good working condition
3. Verification that power is available to foam concentrate pump

A.12.3.2.5.5.6(1) See 12.3.2.3.1
A.12.3.2.5.5.6(2) See Figure A.12.3.6.5.3(2)

11.2.6.6.7 Wide Range Proportioner. The inspection shall include the following.

1. Confirm that reference marks between foam inlet nipple and proportioner body are aligned to indicate proper factory setting for internal foam metering valve.

2. Check flow direction arrow to indicate the proportioner is properly installed.

3. Confirm that type of foam marking on nameplate is consistent with the system design requirements and the foam contained in the foam tank.

11.2.6.6.8 Water Powered Foam Concentrate Proportioner Pump. The inspection shall include the following:

1. Verify valves are in the proper operational position in accordance with the manufacturer's specification

2. Verify there are is no leakage on the unit or connections

3. Verify oil level to appropriate mark to water driven pump

4. Evaluate shock absorbers for wear at coupling between water motor and proportioning pump

11.2.6.6.9. Mobile Apparatus Proportioner

11.2.6.6.9.1* The foam proportioning system certification shall be reviewed annually.

1. The review shall verify that the foam concentrate type and viscosity has not changed from the foam concentrate used to obtain the system certification.
2. If the foam concentrate has changed, the change shall be considered an impairment until a new proportioning system certification can be received from the proportioner manufacture.

A.11.2.6.6.9.1 This inspection is specific to foam concentrate carried in front line apparatus. In large scale incidents it is common for mutual aid groups to bring foam concentrate from different manufacturers which may not be of the same type and viscosity of the foam carried in front line apparatus.

11.2.7 Foam Concentrate Storage

11.2.7.1* Foam concentrate storage shall verify that the quantity of foam concentrate satisfies the requirements of the original design.

A.11.2.7.1 In some cases, an adequate supply of foam liquid is available without a full tank. This is particularly true of foam liquid stored in nonmetallic tanks. If liquid is stored in metallic tanks, the proper liquid level should be one-half the distance into the expansion dome.

11.2.7.2 Foam Concentrate Storage Tanks shall be inspected annually in accordance with 9.2.4 for external corrosion and/or damage.

A.11.2.7.2 Polyethylene tanks can be subject to stress cracking. External inspection should look for this type of failure. These stress cracks can generally be identified by utilizing high intensity light.

11.2.7.3 The internal of expansion domes on foam concentrate storage tanks shall be inspected annually.

11.2.7.4 Tanks shall be inspected for sediment.

11.2.7.5 Excessive sediment shall require draining and flushing of the tank.

11.2.7.5.1 Foam Concentrate Storage Tanks shall have internal inspections performed when the tank is drained and flushed for maintenance.

11.2.7.6 Where provided with pressure vacuum vents, the vent shall be inspected and verify that the vent is operating freely.

11.2.7.7 Where applicable, verify that the tank hydro is current and not out of date.

11.2.7.8 Where applicable, through the wall fittings shall be inspected for mechanical damage and leakage.

> A.11.2.7.8 Through the wall fittings are typically utilized on polyethylene storage tanks. Leaks often occur due to bolts being over tightened. Failures of these types of fittings can also occur due to insufficient pipe supports provided to reduce stress on the through the wall fitting.

11.2.7.9 Bladder Tanks

1. An inspection for the presence of foam in the water surrounding the bladder shall be conducted annually.

11.2.8 Compressed Air Foam-Producing Equipment.

11.2.8.1 Compressed air foam-generating equipment and accessories shall be inspected annually.

11.2.8.2 Discharge devices shall be visually inspected annually for evidence of mechanical damage.

11.2.9 Pipe and Fittings*. Foam system pipe and fittings shall be inspected annually.

> **A.11.2.8** Pipe and fittings installed on floating roof tanks should align the inspection with additional roof inspection work to reduce costs associated with confined space entry, etc.

11.2.9.1 Pipe and fittings installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shut down.

11.2.9.2 System pipe and fittings shall be inspected for the following.

11.2.9.2.1 System pipe and fittings shall be free of mechanical damage, leakage, and corrosion.

11.2.9.2.2 System pipe shall not be subjected to external loads by materials either resting on the pipe or hung from the pipe.

(1) Inspections which identify corrosion or mechanical damage shall be documented and corrected in accordance with 11.1.5.
(2) Pressure tests of normally dry piping shall be made when visual inspection indicates questionable strength due to corrosion or mechanical damage.

11.2.9.2.3 System pipe shall be inspected for misalignment or trapped sections

11.2.9.2.4 System auxiliary drain signage shall be inspected per 13.4.5.1.2

11.2.9.2.5 The location and condition of rubber gasketed fittings

(1) A.11.2.9.2.5 Red rubber gaskets are not suitable for use with foam concentrate.

11.2.9.2.6 Above ground system piping shall be examined to determine its condition and to verify that proper drainage pitch is maintained.

11.2.9.2.7 Underground foam solution and foam concentrate piping shall be hydrostatically pressure tested at the system design pressure of the installation standard at least every 10 years.

11.2.9.2.7.1 Other frequencies shall be allowed when approved by the AHJ
11.2.9.2.7.2 Other inspection means in accordance with Chapter 14 shall be allowed

11.2.9.2.8 NFPA 11 Section 4.7.1.3 provides guidance for foam system piping and states that galvanized pipe shall not be used for foam concentrate lines.

11.2.10 Hangers, Braces, and Supports. Foam system hangers, braces, and supports shall be inspected annually from the floor level.

11.2.10.1 Hangers, braces, and supports installed in areas that are inaccessible for safety considerations due to process operating shall be inspected during each scheduled shutdown.

11.2.10.2 Hangers, braces, and supports shall not be damaged, loose, or unattached.

(1) Condition (e.g., missing or damaged paint or coating, rust, and corrosion)
(2) Secure attachment to structural supports and piping
(3) Damaged or missing hangers, braces, and supports

11.2.10.3 Hangers, braces, and supports that are damaged, loose, or unattached shall be replaced or refastened.

11.2.11 Foam Concentrate

11.2.11.1 Foam Concentrate Inspection shall verify that the foam concentrate type and viscosity has not changed from the foam concentrate used to obtain the system certification and is suitable for the current hazard (i.e., alcohol resistant, etc.). Reference NFPA 11 4.3.1.4 for the physiochemical properties to be inspected.

11.2.11.1.1 Inspection shall verify that different brands or types of foam concentrates have not been mixed.

11.2.11.1.2 Where different brands or types of foam concentrates have been mixed, inspection shall verify with the manufacturer(s) that the concentrates can be mixed, and accepted by the AHJ to prove that they are compatible.

11.2.11.2 At least annually, an inspection shall be made of foam concentrates for evidence of excessive sludging or deterioration.

11.2.11.3 Quantity of concentrate in storage shall meet design requirements, and tanks or containers shall normally be kept full, with space allowed for expansion.

11.2.12 High-Pressure Cylinders.

11.2.12.1 Cylinder Pressures

11.2.12.1.1 Inspection shall verify that the pressure within the cylinder(s) is in accordance with the manufacturer recommendation for the system.

11.2.12.2 High pressure cylinders used in compressed air foam systems hydrostatic test date shall be inspected.

11.2.12.2.1 High-pressure cylinders used in compressed air foam systems shall not be recharged without a hydrostatic test (and remarking) if more than 5 years have elapsed from the date of the last test.

11.2.12.2.2 Cylinders that have been in continuous service without discharging shall be permitted to be retained in service for a maximum of 12 years, after which they shall be discharged and retested before being returned to service.

11.2.13 Foam Dams

11.2.13.1 Foam Dams inspections shall follow the requirements below for the applicable tank construction.

11.2.13.2 Foam Dams installed in areas that are inaccessible for safety considerations due to process operations shall be inspected during each scheduled shut down.

11.2.13.3* External Floating Roof. At least annually the foam dam shall be visually inspected for the following:

1. Foam Dam integrity is sound and properly attached to the roof.
2. The foam dam drainage slots are free and clear and not restricted by debris
3. Earthing shunts shall be inspected for corrosion, and damage

    A.11.2.13.3 Accessing the roof of an external floating roof may be considered a confined space and require confined space attendants, etc. If possible, foam dam inspections should be coordinated with annual tank seal inspections in order to minimize cost the cost of inspection. Additional cost savings may be realized by performing the annual water flow test on these systems when personnel are already on the roof to observe the water flow.

11.2.13.4 Internal Floating Roof.

1. Foam Dam inspection shall be conducted when the tank is brought down for required inspection and maintenance per industry standards.
2. Earthing shunts shall be inspected for corrosion, and damage.

    A.11.2.13.4 In some instances personnel may be inserted into the interstitial space of an internal floating roof while the tank is in service, which could allow for a foam dam to be inspected;

however, this is not common practice. Accessing the roof while the tank is in service will require proper planning and will be designated as a confined space entry. Proper safety precautions and compliance with confined space entry standards will apply. Foam dam inspection intervals may range based on the tank life, however the average inspection interval is 20 years.

11.2.14 Deluge Valves. Deluge valves shall be inspected in accordance with the provisions of Chapter 13.

11.2.15 Operating Instructions and Training. Inspection shall verify that the operation, system deactivation, acceptance test/commissioning test results, maintenance instructions, and layouts are in place at control equipment with copies of each on file.

11.3 Testing

11.3.1 Minimum requirements. Where any of the following testing requirements are found deficient the results shall be documented, corrected, and re-tested in accordance with 11.1.5.

11.3.1.1 Foam concentrate testing shall be conducted annually.

11.3.1.2 Samples of foam concentrates shall be sent to the manufacturer or qualified laboratory for quality condition testing.

11.3.1.3 When the foam type and brand of foam are known, the quality testing shall confirm the product meets the manufacturer's specifications.

11.3.2 Proportioner Tests. An operational test of the foam proportioner shall be conducted annually.

(1) A foam flow test to verify solution concentration can be performed through a test outlet when it cannot be flowed due to occupancy

11.3.2.1* Where approved by the authority having jurisdiction, surrogate test liquids shall be permitted to be used in lieu of foam concentrates. Alternative test methods shall be permitted to enable use of surrogate test liquids but system pressures and flows shall remain as described above and meet the system design requirements.

A. 11.3.2.1 Refer to NFPA-11 Annex Section D.5.2 for further information regarding foam system testing using surrogate liquid test methods.

11.3.2.2 The concentration of the foam solution sample shall be verified by one of the following measurement devices.

1. Digital refractometer
2. Digital electric conductivity using handheld or on-line instrumentation connected to electronic data acquisition equipment
3. Calibrated Listed digital flow meters (total flow and foam concentrate)
4. Other means acceptable to the AHJ.

11.3.2.3 The following data shall be required:

1. Static water pressure
2. Residual water pressure at the control valve and at the remote reference point in the system
3. Actual discharge rate
4. Consumption rate of foam producing material
5. Concentration of the foam solution

A.11.3.2.3 Collecting expansion ratio and drain time of SFFF can be useful in ensuring system performance in comparison to manufacturers listing report or manufacturers specifications. See Annex H.

11.3.2.4 For compressed air foam systems, the following data shall be recorded as part of any discharge test.

1. Static water pressure

2. Residual water pressure at the control device
3. System air pressure
4. Concentration of the foam solution.

11.3.2.4.1 Where foam solution/premix testing is conducted the following shall apply

1. The system shall be arranged so that tests are performed with as little loss of foam concentrate as possible.

11.3.2.5 Proportioning equipment for foam-water sprinkler systems shall be verified by flow tests.

11.3.2.5.1 Flow testing through suitable test outlet connections shall be permitted if determined to meet the required system design flow conditions and found to be acceptable by the authority having jurisdiction. Testing using alternative methods as described in 11.3.2.1 shall also be permitted.

11.3.2.5.2 Verify that the water pressure at the proportioner inlet meets the system design condition at the maximum required system flow condition. Verify that the maximum water supply pressure does not exceed the maximum allowable working pressure of any proportioning system components.

11.3.2.5.3 For closed head type systems including wet pipe, preaction, and dry pipe the foam concentrate induction rate (% concentration) shall be verified at the maximum system design flow and at a flow equal to the (4) most hydraulically located sprinkler heads discharging.

11.3.2.5.3.1 When wide range or variable range proportioners are used in closed head sprinkler systems they shall be tested for foam concentrate induction rate (% concentration) at the maximum design flow and at a flow equal to the (4) most hydraulically located sprinkler heads discharging.

11.3.2.5.4 For open head deluge type systems the foam concentrate induction rate (% concentration) shall be verified at the maximum system design flow condition.

11.3.2.5.5 For systems with multiple foam proportioners designed to be operated individually the foam induction rate (% concentration) for each proportioner shall be verified by a separate flow test.

11.3.2.5.6 For systems designed with multiple proportioners to be operated simultaneously, the foam concentrate induction rate (% concentration) for each proportioner shall be verified as the required number of proportioners are discharged simultaneously.

11.3.2.5.7 The foam concentrate induction rate, expressed as a percentage of the foam solution flow (water plus foam concentrate), shall be within minus 0 percent to plus 30 percent of the manufacturer's listed concentrations, or plus 1 percentage point, whichever is less.

11.3.3 Mobile Apparatus Proportioner - Testing shall include the following

1) Verification the foam proportioning system meets the requirements of NFPA 1901 20.11.2
2) If inspection determines that the foam concentrate type or viscosity has been changed without re-certification of the system per NFPA 1901 20.10.1, the system shall be type tested and re-certified by the foam proportioning system manufacturer.

11.3.4 Water Powered Foam Concentrate Proportioner Pump The testing shall include the following:

1. Operate the water motor driven pump in accordance with manufacturer's specification

2. Operate manual air bleed valve, pressure relief valves and operational valves in accordance with the manufacturer's specification

3. Check filters for contamination in accordance with manufacturer's specification

4. Check screwed connection for tightness

5. Operate the water powered foam concentrate proportioner pump to the installed specifications for rate of flow and conduct a proportioning test in accordance with the manufacturer's recommended procedures and specifications.

11.3.5 Hydrostatic Testing

11.3.5.1 Standard Pressure Proportioner tanks and bladder tanks shall undergo hydrostatic testing per Table 11.1.1.2.

A.11.4.3.5.2 When hydrostatically testing bladder tanks, the generation of a pressure differential across the bladder could cause damage to the bladder. Tanks should be filled with agent to no less than the normal fill capacity and air should be vented from inside and outside the bladder before pressurizing.

11.3.5.1.2 When performing hydrostatic testing on bladder tanks, the hydrostatic test shall not create a pressure differential across the bladder.

11.3.5.1.3 When performing hydrostatic testing on bladder tanks, while under system working pressure, the exterior of the foam concentration bladder tank shall be inspected for leaks.

11.3.5.2 High Pressure Cylinders.

11.3.5.2.1 After system activation, high pressure cylinders shall be hydrostatically tested if more than 5 years have passed since the last hydrostatic test.

11.3.5.2.2 High Pressure Cylinders shall undergo a hydrostatic test every 12 years if no discharge has occurred.

11.3.6. Water Supply. The water supply for foam systems shall be tested in accordance with NFPA 25 Chapter 7, 8, and 9.

11.3.7 Monitors

11.3.7.1 Monitors and monitor nozzles shall be tested in accordance with Section 7.3.3.

11.3.7.2 Where water powered oscillating monitors are provided, testing shall be in accordance with manufacturer recommendations.

11.3.7.3 Full flow testing of oscillating monitors shall occur every 5 years and verify the range of travel and the set spray pattern are correct.

11.3.7.3.1 Alternate frequencies where approved by the AHJ are allowed.

11.3.8 Hose

11.3.8.1 Supplementary hoses shall be tested in accordance with NFPA 1962.

11.3.8.2 Hoses manufactured in accordance with standards other than NFPA 1962 shall be tested per the manufacturer guidelines.

11.3.9 Hose Nozzle

11.3.9.1 Hose Nozzles shall be tested in accordance with NFPA 1962 Ch. 5.

11.3.10* Discharge Device Operational Tests Frequency of system tests shall be in accordance with Table 11.1.1.2.

> A.11.3.10 Operational tests generally should be comprised of the following:
> (1) A detection/actuation test with no flow to verify that all components such as automated valves, foam and water pumps, and alarms operate properly
> (2) A water-only flow test to inspect piping continuity, discharge patterns, pressures, and line flushing or a physical internal pipe and discharge device inspection if water cannot be flowed due to occupancy. Recommended water flow when occupancy is restricted is every 5 years.
> (3) Resetting of system to its normal standby condition, including draining of lines and filling of foam liquid tank

11.3.10.1* Test Preparation. Precautions shall be taken to prevent damage to property during the test.

> A.11.3.10.1 The property owner or designated representative should take care to prevent damage to equipment or the structure during the test. Damage could be caused by the system discharge or by runoff from the test site. It should be verified that there is adequate and unobstructed drainage. Equipment should be removed or covered as necessary to prevent damage. Means such as curbing or sandbagging should be used to prevent entry of the foam-water solution.

11.3.10.1.1 Where discharge from the system discharge devices would create a hazardous condition or conflict with local requirements, an approved alternate method to achieve full flow conditions shall be permitted.

11.3.10.2* Operational Test Performance.

> A.11.3.10.2 An alternative method for achieving flow can be permitted to be an installation as shown in Figure A.12.3.3.2. This type of testing does not verify system pipe conditions or discharge device performance but only the water supply, foam concentrate supply, and proportioning accuracy.

11.3.10.2.1 Operational tests shall be conducted to ensure that the foam-water sprinkler system(s) responds as designed, both automatically and manually.

11.3.10.2.2 The test procedures shall simulate anticipated emergency events so the response of the foam-water sprinkler system(s) can be evaluated.

11.3.10.2.3 It shall be permissible to test the full flow discharge from foam-water deluge systems using water only in lieu of foam.

11.3.10.2.4 Where plugs or caps are provided on discharge devices, the full flow test shall verify that all plugs or caps release as intended.

11.3.10.2.5 Response Time. Under test conditions, the automatic fire detection systems, when exposed to a test source, shall operate within the requirements of NFPA 72 for the type of detector provided, and the response time shall be recorded.

11.3.10.2.6 Discharge Time. The time lapse between operation of detection systems and water delivery time to the protected area shall be recorded for open discharge devices.

11.3.10.2.7 Discharge Patterns.

11.3.10.2.7.1 The discharge patterns from all of the open discharge devices shall be observed to ensure that patterns are not impeded by debris and to ensure that discharge devices are correctly positioned and provide adequate coverage.

11.3.10.2.7.2 Discharge devices shall be permitted to be of different orifice sizes and types.

11.3.10.2.8* Pressure Readings.

> A.11.3.10.2.8 Specific foam concentrates typically are listed or approved with specific sprinklers. Part of the approval and listing is a minimum sprinkler operating pressure. Sprinkler operating pressure affects foam quality, discharge patterns, and fire extinguishment (control) capabilities. Discharge pressures less than this specified minimum pressure should be corrected immediately; therefore, it is necessary to test under full flow conditions.

11.3.10.2.8.1 Pressure readings shall be recorded at the most hydraulically demanding discharge device.

11.3.10.2.8.2 A second pressure reading shall be recorded at the main control valve.

11.3.10.2.8.3 Readings shall be compared to the hydraulic design pressures to ensure the original system design requirements are met.

11.3.10.3 Multiple Systems. The maximum number of systems expected to operate in case of fire shall be tested simultaneously to inspect the adequacy of the water supply and foam concentrate pump.

11.3.10.4 Manual Actuation Devices. Manual actuation devices shall be tested annually.

11.3.10.5 Return to Service. After the full flow test, the foam-water sprinkler system shall be returned to service and the foam concentrate tank shall be replenished to design level.

11.3.11* Fixed Foam Discharge Outlets

A.11.3.11. Fixed Foam Discharge Outlets are devices permanently attached to a tank, dike, or other containment structure, designed to introduce foam. Typical devices include, fixed foam discharge outlets.

11.3.11.1 Annual Water Flow. At least annually water shall be discharged through each fixed foam discharge outlet to confirm that fixed foam discharge outlets and foam solution feed lines are not obstructed.

11.3.11.1.2 Alternative test methods and frequencies as identified in this standard or where approved by the AHJ shall be permitted.

11.3.11.1.3 Where water flow from the fixed foam discharge outlet occurs, the most remote device residual pressure shall be recorded and compared with the original hydraulic calculations to ensure the correct amount of foam will be delivered to the system.

11.3.11.1.4 Observe the air inlet for indications of water back flow**.**

11.3.11.2 Cone Roof Tanks. Where cone roof tanks are provided with fixed foam discharge outlets, the following testing requirements shall apply.

11.3.11.2.1 Fixed foam discharge outlets installed in areas that are inaccessible for safety considerations due to process operations shall be tested during each scheduled shut down.

11.3.11.2.2 The AHJ shall review and approve the plans for a water flow test through the fixed foam discharge outlet.

a) Where means to isolate a fixed foam discharge outlet are provided, water flow tests through test connections on the risers of foam solution pipe at the tank shell shall be permitted pending approval from the AHJ.
b) Tank operations may or may not facilitate a water flow test.
   1. Where a water flow test is not possible visual inspection of supply piping can be conducted in accordance with Ch. 14
b) Where provided with an inert gas blanketing system, a water flow test may not be feasible until the next tank outage.

   1. Where determined feasible, the AHJ shall verify that the makeup gas is sufficient to account for the removal of a fixed foam discharge outlet lid through the duration of the flow test.

   A.11.3.11.2.2. Fixed foam discharge outlets installed on cone roof tanks require vapor seals. In some instances, cone roof tanks are provided with an inert gas blanket, such as nitrogen. The blanket can be used for the following

   - Mitigation of a flammable atmosphere due to elevated product temperatures
   - Mitigation of gum formation or other product quality issues in finished product tanks.

A visual inspection of tanks equipped with these systems may cause costly product quality issues due to oxygen ingress, or potential for pyrophoric reaction and fire due to oxygen ingress into the tank.

c) Proper personal protective equipment shall be provided for personnel accessing fixed foam discharge outlets on in-service product tanks.
d) Where water flow testing is possible, water shall not be allowed to enter the storage tank.
e) Consideration should be given to conducting flow tests on tanks operating at elevated temperatures.
   A.11.3.9.2 (e) The following can be done to prevent water intrusion.
   - Fixed foam discharge outlets can be rotated 180 degrees to discharge water away from the tank.
   - Inflatable inner tubes can be installed inside the fixed foam discharge outlet to prevent water intrusion.
   - Fabricated directional elbows can be installed on the discharge tube to direct water away from the chamber.
   - Installation of blinds between the chamber and the tank.
   - Other means of preventing water flow from the chamber into the tank may be feasible.

11.3.11.3 Internal Floating Roofs / Geodesic Dome Roofs. Where tanks with Internal Floating roofs/geodesic domes are provided with fixed foam discharge outlets the following testing requirements shall apply.

1. Fixed foam discharge outlets installed in areas that are inaccessible for safety considerations due to process operations shall be tested during each scheduled shut down.
2. Proper personnel protection equipment shall be provided for personnel accessing fixed foam discharge outlets on in-service product tanks.
3. Where water flow testing is possible, water shall not be allowed to enter the storage tank.
   a. Where means to isolate a fixed foam discharge outlet are provided, water flow tests through test connections on the risers of foam solution pipe at the tank shell shall be permitted pending approval from the AHJ.

   A.11.3.11.3. Internal Floating roofs may or may not be provided with roof drains depending on the tank construction. The following can be done to prevent water intrusion.
   - Fixed foam discharge outlets can be rotated 180 degrees to discharge water away from the tank.
   - Inflatable inner tubes can be installed inside the fixed foam discharge outlet to prevent water intrusion.
   - Fabricated directional elbows can be installed on the discharge tube to direct water away from the fixed foam discharge outlet.
   - Installation of blinds between the fixed foam discharge outlet and the tank
   - Other means of preventing water flow from the fixed foam discharge outlet into the tank may be feasible.

4. Water flow testing frequency involving discharge onto the tank roof shall align with tank outages and industry tank inspection frequencies.

a. Short outages where product is not removed from the tank and the roof is not accessible shall not require a water flow test.
b. Water flow testing shall be done when the tank outage permits visual observation of water discharge and foam dam operation during the test.
c. Foam Dam Testing shall be in accordance with 11.3.9.5

11.3.11.4 External Floating Roofs. External floating roofs are commonly provided with rim seal protection via above the seal foam application or below the seal foam application.

11.3.11.4.1 Below the Seal Foam Systems. Testing requirements for below the seal foam systems shall be as follows:

1. Fixed foam discharge outlets installed in areas that are inaccessible for safety considerations due to process operations shall be tested during each scheduled shut down.
2. Proper personnel protection equipment shall be provided for personnel accessing fixed foam discharge outlets on in-service product tanks.
3. *Water flow injection between the seal shall not be permitted on an in-service tank.
    a. Where systems are provided with proper isolation and flow test means, water flow tests can be conducted with water discharge on the roof
    b. Tank roof drains must be open and monitored.

    A.11.3.11.4.1(3) Existing systems may not be equipped with a means to isolate fixed foam discharge outlets and direct flow away from the seal in order to facilitate an annual flow test. Water flow on these systems may result in seal fabric failures which can result in water entering the tanks, or product discharge onto the roof.

4. Water flow testing frequency involving discharge between the roof seals shall align with tank outages and industry tank inspection frequencies.
    a. The AHJ shall review and approve the water flow test plan. The plan shall consider the operating pressure of the fixed foam discharge outlets, potential seal damage due to water flow/water impingement on the tank seal, and drainage.
    b. Short outages where product is not removed from the tank and the roof is not accessible shall not require a water flow test.
    c. Water flow testing shall be done when the tank outage permits visual observation of water discharge and foam dam operation (when provided) during the test.
    d. Foam Dam Testing shall be in accordance with 11.3.9.5

11.3.11.4.2 Above the Seal Foam Systems. Testing requirements for above the seal foam systems shall be as follows:

1. Water flow tests shall be conducted annually with discharge onto the roof.
2. Prior to testing, verify that the roof drains are open.
3. Test requirements for foam dams are provided in Section 11.3.9.5.

11.3.11.5 Foam Dam

11.3.11.5.1 During the water flow test, foam dams shall be observed for proper retention of water

A.11.3.11.5.1 This observation does not show adequate foam travel between foam makers, but rather verifies the integrity and function of the foam dam.

11.3.11.5.2 Verify roof drains function properly during the test.

11.3.11.6 Pressure Foam Makers. Testing shall follow manufacturer's recommendations.

11.3.11.6.1 Gate Valves shall be tested per 13.3.3.1

11.3.11.6.1.1 The AHJ shall approve the operation of the gate valve downstream of the rupture disk or check valve.

> A.11.3.11.6.1.1 The operation of the gate valve closest to the tank may result in product becoming trapped between the rupture disk, check valve, and gate valve if no low point drain or bleeder is provided.

11.3.11.6.2 Annual Water Flow. At least annually water shall be discharged through each fixed foam discharge outlet to confirm that fixed foam discharge outlet and foam solution feed lines are not obstructed.

11.3.11.6.2.1 Alternative test methods and frequencies as identified in this standard or where approved by the AHJ shall be permitted.

> A.11.3.11.6.2.1 Annual water flow tests may result in a release of product to atmosphere if product is trapped between the check valve and the gate valve as product may become entrained in the water and discharged out of the test connection.

11.3.11.6.2.2 Rupture discs shall be removed prior to the flow test.

11.3.11.6.2.3 Gate valves downstream of the check valve shall be verified to be closed.

> A.11.3.11.6.2.3 Additional measures, i.e., slip blinds, may be required prior to the water flow test

11.3.11.6.2.4 During the water flow test the inlet and outlet pressure at the pressure foam maker shall be noted and confirmed to be within the acceptable range per the system design and the manufacturer's recommendations.

11.3.11.6.2.5 Observe the air inlet for indications of water back flow**.**

11.4* Maintenance.

A.11.4 The maintenance items specified in the body of this standard are in addition to the typical inspection and test procedures indicated. Foam systems are, as are all fire protection systems, designed to be basically maintenance free. There are, however, some areas that need special attention. Foam concentrate shelf life varies between liquids and is affected by factors such as heat, cold, dilution, contamination, and many others. As with all systems, common sense dictates those maintenance-sensitive areas that should be given attention. Routine testing and inspection generally dictate the need for additional maintenance items. Those maintenance items specified are key procedures that should be performed routinely.

11.4.1 Maintenance of foam systems shall be in accordance with the requirements of those chapters covering the specific component parts. Where any of the following testing requirements are found deficient the results shall be documented, corrected, and re-tested in accordance with 11.1.5.

11.4.2* Water Supply. The water supply for foam systems shall be maintained in accordance with NFPA 25 Chapter 7, 8, and 9.

A.11.4.2 * Water supply piping should be free of internal obstructions that can be caused by debris (e.g., rocks, mud, tubercles) or by closed or partially closed control valves. See Chapter 7, 8, and 9 for maintenance requirements.

11.4.3 Foam Concentrate Tanks. Foam concentrate tanks shall be maintained as follows.

11.4.3.1. Metallic Atmospheric and Pressure Vessel Storage Tanks

11.4.3.1.1 Excessive sediment shall require draining and flushing the tank

11.4.3.1.2* The foam concentrate storage tank shall be drained of foam concentrate and flushed.

A.11.4.3.1.2 Foam concentrates tend to settle out over time. Depending on the specific characteristics of the foam concentrate, sedimentation accumulates in the bottom of the storage vessel. This sediment can affect proportioning and foam concentrate integrity. Some concentrates tend to settle out more rapidly than others. If the annual samples indicate excessive sediment, flushing the tank could be required more frequently.

11.4.3.1.3 Foam concentrate shall be permitted to be salvaged and reused.

11.4.3.2 Bladder Tanks

11.4.3.2.1 Sight glass, where provided, shall be removed and cleaned.

11.4.4 Foam Components. Maintenance of specific foam components shall be in accordance with 11.4.4.1 through 11.4.9.1

11.4.4.1 Standard Pressure Proportioner.

11.4.4.1.1 The ball drip (automatic-type) drain valves shall be disassembled, cleaned, and reassembled.

11.4.4.2 Standard Balanced Pressure Proportioner.

11.4.4.2.1 Pump Operation.

11.4.4.2.1.1 The foam concentrate pump shall be operated.

11.4.4.2.1.2 Foam concentrate shall be circulated back to the tank.

11.4.4.2.2 Servicing. Foam pumps, drive train, and drivers shall be serviced in accordance with the manufacturer's instructions and frequency but not at intervals of more than 5 years.

11.4.4.2.3 Flushing. The diaphragm balancing valve shall be flushed through the diaphragm section with water or foam concentrate until fluid appears clear or new.

11.4.4.3 In-Line Balanced Pressure Proportioner.

11.4.4.3.1 Pump Operation.

11.4.4.3.1.1 The foam concentrate pump shall be operated.

11.4.4.3.1.2 Foam concentrate shall be circulated back to the tank.

11.4.4.3.2 Servicing. Foam pumps, drive train, and drivers shall be serviced in accordance with the manufacturer's instructions and frequency but not at intervals of more than 5 years.

11.4.4.3.3 Flushing. The diaphragm balancing valve shall be flushed through the diaphragm section with water or foam concentrate until fluid appears clear or new.

11.4.4.4 Mobile Apparatus Proportioning

11.4.4.4.1 Mobile Apparatus Proportioning systems shall be maintained in accordance with NFPA 1901 20.9.4.2

11.4.4.5 Water Powered Foam Concentrate Proportioner Pump The maintenance shall include the following:

1. Provide lubrication to the shaft of the proportioning pump in accordance with the manufacturer's specification
2. Change oil to water driven pump
3. Change the vanes to the water driven pump, when appropriate, in accordance to the manufacturer's specification

11.4.4.6 Pressure Vacuum Vents. The procedures specified in 12.3.4.9.1 through 12.3.4.9.13 shall be performed on pressure vacuum vents every 5 years.

11.4.4.6.1 The vent shall be removed from the expansion dome.

11.4.4.6.2 The vent shall be inspected to ensure that the opening is not blocked and that dirt or other foreign objects do not enter the tank.

11.4.4.6.3 The vent bonnet shall be removed.

11.4.4.6.4 The vacuum valve and pressure valve shall be lifted out.

11.4.4.6.5 The vent body shall be flushed internally, and the vacuum valve and the pressure valve shall be washed thoroughly.

11.4.4.6.6 The vent shall be inspected to ensure that the screen is not clogged, and the use of any hard, pointed objects to clear the screen shall be avoided.

11.4.4.6.7 If the liquid has become excessively gummy or solidified, the vent body and parts shall be soaked in hot soapy water.

11.4.4.6.8 The vent body shall be turned upside down and drained thoroughly.

11.4.4.6.9 Parts shall be dried by placing them in a warm and dry area or by using an air hose.

11.4.4.6.10 Parts shall be sprayed with a light Teflon® coating, and the vent shall be reassembled.

11.4.4.6.11 The use of any type of oil for lubrication purposes shall not be permitted.

11.4.4.6.12 The vent bonnet shall be replaced, and the vent shall be turned upside down slowly a few times to ensure proper freedom of the movable parts.

11.4.4.6.13 The vent shall be attached to the liquid storage tank expansion dome.

11.4.4.7 Monitor Maintenance. Monitor and Monitor nozzle maintenance shall be as specified in 7.4.3

11.4.4.8. Fixed foam discharge outlets. Foam chambers and foam makers shall be maintained in accordance with manufacturer recommendations.

11.4.4.8.1 Vapor Seals shall be maintained in accordance with manufacturer recommendations.

A.11.4.4.8.1 Vapor seals may have manufacturer specific torque specifications.

11.4.4.9 Pressure Foam Makers. Pressure foam makers shall be maintained in accordance with manufacturer recommendations

11.4.4.9.1 Rupture disks shall be maintained and replaced in accordance with disk manufacturer's recommendations.

11.4.4.10 Strainers. Strainers shall be maintained in accordance with Chapter 7.

11.4.4.11. Supplementary Hoses. Hoses shall be maintained in accordance with NFPA 1962 or manufacturer's recommendations.

11.4.4.12. Supplementary Hose Stream Nozzles. Nozzles shall be maintained in accordance with NFPA 1962.

11.4.4.13 Auxiliary Drains. Auxiliary drains shall be maintained in accordance with 13.4.5.3.2.

11.4.4.14 Component Action Requirements.

11.4.4.14.1 Whenever a component in a foam system is adjusted, repaired, reconditioned, or replaced, the action required in Table 12.4.5.1 shall be performed.

11.4.4.14.2 Where the original installation standard is different from the cited standard, the use of the appropriate installing standard shall be permitted.

11.4.4.14.3 The actions of 11.5.1 and 11.5.2 shall not require a design review, which is outside the scope of this standard.

	Table 11.1.1.2 Summary of Low, Medium, and High Expansion Foam, and foam water sprinkler system Inspection, Testing, and Maintenance	
System/Component	**Frequency**	**Reference**
Control Valve(s)		Chapter 13
Deluge/preaction valve(s)		Chapter 13
Discharge device location (spray nozzle)	Monthly	11.2.2.1.1
Discharge device location (sprinkler)	Annually	11.2.2.1.1
Discharge device position (spray nozzle)	Monthly	11.2.2.1.1
Discharge device position (sprinkler)	Annually	11.2.2.1.1
Drainage in system area	Quarterly	11.2.5
Fire Pump(s)		Chapter 8
Foam Concentrate Pumps(s)		Chapter 8
Fittings corrosion	Annually	11.2.9
Fittings damage	Annually	11.2.9
Foam concentrate storage	Annually	11.2.7
Gauges		Chapter 13
Hangers/braces/supports	Annually	11.2.9
Pipe Corrosion	Annually	11.2.9
Pipe Damage	Annually	11.2.9
Proportioning system(s) - all	Monthly	11.2.6
Standard Pressure Proportioning pick up tube	10 years	11.2.6.5.2
Line Proportioner Pickup Tubes	Annually	11.2.6.6.3
Foam Tank Inspection	Annually	11.2.7
Proportioning Head	Annually	11.2.6.5.2
Water Powered Proportioner Pump leakage	Monthly	11.2.6.6.7
Water Powered Proportioner Pump valve position	Monthly	11.2.6.6.7

Water Powered Proportioner Pump Oil Level	6 months	11.2.6.6.7
Water Powered Proportioner Pump Shock Absorbers	6 months	11.2.6.6.7
Strainer(s) – Mainline	Annually	7.2.2.3
Strainer(s) – Discharge Device	Annually	11.2.4.1
Foam Concentrate Strainers	Annually	11.2.4.4
Water supply Piping	-	Chapter 7
Water supply tank(s)		Chapter 9
Waterflow devices		Chapter 13
Supplementary Hoses	Annually	11.2.2.4
Auxiliary Drain Signage	Annually	13.4.5.1.2
Supplementary Hose Stream Nozzles	Annually and after each use	6.2.6
Supplementary Hose Stream Storage	Annually	6.2.7
Fixed foam discharge outlet	Annually	11.2.2.2
Vapor Seals	Annually	11.2.2.2.4
Fire Department Hose Connections	Annually	6.2.3
Hydraulic design information sign	Annually	5.2.5
Underground Piping	10 years	11.2.9
Foam Dam		11.2.12
Pressure Foam Maker	Annual	11.2.2.2.5
Rupture Disk	Annual	11.2.2.2.5.5
Alarm Devices		11.1.3
Operating Instructions and Training	Annually	11.2.14
System Information documents	Annually	11.2.14
High Pressure Cylinders	Annually	11.2.11
Foam in surrounding space of bladder	Annually	11.2.7.8
Test		
Backflow preventer(s)	Annually	Chapter 13
Complete foam-water sprinkler system(s) (operational test)	Annually	11.3.8
Control valve(s)		Chapter 13

Deluge/preaction valve(s)		Chapter 13
Detection system		11.1.3
Discharge device location	Annually	11.3.9.2.7
Discharge device obstruction	Annually	11.3.9.2.7
Discharge device position	Annually	11.3.9.2.7
Fixed foam discharge outlet Water Flow	Annually	11.3.10
Pressure Foam Maker Water Flow	Annually	11.3.10.6
Fire pump(s)		Chapter 8
Foam Concentrate pump(s)		Chapter 8
Manual actuation device(s)	Annually	11.3.9.4
Proportioning system(s) – all	Annually	11.3.2
Valve status test		Chapter 13
Water supply flow test	5 years	Chapter 7
Water supply tank(s)		Chapter 9
Waterflow alarm devices		Chapter 13
Supplementary Hose Streams	5 years	6.3.1
Supplementary Hose Stream Nozzles		NFPA 1962 Ch 5
Foam Concentrate	Annually	11.3.1.1
Monitors	Annually	11.3.6
Oscillating Monitors Range of Motion	Annually	XXXXX
Oscillating Monitor Full Flow	5 years	XXXXXX
Water Powered Foam Proportioning Pump Operation	2 months	11.3.4
Water Powered Foam Proportioning Pump Filters	6 months	11.3.4
Water Powered Foam Proportioning Pump Operation at specified rate of flow	Annually	11.3.4
Water Powered Foam Proportioning Pump screwed connections	6 months	11.3.4
Water Powered Foam Proportioning Pump Valves	6 months	11.3.4

Bladder Tank Hydrostatic Test	10 years	11.3.5.1
Foam Concentrate Tank Hydrostatic Test	10 years	11.3.5.1
High Pressure Cylinder		11.3.5.2
Maintenance		
Backflow preventer(s)		Chapter 13
Bladder sight glass cleaning	10 years	11.4.3.5.1
Check valve(s)		Chapter 13
Control valve(s)		Chapter 13
Deluge/preaction valves		Chapter 13
Detection system		NFPA 72
Detector check valve(s)		Chapter 13
Fire pump(s)		Chapter 8
Foam concentrate strainer(s)	Annually	Chapter 8
Metallic Atmospheric and Pressure Vessel Storage Tanks drain/flush	10 years	11.4.3
Foam concentrate pump(s)	5 years	Chapter 8
In-line balanced pressure type		
Balancing valve diaphragm	5 year	11.4.4.3
Line type		
Pressure Vacuum vents	5 years	11.4.4.6
Proportioning system(s) standard pressure type		
Ball drip (automatic type) drain valves	5 years	11.4.4.3
Standard balanced pressure type		
Balancing valve diaphragm	5 years	11.4.4.3
Strainer(s) – mainline		11.4.4.10
Water Supply		11.4.2
Water supply tank(s)		Chapter 9
Hose Valves		Chapter 13
Pressure gauges		Chapter 13
Fixed foam discharge outlet		11.4.4.8
Pressure Foam Maker		11.4.4.9

Monitors		11.4.4.7
Monitor Nozzles		11.4.4.7
Supplementary Hoses		11.4.4.11
Supplementary Hose Nozzles		11.4.4.12
Rupture Disks		11.4.4.9.1
Water Powered Foam Concentrate Proportioning Pump Shaft Lubrication	6 months	11.4.4.6
Water Powered Foam Concentrate Proportioning Pump Oil Change	5 years	11.4.4.6
Water Powered Foam Concentrate Proportioning Pump Oil Change Vane replacement	Manufacturer Recommendation	11.4.4.6
Auxiliary Drains		13.4.5.3.2

Table XXXXXX Summary of Component Action Requirements

Component	Adjust	Repair/Recondition	Replace	Required Action
Water Delivery Components				
Discharge devices	X		X	Inspect for leaks at system working pressure Inspect for impairments at orifice
Fire department connections	X	X	X	See Chapter 13
Manual release	X	X	X	Operational test Inspect for leaks at system working pressure Test all alarms
Pipe and fittings on systems with automatic foam water sprinklers	X	X	X	Hydrostatic test in conformance with NFPA 13
Pipe and fittings on systems with Fixed Foam Discharge Outlets.	X	X	X	Operational flow test
Foam Components				
Ball drip (automatic-type) drain valves				See Chapter 13
Foam concentrate	X		X	Submit a sample for laboratory analysis for conformance with manufacturer's specifications
Foam concentrate pump				See Chapter 8
Foam concentrate strainer(s)				See Chapter 13
Atmospheric Foam concentrate tank	X	X	X	Inspect for condition, repair as appropriate

Foam Concentrate Bladder Tank	X	X	X	Inspect water jacket for presence of foam concentrate
Proportioning system(s)	X	X	X	Conduct flow test and inspect proportioning by an approved test device
Water supply tank(s)				See Chapter 9
Alarm and Supervisory Components				
Detection system	X	X	X	Operational test for conformance with NFPA 13 and/or NFPA 72
Pressure-switch-type waterflow	X	X	X	Operational test using inspector’s test connection
Valve supervisory device			X	Test for conformance with NFPA 13 and/or NFPA 72
Vane-type waterflow	X	X	X	Operational test using inspector’s test connections
Water motor gong			X	Operational test using inspector’s test connection
Status-Indicating Components				
Gauges	X		X	Verify at 0 psi (0 bar) and system working pressure; see Chapter 13 regarding calibration
Testing and Maintenance Components				
Auxiliary drains	X	X	X	Inspect for leaks at system working pressure
Inspector’s test connection	X	X	X	Inspect for leaks at system working pressure
Main drain	X	X	X	Full-flow main drain test
Structural Components				
Hanger/seismic bracing	X	X	X	Inspect for conformance with NFPA 13

Pipe stands	X	X	X	Inspect for conformance with NFPA NFPA 13
Informational Components				
General information	X	X	X	Inspect for conformance with NFPA 11 and NFPA 13
Hydraulic information sign	X	X	X	Inspect for conformance with NFPA 11 and NFPA 13
Valve signs	X	X	X	Inspect for conformance with NFPA 11 and NFPA 13

Table A.3.3.8

Chapter 11: Low-Medium and High Expansion Foam Systems – Inspection

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Alarm devices	Physical damage apparent	5.2.4			X
Pipe and Fittings	Mechanical damage, missing or damaged pain or coating, rusted or corroded, not properly aligned or trapped sections, low point drains not functioning, improper location or poor condition of rubber-gasketed fittings	11.2.2		X	
Hangers and seismic braces	Damaged or missing, not securely attached to structural or piping, missing or damaged paint or coating, rusted or corroded	11.2.3		X	
Foam-water discharge devices	Discharge devices missing	11.2.4.1	X		
Foam-water discharge devices	Discharge devices not properly positioned or pointed in design direction, loaded or corroded	11.2.4.1		X	

Foam-water discharge devices	Plugs or Caps not free to operate as intended	11.2.4.2		X	
Foam-water discharge devices	Missing caps or plugs if required	11.2.4.2		X	
Foam-water discharge devices	Incorrect foam concentrate for application and devices	11.2.4.4		X	
Foam concentrate strainers	Blowdown valve open or not plugged	11.2.6.4		X	
Drainage	Trap sumps and drainage trenches blocked, retention embankments or dikes in disrepair	11.2.7			X
Proportioning systems (all)	Proportioning system valves not in correct open/closed position in accordance with specified operating conditions	11.2.8.3	X		
Proportioning systems (all)	Concentrate tank does not have correct quantity required by original design	11.2.8.4		X	
Proportioning systems (all)	Concentrate tank empty	11.2.8.4	X		
Standard pressure proportioner	Automatic drains (ball drip valves) not free or open, external corrosion on	11.2.8.5.1			X

	foam concentrate tanks				
Bladder tank proportioner	Water control valve to foam concentrate in “closed” position	11.2.8.5.2	X		
Bladder tank proportioner	Foam in water surrounding bladder	11.2.8.5.2	X		
Bladder tank proportioner	External corrosion on foam concentrate tank	11.2.8.5.2			X
Line proportioner	Strainer damaged, corroded, pressure vacuum vent not operating freely	11.2.8.5.3		X	
Line proportioner	Strainer plugged or fouled	11.2.8.5.3	X		
Line proportioner	External corrosion on foam concentrate tank	11.2.8.5.4			X
Standard balanced pressure proportioner	Sensing line valves not open, no power to foam liquid pump	11.2.8.5.4	X		
Standard balanced pressure proportioner	Strainer damaged, corroded, plugged, or fouled, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures.	11.2.8.5.4		X	
In-line balanced pressure proportioner	Sensing line valves at pump unit or individual proportioner stations	11.2.8.5.5	X		

	not open, no power to foam liquid pump				
In-line balanced pressure proportioner	Strainer damaged, corroded, pressure vacuum vent no operating freely, gauges damaged or not showing proper pressures	11.2.8.5.5		X	
In-line balanced pressure proportioner	Strainer plugged or fouled	11.2.8.5.5	X		
Orifice plate proportioner	No power to foam liquid pump	11.2.8.5.6	X		
Orifice plate proportioner	Strainer damaged, corroded, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures	11.2.8.5.6		X	
Orifice plate proportioner	Strainer plugged or fouled	11.2.8.5.6	X		
Wide Range Proportioner	Reference Marks not aligned	11.2.6.6.7		X	
Wide Range Proportioner	Proportioner installed backwards	11.2.6.6.7	X		
Wide Range Proportioner	Foam marking aligns with system design and storage tank	11.2.6.6.7		X	
Foam Concentrate	Fails quality testing	11.4.2		X	
Fixed Foam Discharge Outlet	Inlet Orifice Clogging		X		

Fixed Foam Foam Discharge Outlet	Air Inlet, painted over, birds nest ec		X		
Fixed Foam Discharge Outlet	Vapor Seal			X	
Fixed Foam Discharge Outlet	Deflector not present		X		
Fixed Foam Discharge Outlet	Orifice Plate, or jet orifice missing		X		
Fixed Foam Discharge Outlet	Corrosion				X
Foam Dam	Foam Dam damaged, clogged drains within dam		X		
Pressure Foam Maker	Orifice Clogged		X		
Pressure Foam Maker	Air Intake		X		
Pressure Foam Maker	Corrosion				X
Pressure Foam Maker	Rupture Disc Burst			X	
Pressure Foam Maker	Check Valve – not operating freely		X		
Pressure Foam Maker	Bottoms Water level			X	
Fire Department Connection	Damaged threads/fittings			X	
Monitor	Lack of rotation			X	
Monitor	Missing nozzle		X		
Supplementary Hose	Hose dry rot, fitting damage, etc.		X		
Supplementary Hose Reel	Failure to rotate		X		

Supplementary Hose Reel	Failure of water swivel joint		X		
Supplementary Hose Nozzle	Damage, corrosion, etc.			X	
Oscillating Monitor	Failure of oscillating mechanism (i.e., swivel joints not operating properly		X		

Chapter 11: Low-Medium and High Expansion Foam Systems - Testing

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Alarm Devices	Water motor and gong not functioning	13.2.4.1		X	
Alarm Devices	Pressure switch or vane-type switch not functioning or no alarm	13.2.4.2		X	
Operational test	Fire detection system did not operate within requirements of NFPA 72	11.3.2.4		X	
Operational test	Nozzles Plugged	11.3.2.6.1	X		
Operational test	Nozzles not correctly positioned	11.3.2.6.1		X	
Operational test	Pressure readings not comparable to original design requirements	11.3.2.7		X	
Operational test	Manual activation devices not working properly	11.3.4	X		
Operational test	Foam sample failed concentration test	11.3.5	X		

Main drain	More than 10% drop in full flow pressure	13.2.3.3		X	
Assessment of internal condition	Inspection revealed presence of MIC, zebra mussels, rust and scale	13.2.1		X	
Fixed Foam Discharge Outlet	Orifice Plugged		X		
Pressure Foam Maker	Plugged		X		
Foam Dam	Failed to retain water		X		
Monitor	Nozzle patterns not adequate/adjustable				X
Oscillating Monitor	Failure of oscillation			X	
Hydro Test	Bladder Tank fails the hydro		X		
Hydro Test	Balanced Pressure Tank fails the hydro		X		
Foam Concentrate	Foam Concentrate failure report from the lab		X		
Foam Contamination	Foam Types Mixed or Water Intrusion			X	

Public Input No. 57-NFPA 25-2020 [Section No. 11.1.1.2]

11.1.1.2

Table 11.1.1.2 shall be used to determine the minimum required frequencies for inspection, testing, and maintenance.

Table 11.1.1.2 Summary of Foam-Water Sprinkler System Inspection, Testing, and Maintenance

System/Component	Frequency	Reference
Inspection		
Control valve(s)	-	Chapter 13
Deluge/preaction valve(s)	-	Chapter 13
Discharge device location (spray nozzle)	Monthly	11.2.4
Discharge device location (sprinkler)	Annually	11.2.4
Discharge device position (spray nozzle)	Monthly	11.2.4
Discharge device position (sprinkler)	Annually	11.2.4
Drainage in system area	Quarterly	11.2.7
Fire pump system	-	Chapter 8
Fittings corrosion	Annually	11.2.2
Fittings damage	Annually	11.2.2
Foam concentrate strainer(s)	Quarterly	11.2.6.4
Gauges	-	Chapter 13
Hangers/braces/supports	Annually	11.2.3
Pipe corrosion	Annually	11.2.2
Pipe damage	Annually	11.2.2
Proportioning system(s) — all	Monthly	11.2.8
Strainer(s) — Mainline	5 years	11.2.6.1
Water supply piping	-	11.2.5.1
Water supply tank(s)	-	Chapter 9
Waterflow alarm devices	-	Chapter 13
Test		
Backflow preventer(s)	-	Chapter 13

Complete foam-water sprinkler system(s) (operational test)	Annually	11.3.2, 11.3.3
Control valve(s)	-	Chapter 13
Deluge/preaction valve(s)	-	Chapter 13
Discharge device location	Annually	11.3.2.6
Discharge device obstruction	Annually	11.3.2.6
Discharge device position	Annually	11.3.2.6
Fire pump system	-	Chapter 8
Foam-water solution	Annually	11.3.5
Foam concentrate samples	Annually	11.4.2
Manual actuation device(s)	Annually	11.3.4
Valve status test	-	Chapter 13
Water supply flow test	-	Chapter 7
- - -		
Water supply tank(s)	-	Chapter 9
Waterflow alarm devices	-	Chapter 13
Maintenance		
Backflow preventer(s)	-	Chapter 13
Bladder tank type	- -	
Foam concentrate tank — hydrostatic test	10 years	11.4.5.2
Sight glass	10 years	11.4.5.1
Check valve(s)	-	Chapter 13
Control valve(s)	-	Chapter 13

Deluge/preaction valves		
–		
	Chapter 13	
Detector check valve(s)		
–		
	Chapter 13	
Fire pump system		
–		
	Chapter 8	
Foam concentrate pump operation	Monthly	11.4.7.1
Foam concentrate		
~~samples Per manufacturer's recommendation 11.4.2 Foam concentrate~~		
strainer(s)	Quarterly	Section 11.4
In-line balanced pressure type		
– –		
Balancing valve diaphragm	5 years	11.4.8.3
Foam concentrate pump(s)	5 years*	11.4.8.2
Foam concentrate tank	10 years	11.4.8.4
Line type		
– –		
Foam concentrate tank — corrosion and pickup pipes	10 years	11.4.6.1
Foam concentrate tank — drain and flush	10 years	11.4.6.2
Pressure vacuum vents	5 years	11.4.9
Proportioning system(s) standard pressure type		
– –		
Ball drip (automatic type) drain valves	5 years	11.4.4.1
Corrosion and hydrostatic test	10 years	11.4.4.4
Foam concentrate tank — drain and flush	10 years	11.4.4.2
Standard balanced pressure type		
– –		
Balancing valve diaphragm	5 years	11.4.7.3
Foam concentrate pump(s)	5 years*	11.4.7.2
Foam concentrate tank	10 years	11.4.7.4
Strainer(s) — mainline	5 years	11.2.6.1
Water supply	Annually	11.2.5.2
Water supply tank(s)		
–		
Chapter 9		

*Also refer to manufacturer's instructions and frequency. Maintenance intervals other than preventive maintenance are not provided, as they depend on the results of the visual inspections and operational tests. For foam-water sprinkler systems in aircraft hangars, refer to the inspection, test, and maintenance requirements of Table 11.1.1 in NFPA 409.

Statement of Problem and Substantiation for Public Input

Foam concentrate samples should be tested annually in accordance with NFPA 11 recommendations. Also this should be under the TEST section not the MAINTENANCE section.

Submitter Information Verification

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Submittal Date: Tue May 12 13:58:04 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-143-NFPA 25-2020

Statement: Delete the current Chapter 11 in its entirety and replace it with the new text prepared by the NFPA 11 task group, in its entirety. Note the group was assigned by NFPA 11 Chair, Joan Leedy and met frequently over many months to develop the new text. The TG was comprised of a cross section of the committee, to include end users, foam manufacturer's PE's and FPE's as well as ITM service providers and foam testers. This action was the result of discontinuing NFPA 16 (Foam & Water) by folding it into a chapter of NFPA 11, so that all foam related requirements will exist in a single document.

Public Input No. 58-NFPA 25-2020 [Section No. 11.4.2]

11.4.2 Foam Concentrate Samples.

~~Samples~~ At least annually, samples of foam concentrates shall be sent to the manufacturer or qualified laboratory for quality condition testing ~~at the frequency recommended by the manufacturer~~ .

Statement of Problem and Substantiation for Public Input

NFPA 11 requires annual testing.

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Committee:	INM-AAA

Committee Statement

Resolution: FR-143-NFPA 25-2020

Statement: Delete the current Chapter 11 in its entirety and replace it with the new text prepared by the NFPA 11 task group, in its entirety. Note the group was assigned by NFPA 11 Chair, Joan Leedy and met frequently over many months to develop the new text. The TG was comprised of a cross section of the committee, to include end users, foam manufacturer's PE's and FPE's as well as ITM service providers and foam testers. This action was the result of discontinuing NFPA 16 (Foam & Water) by folding it into a chapter of NFPA 11, so that all foam related requirements will exist in a single document.

Public Input No. 102-NFPA 25-2020 [Section No. 13.1.1.2]

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	

Item	Frequency	Reference		
Strainers, filters, orifices	5 years	13.4.4.1.3		
Fire Department Connections	Quarterly	13.8.1		
Gauges	Monthly/quarterly	13.2.5		
Hose Valves	Quarterly	13.6.1		
Preaction 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		
Hose connection pressure-regulating	Annually	13.5.2.1		
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	13.5.6.2.1		
Valve Supervisory Signal Initiating Device	Quarterly	13.3.2.1.3		
Supervisory Signal Devices (except valve supervisory switches)	Quarterly	13.2.6.1		
-	-	- Air Compressors and Nitrogen Generators	Monthly	13.10.2
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		

Item	Frequency	Reference
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	13.2.5.2
Main Drains	Annually/quarterly	13.2.3
Preaction 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
Fire pump circulation relief	With churn test	13.5.6.1.2
Fire pump pressure relief valves	With fire pump test	13.5.6.2.2
-	-	-
-	-	-
Air Compressors and Nitrogen Generators	Annually	13.10.3
Hose Valves	Annually/3 years	13.6.2
Waterflow Alarms	Quarterly/semiannually	13.2.4

Item	Frequency	Reference		
Supervisory Signal Devices (except valve supervisory switches)	Annually	13.2.6.2		
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/ Quick-Opening Devices	Annually	13.4.5.3		
Hose Valves	As needed	13.6.3		
Preaction Valves	Annually/5 years	13.4.3.3		
-	-	- Air compressors and Nitrogen Generators	Per manufacturer	13.10.4

Statement of Problem and Substantiation for Public Input

Air compressors and nitrogen generators were not added to table 13.1.1.2 in the 2020 edition. These items should be added to the table for quick reference as they are common components.

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Committee: INM-AAA

Committee Statement

Resolution: FR-86-NFPA 25-2020

Statement: Nitrogen and air compressors were inadvertently omitted from the Table in the last revision to the installation standard as new technology and criteria noted needs to be added to 25 for consistency and guidance.

Public Input No. 3-NFPA 25-2019 [New Section after 13.2.1]

13.2.1.1* Upon discovery of any component or equipment under recall or replacement programs by the owner's maintenance personnel, designated representative, or contractor, the owner shall be notified in writing.

13.2.1.1.1 The property owner or designated representative shall correct, remedy, repair, or replace components and equipment under recall or replacement program.

Statement of Problem and Substantiation for Public Input

Repeating the language from Chapter 4 into Chapters 5 and 13 provides ITM personnel with a placeholder and a related direction in terms of findings and how to classify the in Table 3.3.8

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2-NFPA 25-2019 [Section No. 5.2.1.1.1]	
Public Input No. 2-NFPA 25-2019 [Section No. 5.2.1.1.1]	
Public Input No. 4-NFPA 25-2019 [New Section after A.3.3.8]	

Submitter Information Verification

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Submittal Date: Wed Dec 04 17:27:57 EST 2019
Committee: INM-AAA

Committee Statement

Resolution: Information is already contained in Chapter 4.

Public Input No. 246-NFPA 25-2020 [Section No. 13.2.1]

13.2.1

The property owner or designated representative shall have manufacturers' literature available to provide specific instructions for inspecting, testing, and maintaining the valves and associated equipment.

Statement of Problem and Substantiation for Public Input

This section needs to be moved or copied to section 4.1.

Section 4.1 covers owner's responsibilities. This requirement is often overlooked by the owner.

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Submittal Date: Tue Jun 30 11:17:24 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-88-NFPA 25-2020

Statement: This is an owner's responsibility and should be located in Chapter 4.

Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]

13.2.2*

All system valves shall be protected from physical damage and shall be ~~accessible~~ capable of being reached quickly for operation without the need to remove obstacles to exercise .

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

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City:

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Submittal Date: Tue Jun 02 19:11:31 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The word accessible is kept for uniformity throughout the document.

Public Input No. 160-NFPA 25-2020 [Section No. 13.2.3]

13.2.3* ~~Main Drain Test.~~ Water Supply Status

A ~~main drain~~ test to asses water supply status shall be ~~conducted annually~~ conducted annually for each water supply lead-in to a building water-based fire protection system to determine whether there has been a change in the condition of the water supply.

13.2.3.1

Where the lead-in to a building supplies a header or manifold serving multiple systems, a ~~single main drain~~ single test shall be permitted.

~~**13.2.3.3**~~

~~When there is a 10 percent reduction in full flow pressure~~

13.2.3.2

~~In systems where the sole water supply is through a backflow preventer and/or pressure-reducing valves, the main drain test of at least one system downstream of the device shall be conducted on a quarterly basis.~~

When testing indicates a 10 percent reduction in available water supply when compared to the original acceptance test or previously performed tests, the cause of the reduction shall be identified and corrected if necessary.

Statement of Problem and Substantiation for Public Input

The requirement outlined in this section is to asses the water supply status. A main drain test is an example of one of the ways this can be accomplished. This proposal clarifies the intent of the section and in the related annex language, moves the "main drain test" to annex A.

Also, the requirement to perform a main drain test quarterly when the water supply is through a backflow preventer or PRV is proposed to be relocated to the maintenance portions of those respective sections. As with the main drain test, if the intent is the exercise the valve, the standard should state that. Relocating maintenance requirements to the these sections seems appropriate. The requirement to move the PRV from its seat quarterly is already required in 13.5.4.2 and does not need to be repeated here.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 161-NFPA 25-2020 [Section No. A.13.2.3]	Moves "main drain test" to Annex A
Public Input No. 162-NFPA 25-2020 [Section No. 13.7.3]	Relocating BFP maintenance
Public Input No. 163-NFPA 25-2020 [Section No. A.13.5.4.2]	Pointer in annex for PRV maintenance
Public Input No. 161-NFPA 25-2020 [Section No. A.13.2.3]	
Public Input No. 163-NFPA 25-2020 [Section No. A.13.5.4.2]	
Public Input No. 165-NFPA 25-2020 [Global Input]	

Submitter Information Verification

Submitter Full Name: Jason Webb
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Submittal Date: Thu Jun 25 10:52:27 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Water supply status test could be confusing by being misinterpreted as meaning flow must also be measured. Also, current information in chapter and annex covers intent. Current Main Drain Test reference is well recognized in industry.

Public Input No. 249-NFPA 25-2020 [Section No. 13.2.4.1]

13.2.4.1

Activation of ~~the~~ an electric vane type or pressure switch type waterflow alarm device shall result in an audible alarm within ~~5 minutes~~ 90 seconds after such flow begins and until such flow stops.

Statement of Problem and Substantiation for Public Input

A conflict exists between NFPA 72, NFPA 13, and NFPA 25 in regards to acceptable time frames for local audible alarm activation. A 90 second requirement already exists for an electric switch to comply with NFPA 72 as a maximum time allowance. This clarifies and resolves the conflict.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 254-NFPA 25-2020 [Section No. 13.2.4.2]	
Public Input No. 256-NFPA 25-2020 [New Section after 13.2.4.3.2]	

Submitter Information Verification

Submitter Full Name: David Baron
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Submittal Date: Tue Jun 30 11:25:28 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-146-NFPA 25-2020

Statement: Text is relocated to clarify the intended application of the requirements based upon the type of waterflow alarm device being tested. See related FR-145.

Public Input No. 254-NFPA 25-2020 [Section No. 13.2.4.2]

~~**13.2.4.2**~~ –

~~Activation of the initiating device shall occur within 90 seconds of waterflow at the alarm-initiating device when flow occurs that is equal to or greater than that from a single sprinkler of the smallest orifice size installed in the system. [**72:** 17.13.2]~~

Statement of Problem and Substantiation for Public Input

If PI 249 is accepted then this will be redundant. It is also unnecassary if an alarm system is installed as it would be covered by NFPA 72.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 249-NFPA 25-2020 [Section No. 13.2.4.1]	related topic
Public Input No. 256-NFPA 25-2020 [New Section after 13.2.4.3.2]	

Submitter Information Verification

Submitter Full Name: David Baron
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Submittal Date: Tue Jun 30 11:49:48 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-146-NFPA 25-2020

Statement: Text is relocated to clarify the intended application of the requirements based upon the type of waterflow alarm device being tested. See related FR-145.

Public Input No. 256-NFPA 25-2020 [New Section after 13.2.4.3.2]

TITLE OF NEW CONTENT

13.2.4.3.3 Mechanical water flow alarm device shall result in a continuous audible alarm on the premises within 5 miutes of any flow of water equal to or greater than that from a single sprinkler of the smallest K-factor installed on the system.

Statement of Problem and Substantiation for Public Input

This must be added to clarify that there is an allowance for this specific equipment and that is and was constructed and installed on systems and complied with the installation standards.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 249-NFPA 25-2020 [Section No. 13.2.4.1]	
Public Input No. 254-NFPA 25-2020 [Section No. 13.2.4.2]	

Submitter Information Verification

Submitter Full Name: David Baron
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Submittal Date: Tue Jun 30 11:57:48 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-146-NFPA 25-2020

Statement: Text is relocated to clarify the intended application of the requirements based upon the type of waterflow alarm device being tested. See related FR-145.

Public Input No. 72-NFPA 25-2020 [New Section after 13.2.4.6]

13.2.4.7

Except as permitted by 13.2.4.7.1, testing of vane-type waterflow alarm devices on wet pipe sprinklers systems shall be accomplished by a flow of water equivalent to the flow out of the smallest single k-factor sprinkler (or smaller) past the flow switch.

13.2.4.7.1

A vane-type waterflow alarm device listed with an integral automated test feature that is capable of verifying the presence of water at the location of the water flow alarm device and function of the water flow device and alarm shall be permitted to be used.

13.2.4.7.2

Vane-type waterflow alarm devices tested semiannually using circulated water or as described in 13.2.4.7.1 shall be tested by opening the inspector's test connection at a minimum frequency of once every 3 years.

Statement of Problem and Substantiation for Public Input

To be consistent with desire for common components being located in Chapter 13, 5.3.3.4, 5.3.3.4.1, and 5.3.3.4.2 relocated to Chapter 13 with no change of text.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 71-NFPA 25-2020 [Section No. 5.3.3]	
Public Input No. 71-NFPA 25-2020 [Section No. 5.3.3]	

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Street Address:
City:
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Zip:
Submittal Date: Mon Jun 01 15:39:05 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-148-NFPA 25-2020

Statement: Waterflow alarm devices are a common component and the requirements are located in Chapter 13. Relocating from Chapter 5 to Chapter 13 to be consistent with common components being in Chapter 13.

Public Input No. 73-NFPA 25-2020 [Section No. 13.2.4.7]

~~13.2.4.7~~ –

~~Fire pumps shall not be taken out of service during testing unless constantly attended by qualified personnel, or all impairment procedures contained in Chapter 15 are followed.~~

Statement of Problem and Substantiation for Public Input

This requirement is redundant to general requirement stated in 4.4.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 71-NFPA 25-2020 [Section No. 5.3.3]	

Submitter Information Verification

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Zip:
Submittal Date: Mon Jun 01 15:51:48 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-95-NFPA 25-2020
Statement: The wording is redundant based on section 4.4.

Public Input No. 164-NFPA 25-2020 [Section No. 13.2.5]

13.2.5 Gauges and Transducers .

13.2.5.1* Inspections.

13.2.5.1.1*

Gauges and transducers shall be inspected monthly to verify that the gauges are operable and not physically damaged.

13.2.5.1.2

Gauges and transducers monitoring water pressure shall be inspected quarterly to verify that normal water supply pressure is being maintained.

13.2.5.1.3

Gauges and transducers monitoring air or nitrogen pressure shall be inspected monthly to verify that normal air or nitrogen pressure are being maintained.

13.2.5.1.3.1

The gauge or transducer on the quick-opening device, if provided, shall indicate the same pressure as the gauge on the system side of the dry pipe valve.

13.2.5.1.3.2

Where air pressure supervision is connected to a constantly attended location, gauges ~~shall~~ and transducers shall be inspected quarterly.

13.2.5.1.4*

For dry pipe or preaction systems protecting freezers with an air pressure gauge(s) or tranducers on the air line(s) between the compressor and the dry pipe or preaction valve, the air pressure gauge or transducer near the compressor shall be compared monthly to the pressure gauge or transducer above the dry pipe or preaction valve.

13.2.5.1.4.1

When the gauge or transducer near the compressor is reading higher than the gauge or transducer near the dry pipe valve, the air line in service shall be taken out of service and the alternate air line shall be opened to equalize the pressure.

13.2.5.1.4.2

An air line taken out of service in accordance with 13.2.5.1.4.1 shall be internally inspected, removed of all ice blockage, and reassembled for use as a future alternate air line.

13.2.5.2

Gauges and transducers shall be replaced every 5 years or tested every 5 years by comparison with a calibrated gauge.

13.2.5.3

Gauges and transducers not accurate to within 3 percent of the full scale shall be recalibrated or replaced.

Statement of Problem and Substantiation for Public Input

The use of transducers to monitor pressures is becoming commonplace. NFPA 25 should should be updated to reflect these devices and establish inspection, testing, and maintenance requirements similar to those in place for gauges.

Submitter Information Verification

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Organization: Potter Electric Signal Company
Street Address:
City:
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Zip:
Submittal Date: Thu Jun 25 12:47:12 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: While transducers may need to be noted, this does not work for all line items listed. Some tasks cannot be realistically done. Transducers cannot be inserted globally. Transducers may need a dedicated section with specific requirements.

Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]

13.3.2.2*

The valve inspection shall verify that the valves are in the following condition:

(1) In the normal open or closed position

(2)* Sealed, locked, or supervised

(3) ~~Accessible~~ Not blocked from view or reach by movable or fixed storage

(4) Post indicator valves (PIVs) are provided with correct wrenches

(5) Free from external leaks

(6) Provided with applicable identification

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
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Affiliation: NFSA Engineering and Standards Committee
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City:
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Submittal Date: Tue Jun 02 19:14:42 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Accessible has not created any issues in interpretation. Proposed language makes requirement more/less restrictive by limiting term to movable and fixed storage.

Public Input No. 146-NFPA 25-2020 [Section No. 13.4.2.1]

13.4.2.1–_*_ Inspection.

Valves shall be inspected internally every 5 years to verify that all of the valve's components operate correctly.

Add new annex section A.13.4.2.1

A.13.4.2.1 Work performed to provide access for internal inspection of valves, regardless of type, should be considered maintenance work.

Statement of Problem and Substantiation for Public Input

With many AHJ's now requiring NICET certification to perform inspections, it should be noted that work performed to expose the internal condition of a valve for inspection is actually maintenance work. While this may seem insignificant, it is an important distinction because many inspectors are trained for inspection work solely and may not have the expertise or the tools on hand to disassemble piping for the internal inspection to be performed. In some cases, the AHJ is requiring the fitter or technician to hold a license as well.

Submitter Information Verification

Submitter Full Name: Robert Caputo

Organization: Fire & Life Safety America

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City:

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Zip:

Submittal Date: Mon Jun 22 15:00:17 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Current wording in Chapter 4 covers who is qualified and allowed/not allowed to conduct work.

Public Input No. 203-NFPA 25-2020 [New Section after 13.4.3.2.2]

13.4.3.2.2.1

When only the system is altered by replacing the preaction valve between each full trip, the new valve shall only be required to be partially trip tested, through the remote inspector’s test connection and with the quick-opening device in service, if provided, and timed in comparison to the last acceptable trip time of the prior preaction valve during the full flow test.

Statement of Problem and Substantiation for Public Input

In the attempt to limit the amount of water introduced into normally dry piping, and an attempt to help mitigate corrosion. I feel it is logical to be able to compare the new valve trip time to the previously installed valve, with that data a reasonable assessment can be determined of what the total delivery time would be with the new valve installed. By taking the new valve trip time and adding it to the prior travel time of the water to the remote ITV, an assessment can be determined what the total delivery time would be until the next scheduled full trip.

Submitter Information Verification

Submitter Full Name:	Jason Williams
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Affiliation:	AFSA
Street Address:	
City:	
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Zip:	
Submittal Date:	Mon Jun 29 23:43:02 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Wording is confusing and does not meet manual of style. When a valve is replaced it should be fully tested as this is not done very often.

Public Input No. 202-NFPA 25-2020 [Section No. 13.4.3.2.2]

13.4.3.2.2

Except for preaction systems covered by 13.4.3.2.5, every 3 years and whenever the system is altered, the preaction valve shall be trip tested with the control valve fully open.

Statement of Problem and Substantiation for Public Input

To provide the same criteria that is required for listed dry valves for dry pipe systems.

Submitter Information Verification

Submitter Full Name:	Jason Williams
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City:	
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Submittal Date:	Mon Jun 29 23:40:12 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: These actions are already covered by Table 13.11.1.

Public Input No. 158-NFPA 25-2020 [Section No. 13.4.3.2.6]

13.4.3.2.6

Preaction systems shall be tested once every 3 years for air leakage, using one of the following test methods:

(1) Perform a pressure test at 40 psi (3.2 bar) for ~~2 hours~~ 4 hours . The system shall be permitted to lose up to 3 psi (0.2 bar) during the duration of the test. Air leaks shall be addressed if the system loses more than 3 psi (0.2 bar) during this test.

(2) With the system at normal system pressure, shut off the air source (compressor or shop air) for 4 hours. If the low air pressure alarm goes off within this period, the air leaks shall be addressed.

Statement of Problem and Substantiation for Public Input

The 2019 edition of NFPA 13 (section 28.2.2) allows a maximum leak rate of 1.5 psi (0.1 bar) over 24 hours for acceptance testing of new dry pipe and preaction sprinkler systems. The 2020 edition of NFPA 25 allows a maximum leak rate of 36 psi over 24 hours, which represents an increase of 24X between the two standards. The previous NFPA 25 allowance (before the 2008 edition) allowed a 10 psi (0.7 bar) pressure loss per week, which is very similar to the current NFPA 13 allowance in terms of leak rate. The 10 psi leak rate over one week was abandoned due to the difficulty of ascertaining pressure loss rate during a time period when the automatic air supply would be expected to cycle on and off. There is no justification for allowing such a significant decline in system integrity to a water-based fire protection system. The recommended modification would allow an increase of 12X between NFPA 13 and NFPA 25, which would still accommodate an increased pressure loss rate for aging sprinkler systems.

Existing dry pipe and preaction sprinkler systems with excessive leak rates represent a liability to building owners for two (2) primary reasons:
1. Excessive leakage results in increased run frequency for the automatic gas source, which can cause the gas source to fail prematurely. This can be a costly repair for the owner.
2. Excessive leakage results in increased oxygen gas exposure inside system piping. Dry pipe and preaction sprinkler systems are already exposed to much higher corrosion rates compared to wet pipe systems because of the abundant oxygen supply from the gas source. An increased leak rate results in a greater volume of oxygen gas flow through the system, further accelerating the corrosion rate. It has been proven that corrosion and corrosion debris have a negative impact on system integrity and reliability.

Supporting material - FM Global Property Loss Prevention Data Sheet 2-1: Corrosion in Automatic Sprinkler Systems, which lists "Fix air leaks to keep system as tight as possible" in section 2.2.1.11.2 under Loss Prevention Recommendations for Dry-Pipe and Preaction Systems Not Using Nitrogen, and Deluge Systems.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 159-NFPA 25-2020 [Section No. 13.4.5.2.9]	

Submitter Information Verification

Submitter Full Name: Lucas Kirn

Organization: Engineered Corrosion Solutions

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City:
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Submittal Date: Wed Jun 24 12:06:53 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Insufficient evidence provided to support change. Current wording is adequate as a minimum standard.

Public Input No. 143-NFPA 25-2020 [New Section after 13.4.3.2.13]

New Section 13.4.3.2.14

13.4.3.2.14 In preaction systems where nitrogen is required by NFPA 13 as part of the system design, the nitrogen supply shall be tested semiannually to verify the nitrogen concentration is at 98% or greater.

13.4.3.2.14.1 Where the nitrogen concentration is monitored at a constantly attended location, the concentration shall be verified annually.

13.4.3.2.14.2 If nitrogen concentration is found to be below 98%, the cause of the low concentration shall be identified and corrected.

Statement of Problem and Substantiation for Public Input

If approved by NFPA 13, dry and preaction systems using nitrogen as a supervisory gas will be permitted to use a higher c-value for system design. When nitrogen is used as part of system design, routine verification of the nitrogen concentration should be required.

98% is the industry standard nitrogen concentration. If the concentration of found to be lower than 98%, it is important that the cause be identified and corrected.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 137-NFPA 25-2020 [Section No. 4.1.7.1]	Maintaining nitrogen supply
Public Input No. 138-NFPA 25-2020 [New Section after 5.2.9]	Nitrogen sign if required by NFPA 13
Public Input No. 144-NFPA 25-2020 [New Section after 13.4.5.2.9]	Nitrogen concentration in dry pipe systems
Public Input No. 137-NFPA 25-2020 [Section No. 4.1.7.1]	
Public Input No. 138-NFPA 25-2020 [New Section after 5.2.9]	
Public Input No. 144-NFPA 25-2020 [New Section after 13.4.5.2.9]	

Submitter Information Verification

Submitter Full Name: Jason Webb

Organization: Potter Electric Signal Company

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Zip:

Submittal Date: Thu Jun 18 16:02:39 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: This applies to specific systems and more detail needed with potential Annex explanatory information.

Public Input No. 214-NFPA 25-2020 [New Section after 13.4.3.2.13]

TITLE OF NEW CONTENT

13.4.3.2.14 When refilling a preaction system, the air/gas supply shall be capable of restoring normal air pressure in the system within 30 minutes.

Statement of Problem and Substantiation for Public Input

This section simply keeps the requirements in line with the requirements contained in NFPA 13 and consistent with the requirements of testing a dry valve contained in this standard.

Submitter Information Verification

Submitter Full Name: Jeff Lewis
Organization: VSC Fire & Security
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City:
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Submittal Date: Tue Jun 30 09:39:01 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: There is not a requirement for refill times in NFPA 13.

Public Input No. 216-NFPA 25-2020 [New Section after 13.4.3.2.13]

TITLE OF NEW CONTENT

13.4.3.2.15 The requirements of 13.4.3.2.14 shall not apply in refrigerated spaces maintained below 5 F (-15 C), where normal system air/gas pressure shall be permitted to be restored within 60 minutes.

Statement of Problem and Substantiation for Public Input

this keeps language consistent with the requirements contained in NFPA 13 and makes the preaction testing section more consistent with the dry valve testing required by this standard.

Submitter Information Verification

Submitter Full Name: Jeff Lewis
Organization: VSC Fire & Security
Street Address:
City:
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Zip:
Submittal Date: Tue Jun 30 09:45:10 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: There is not a requirement for refill times in NFPA 13.

Public Input No. 112-NFPA 25-2020 [Section No. 13.4.4.2.3]

13.4.4.2.3*

Except as provided by 13.4.4.2.3.1 and 13.4.4.2.3.2, each deluge valve shall be trip tested annually at full flow in the warm weather of late spring or early summer and in accordance with the manufacturer's instructions.

13.4.4.2.3.1*

Where the nature of the protected property is such that water cannot be discharged for test purposes, an annual trip test shall be permitted to be conducted in a manner that does not necessitate discharge in the protected area.

13.4.4.2.3.2

Where the nature of the protected property is such that water cannot be discharged unless protected equipment is shut down (e.g., energized electrical equipment), a full flow system test shall be conducted at the next scheduled shutdown.

13.4.4.2.3.3

For full flow tests in accordance with 13.4.4.2.3.2, the test frequency shall not exceed 3 years.

Statement of Problem and Substantiation for Public Input

Trip testing in the spring needs to be moved from the Annex into the body of the standard. Technicians perform full trip tests of deluge systems in 'warm weather' in October, November, December, and January because it is 'warm' that day, or for a few days. That is not the intent. Deluge systems cannot dry out in areas where freezing temperatures are experienced in September through March as they can if the system is full trip tested in April through June. Full trip testing in September through February promotes corrosion and freeze failures.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 113-NFPA 25-2020 [Section No. 13.4.5.2.2 [Excluding any Sub-Sections]]	Similar change for dry systems
Public Input No. 113-NFPA 25-2020 [Section No. 13.4.5.2.2 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 07 12:16:55 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Late spring and early summer are still vague and open to wide interpretation. Added information belongs in annex.

Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]

13.4.4.2.7.4

Where the hydraulically most remote nozzle or sprinkler is ~~inaccessible~~ <u>not capable of being reached for quick or easy replacement</u> , nozzles or sprinklers in other than foam-water sprinkler systems shall be permitted to be inspected visually without taking a pressure reading on the most remote nozzle or sprinkler.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 03 17:03:30 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Added wording changes the intent of just correcting “accessible.” Initial intent was not part of replacement.

Public Input No. 178-NFPA 25-2020 [Section No. 13.4.4.3.2]

13.4.4.3.2

During the annual trip test, the interior of the deluge valve shall be cleaned thoroughly ~~and the parts~~ . Internal and external trim parts and components shall be replaced or repaired as necessary.

13.4.4.3.2.1

Interior cleaning and internal 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 Input

The section does not address the external trim parts and components that also require maintenance. A differentiation needs to be made between the repair of internal and external parts and components so there isn't any misunderstanding.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 177-NFPA 25-2020 [Section No. 13.4.5.3.1]	Similar change to dry pipe valve maintenance.
Public Input No. 177-NFPA 25-2020 [Section No. 13.4.5.3.1]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 13:13:13 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-96-NFPA 25-2020

Statement: Revised wording clarifies that both internal and external parts are included.

Public Input No. 194-NFPA 25-2020 [Section No. 13.4.5.1.2]

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) 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.

Statement of Problem and Substantiation for Public Input

8.2.4.4 in NFPA 13 where a valve is installed in the connection between a dry pipe sprinkler riser and a quick-opening device, it shall be an indicating-type valve that is sealed, locked, or electrically supervised in the open position. This is to help gap the disconnect about the purpose of a seal and how and when it should be used on a dry valve trim assembly.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 22:48:06 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-97-NFPA 25-2020

Statement: Added wording matches NFPA 13 where valves are optional and only when installed valves must be sealed, locked, or electrically supervised.

Public Input No. 204-NFPA 25-2020 [New Section after 13.4.5.1.3]

13.4.5.1.3.1

Internal inspection of valves, that can be reset without removal of a faceplate and require no priming water on top of the clapper, shall be permitted to be conducted every 5 years.

Statement of Problem and Substantiation for Public Input

Mechanically the low-differential dry valves are no different than deluge valves listed for preaction closed dry pipe systems, and should be internally inspected at the same frequency.

Submitter Information Verification

Submitter Full Name:	Jason Williams
Organization:	American Fire Sprinkler Associ
Affiliation:	AFSA
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jun 29 23:50:30 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Dry pipe valves need to be inspected annually to ensure that there is no build-up of obstructive material or corrosion.

Public Input No. 22-NFPA 25-2020 [New Section after 13.4.5.1.3]

13.4.5.1.3.1

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 Input

This allowance for 5 year internal inspection of externally reset-able valves is already permitted for preaction and deluge valves. There are several dry pipe valves that have been in production for several years that are designed for external reset and 5 year internal inspection. Adding this section to the standard will clarify any misunderstandings with AHJs and property owners.

Submitter Information Verification

Submitter Full Name:	Curtis Jones
Organization:	Commercial Fire Protection, Inc.
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Fri Mar 13 21:09:18 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Dry pipe valves need to be inspected annually to ensure that there is no build-up of obstructive material or corrosion.

Public Input No. 248-NFPA 25-2020 [New Section after 13.4.5.1.3]

TITLE OF NEW CONTENT

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 Input

Preaction and deluge valve already have this allowance. Dry valves are no different physically and operationally. The trim might change but the internal of the valves are similar. The allowance should be the same among these three types of valves.

Submitter Information Verification

Submitter Full Name:	John Denhardt
Organization:	American Fire Sprinkler Association
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 30 11:23:57 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Dry pipe valves need to be inspected annually to ensure that there is no build-up of obstructive material or corrosion.

Public Input No. 288-NFPA 25-2020 [Section No. 13.4.5.1.3]

13.4.5.1.3

The interior of the dry pipe valve shall be inspected annually when the trip test is conducted.

<u>13.4.5.1.3.1 Internal inspection of valves that can be reset without removal of the faceplate shall be permitted to be conducted every 5 years.</u>

Statement of Problem and Substantiation for Public Input

The provisions of 13.4.4.1.2 for deluge valves and 13.4.3.1.2 for preaction valves extend the internal inspection frequency for these type valves with external reset to 5 years. As the valve bodies for these valves and the dry pipe valve are exactly the same, there is no reason not to extend the same allowance to dry pipe valves as well.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 16:13:46 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Dry pipe valves need to be inspected annually to ensure that there is no build-up of obstructive material or corrosion.

Public Input No. 113-NFPA 25-2020 [Section No. 13.4.5.2.2 [Excluding any Sub-Sections]]

Each dry pipe valve shall be trip tested annually during the warm weather in late spring .

Statement of Problem and Substantiation for Public Input

Trip testing in the spring needs to be moved from the Annex into the body of the standard. Technicians perform full trip tests of dry systems in 'warm weather' in October, November, December, and January because it is 'warm' that day, or for a few days. That is not the intent. Dry systems cannot dry out in areas where freezing temperatures are experienced in September through March as they can if the system is full trip tested in April through June. Full trip testing in September through February promotes corrosion and freeze failures.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 112-NFPA 25-2020 [Section No. 13.4.4.2.3]	similar change for deluge systems
Public Input No. 112-NFPA 25-2020 [Section No. 13.4.4.2.3]	

Submitter Information Verification

Submitter Full Name: Scott Futrell

Organization: Futrell Fire Consult & Design, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Sun Jun 07 12:26:10 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Late spring and early summer are still vague, restrictive and open to wide interpretation. Added information belongs in annex.

Public Input No. 212-NFPA 25-2020 [New Section after 13.4.5.2.2.2]

TITLE OF NEW CONTENT

13.4.5.2.2.1 When only the system is altered by replacing the dry valve between each full trip, the new valve shall only be required to be partially trip tested, through the inspector's test connection and with the quick opening device in service, if provided, and timed in comparison to the last acceptable full flow trip time of the prior dry valve operation.

Statement of Problem and Substantiation for Public Input

In the attempt to limit the amount of water introduced into normally dry piping , to help mitigate corrosion and freeze potential, I think it is logical to to be able to compare the new dry valve trip time to that of the previously installed dry valve. With that data a reasonable assessment can be determined of what the total delivery time would be with the new valve installed. By taking the new dry valve trip time and adding it to the prior water delivery travel time to the remote ITC, an assessment can be determined of what the total delivery time would be until the next scheduled full trip test.

Submitter Information Verification

Submitter Full Name: Jeff Lewis

Organization: VSC Fire & Security

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 09:20:41 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Wording is confusing and does not meet manual of style. When a valve is replaced it should be fully tested as this is not done very often.

Public Input No. 144-NFPA 25-2020 [New Section after 13.4.5.2.9]

New Section 13.4.5.2.10

13.4.5.2.10 In dry pipe systems where nitrogen is required by NFPA 13 as part of the system design, the nitrogen supply shall be tested semiannually to verify the nitrogen concentration is at 98% or greater.

13.4.5.2.10.1 Where the nitrogen concentration is monitored at a constantly attended location, the concentration shall be verified annually.

13.4.5.2.10.1 If nitrogen concentration is found to be below 98%, the cause of the low concentration shall be identified and corrected.

Statement of Problem and Substantiation for Public Input

If approved by NFPA 13, dry and preaction systems using nitrogen as a supervisory gas will be permitted to use a higher c-value for system design. When nitrogen is used as part of system design, routine verification of the nitrogen concentration should be required.

98% is the industry standard nitrogen concentration. If the concentration of found to be lower than 98%, it is important that the cause be identified and corrected.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 137-NFPA 25-2020 [Section No. 4.1.7.1]	Maintaining nitrogen supply
Public Input No. 138-NFPA 25-2020 [New Section after 5.2.9]	Nitrogen sign if required by NFPA 13
Public Input No. 143-NFPA 25-2020 [New Section after 13.4.3.2.13]	Nitrogen concentration in dry pipe systems
Public Input No. 137-NFPA 25-2020 [Section No. 4.1.7.1]	
Public Input No. 138-NFPA 25-2020 [New Section after 5.2.9]	
Public Input No. 143-NFPA 25-2020 [New Section after 13.4.3.2.13]	

Submitter Information Verification

Submitter Full Name: Jason Webb
Organization: Potter Electric Signal Company
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 18 16:21:18 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This applies to specific systems and more detail is needed with potential Annex explanatory information.

Public Input No. 159-NFPA 25-2020 [Section No. 13.4.5.2.9]

13.4.5.2.9

Dry pipe systems shall be tested once every 3 years for gas leakage, using one of the following test methods:

(1) A gas (air or nitrogen) pressure test at 40 psi (3.2 bar) shall be performed for ~~2 hours~~ 4 hours .

(2) The system shall be permitted to lose up to 3 psi (0.2 bar) during the duration of the test.

(3) Gas leaks shall be addressed if the system loses more than 3 psi (0.2 bar) during this test.

(4) With the system at normal system pressure, the gas source (nitrogen supply, compressor, or shop air) shall be shut off for 4 hours. If the low pressure alarm goes off within this period, the leaks shall be addressed.

Statement of Problem and Substantiation for Public Input

The 2019 edition of NFPA 13 (section 28.2.2) allows a maximum leak rate of 1.5 psi (0.1 bar) over 24 hours for acceptance testing of new dry pipe and preaction sprinkler systems. The 2020 edition of NFPA 25 allows a maximum leak rate of 36 psi over 24 hours, which represents an increase of 24X between the two standards. The previous NFPA 25 allowance (before the 2008 edition) allowed a 10 psi (0.7 bar) pressure loss per week, which is very similar to the current NFPA 13 allowance in terms of leak rate. The 10 psi leak rate over one week was abandoned due to the difficulty of ascertaining pressure loss rate during a time period when the automatic air supply would be expected to cycle on and off. There is no justification for allowing such a significant decline in system integrity to a water-based fire protection system. The recommended modification would allow an increase of 12X between NFPA 13 and NFPA 25, which would still accommodate an increased pressure loss rate for aging sprinkler systems.

Existing dry pipe and preaction sprinkler systems with excessive leak rates represent a liability to building owners for two (2) primary reasons:
1. Excessive leakage results in increased run frequency for the automatic gas source, which can cause the gas source to fail prematurely. This can be a costly repair for the owner and may result in the dry pipe valve tripping before the problem is identified.
2. Excessive leakage results in increased oxygen gas exposure inside system piping. Dry pipe and preaction sprinkler systems are already exposed to much higher corrosion rates compared to wet pipe systems because of the abundant oxygen supply from the gas source. An increased leak rate results in a greater volume of oxygen gas flow through the system, further accelerating the corrosion rate. It has been proven that corrosion and corrosion debris have a negative impact on system integrity and reliability.

Supporting material - FM Global Property Loss Prevention Data Sheet 2-1: Corrosion in Automatic Sprinkler Systems, which lists "Fix air leaks to keep system as tight as possible" in section 2.2.1.11.2 under Loss Prevention Recommendations for Dry-Pipe and Preaction Systems Not Using Nitrogen, and Deluge Systems.

Related Public Inputs for This Document

Related Input	Relationship

Public Input No. 158-NFPA 25-2020 [Section No. 13.4.3.2.6]	allowable pressure loss in dry pipe and preaction sprinkler systems

Submitter Information Verification

Submitter Full Name: Lucas Kirn
Organization: Engineered Corrosion Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 24 12:29:49 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Insufficient evidence provided to support change. Current wording is adequate as a minimum standard.

Public Input No. 177-NFPA 25-2020 [Section No. 13.4.5.3.1]

13.4.5.3.1

During the annual trip test, the interior of the dry pipe valve shall be cleaned thoroughly~~,~~ . Internal and external trim parts and components shall be replaced or repaired as necessary. Quick-opening devices shall be maintained in working order in accordance with manufacturer's requirements.

Statement of Problem and Substantiation for Public Input

Table 13.1.1.2 under maintenance refers to "Dry Pipe Valves / Quick-Opening Devices" in 13.4.5.3, but 13.4.5.3 does not mention external components or the referenced quick-opening device at all. Often quick-opening devices are tested and fail, but are not written as deficiencies and are not put back in service. Direction is necessary because 13.4.5.3 is silent on the external trim, components, and quick-opening devices that do all require maintenance. The section does not address the external trim parts and components that also require maintenance. A differentiation needs to be made between the repair of internal and external parts and components so there isn't any misunderstanding.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 178-NFPA 25-2020 [Section No. 13.4.4.3.2]	Similar modifications to the deluge valve and trim.
Public Input No. 178-NFPA 25-2020 [Section No. 13.4.4.3.2]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 13:04:58 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-98-NFPA 25-2020

Statement: Revised wording clarifies that both internal and external parts are included and recognizes the importance of keeping QOD's in service.

Public Input No. 252-NFPA 25-2020 [Section No. 13.5.6.2.2]

~~**13.5.6.2.2**~~ –

~~The inspection shall verify that 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.~~

Statement of Problem and Substantiation for Public Input

This is a design and installation issue. The inspector should not have to inspect installed and accepted equipment to confirm pressure ratings are sufficient.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jun 30 11:33:29 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: While installation is a design issue. The operation and adjustment of the device is a NFPA 25 issue as it is field adjustable, pressures can vary, and devices can fail.

Public Input No. 195-NFPA 25-2020 [New Section after 13.7.1.3]

13.7.1.3.1

Where an annual test is conducted of the assembly to verify adequate backflow prevention and the performance of a forward flow test per 13.7.2.1, the internal inspection requirement is satisfied.

Statement of Problem and Substantiation for Public Input

This will allow for the combination of the required forward flow and annual backflow test (backflow prevention) to meet the internal inspection requirement. There is no reason for the assembly to be dismantled if the system demand can be flowed through the backflow preventor and it meets its purpose of preventing back siphonage. Those two tests provide evidence that the internal components are working properly. I would also urge the committee to evaluate the need for section A.13.7.1.3 if this input is accepted.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 22:57:08 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Verifying the backflow functionality is not a requirement of NFPA 25. The internal inspection is necessary to verify that during forward flow of the backflow preventer did not collect debris or result in damage of the internal components.

Public Input No. 162-NFPA 25-2020 [Section No. 13.7.3]

13.7.3 Maintenance.

13.7.3.1 Maintenance of all backflow prevention assemblies shall be conducted by a qualified individual following the manufacturer's instructions in accordance with the procedure and policies of the authority having jurisdiction.

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

Statement of Problem and Substantiation for Public Input

This change clarifies the requirement for moving the backflow preventer from its seat on a quarterly basis and makes it a stand-alone requirement. The same requirement already exists in 13.5.4.2 for PRV's.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 160-NFPA 25-2020 [Section No. 13.2.3]	

Submitter Information Verification

Submitter Full Name:	Jason Webb
Organization:	Potter Electric Signal Company
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Thu Jun 25 11:51:45 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: If flow is through a BFA a main drain test is required quarterly which would perform the same function.

Public Input No. 269-NFPA 25-2020 [Section No. 13.7.3]

13.7.3 Maintenance.

Maintenance of all backflow prevention assemblies shall be conducted by a qualified ~~individual~~ person following the manufacturer's instructions in accordance with the procedure and policies of the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

changed individual to person to be consistent with the standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 268-NFPA 25-2020 [Section No. 8.3.7.1.2]	use of the word person as a consistent term within the standard

Submitter Information Verification

Submitter Full Name: Kenneth Schneider
Organization: Ua - Itf
Affiliation: United Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 14:16:09 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-99-NFPA 25-2020

Statement: Definition of qualified uses person(s). This is consistent with other uses throughout the standard.

Public Input No. 123-NFPA 25-2020 [Section No. 13.8]

13.8 Fire Department Connections.

13.8.1

Fire department connections shall be inspected quarterly to verify the following:

(1) Fire department connections are visible and accessible.

(2) Couplings or swivels are not damaged and rotate smoothly.

(3) Plugs or caps are in place and undamaged.

(4) Gaskets are in place.

(5) * Identification signs are in place and properly labeled .

(6) Check valve is not leaking.

(7) Automatic drain valve is in place and operating properly.

(8) Fire department connection clapper(s) is in place and operating properly.

(9) * Interior of the connection is inspected for obstructions.

(10) Visible piping supplying the fire department connection is undamaged.

13.8.2

Interior inspections shall be conducted annually if approved locking caps or locking plugs are installed.

13.8.3

Components shall be repaired or replaced as necessary in accordance with the manufacturer's instructions.

13.8.4

Any obstructions that are present shall be removed.

13.8.5

The piping from the fire department connection to the fire department check valve shall be hydrostatically tested at 150 psi (10 bar) for 2 hours at least once every 5 years.

Statement of Problem and Substantiation for Public Input

In many cases the incorrect ID plate is installed on the FDC, specifically when it relates to manual wet standpipe systems. Adding properly labeled to this section will assist in verifying the FDC is correctly labeled.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 247-NFPA 25-2020 [New Section after A.13.7.2.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 10 10:03:22 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This is a design issue and it would be difficult for the inspector to confirm the accuracy of the information.

Public Input No. 108-NFPA 25-2020 [Section No. 13.8.1]

13.8.1

Fire department connections shall be inspected quarterly to verify the following:

(1) Fire department connections are visible and ~~accessible~~ recognizable from the street or nearest point of fire department vehicle access and have immediate access at all times without obstructions by fences, bushes, trees, walls or any other fixed or moveable object .

(2) Couplings or swivels are not damaged and rotate smoothly.

(3) Plugs or caps are in place and undamaged.

(4) Gaskets are in place.

(5) Identification signs are in place.

(6) Check valve is not leaking.

(7) Automatic drain valve is in place and operating properly.

(8) Fire department connection clapper(s) is in place and operating properly.

(9) * Interior of the connection is inspected for obstructions.

(10) Visible piping supplying the fire department connection is undamaged.

Statement of Problem and Substantiation for Public Input

The term accessible has several different meanings and is not clearly defined in any NFPA document. Replacing the word accessible with clearly written language will correct this issue.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	
Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]	
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]	
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]	
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]	
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]	
Public Input No. 76-NFPA 25-2020 [Section No. 4.1.3]	
Public Input No. 77-NFPA 25-2020 [Section No. 5.2.1.1.4]	
Public Input No. 78-NFPA 25-2020 [Section No. 5.2.2.4]	
Public Input No. 79-NFPA 25-2020 [Section No. 5.2.3.4]	
Public Input No. 80-NFPA 25-2020 [Section No. 7.2.2.1.3]	
Public Input No. 81-NFPA 25-2020 [Section No. 10.2.1.1]	

Public Input No. 82-NFPA 25-2020 [Section No. 10.2.1.3]
Public Input No. 83-NFPA 25-2020 [Section No. 10.3.3.4.3.1]
Public Input No. 84-NFPA 25-2020 [Section No. 13.2.2]
Public Input No. 85-NFPA 25-2020 [Section No. 13.3.2.2]
Public Input No. 107-NFPA 25-2020 [Section No. 13.4.4.2.7.4]

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jun 03 17:08:29 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Added wording changes the intent of just correcting “accessible.” Initial intent was not part of replacement.

Public Input No. 191-NFPA 25-2020 [Section No. 13.8.1]

13.8.1

Fire department connections shall be inspected quarterly to verify the following:

(1) Fire department connections are visible and accessible.

(2) Couplings or swivels are not damaged and rotate smoothly.

(3) Plugs or caps are in place and undamaged.

~~Gaskets~~

(1) Identification signs are in place.

~~Identification signs are~~

(1) Automatic drain valve is in place and operating properly .

(2) Check valve is not leaking.

~~Automatic drain valve is~~

(1) Gaskets are in place

~~and operating properly~~

(1) .

(2) Fire department connection clapper(s) is in place and operating properly.

(3) * Interior of the connection is inspected for obstructions.

(4) * Visible piping supplying

~~the fire~~

(1) a stand alone fire department connection is undamaged and in place .

Statement of Problem and Substantiation for Public Input

Items for the quarterly were rearranged in order from external checks to interior checks, to lead up to section 13.8.2. Number 10 was edited to stand-alone/yard FDCs, typical interior FDC are inside and protected from the outside elements and potential to external damage. Interior piping for FDCs should line with all other pipe and fittings for sprinkler and standpipe. Preview distorted the intent of the changes, an additional view provided below.

13.8.1

Fire department connections shall be inspected quarterly to verify the following:

1. Fire department connections are visible and accessible.
2. Couplings or swivels are not damaged and rotate smoothly.
3. Plugs or caps are in place and undamaged.
4. Identification signs are in place.
5. Automatic drain valve is in place and operating properly.
6. Check valve is not leaking.
7. Gaskets are in place.
8. Fire department connection clapper(s) is in place and operating properly.

9. *Interior of the connection is inspected for obstructions.
10. *Visible piping supplying a stand-alone/yard fire department connection is undamaged and in place.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 192-NFPA 25-2020 [Section No. 13.8.2]	

Submitter Information Verification

Submitter Full Name: Jason Williams
Organization: American Fire Sprinkler Associ
Affiliation: AFSA
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 29 21:48:15 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: There is no need to rearrange the list and change to number 10 is not necessary. It is important to inspect all visible FDC's and piping.

Public Input No. 192-NFPA 25-2020 [Section No. 13.8.2]

13.8.2

Interior inspections shall be conducted ~~annually if~~ every 5 years if approved locking caps or locking plugs are installed.

Statement of Problem and Substantiation for Public Input

By installing a locking cap or plug we remove the most common deficiency due to the tampering aspect of failure and limits it to mechanical issues, which is much less common and would fall in line with other mechanical 5-year inspections.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 191-NFPA 25-2020 [Section No. 13.8.1]	Section 13.8

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 22:03:29 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Insufficient justification for change.

Public Input No. 103-NFPA 25-2020 [New Section after 13.8.5]

TITLE OF NEW CONTENT

13.8.6 Check valves shall be inspected internally in accordance with 13.4.2.1

Statement of Problem and Substantiation for Public Input

Many times, the FDC check valve is buried and typically not inspected because it is not easily accessible. This adds clarification that the FDC is required to be inspected every 5 years.

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 03 16:26:50 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-131-NFPA 25-2020

Statement: Clarifies check valve in the FDC will get internally inspected.

Public Input No. 226-NFPA 25-2020 [Section No. 13.8.5]

13.8.5*

The piping from the fire department connection to the fire department check valve shall be hydrostatically tested at 150 psi (10 bar) for 2 hours at least once every 5 years.

13.8.5.1* Acceptable test results shall be determined by indication of either a pressure loss less than gauge pressure of 5 psi or by no visual leakage.

13.8.5.2* When the fire department connection check valve is inaccessible, the piping shall be hydrostatically tested at 5 psi below the normal system pressure that exists on the system side of the check valve for 2 hours.

13.8.5.2.1 Acceptable test results shall be determined by indication of a pressure loss less than gauge pressure of 5 psi.

Statement of Problem and Substantiation for Public Input

The current language in 13.8.5 doesn't provide the pass/fail criteria or address an acceptable leakage rate for this test. It's unreasonable to think there won't be some minor leakage during the test. Adding the pass/fail criteria for the test along with annex text explaining that some leakage is anticipated, especially for the FDC piping that is either concealed and can't be visually examined, or when buried, allows for an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 230-NFPA 25-2020 [New Section after A.13.10.3(2)]	New related annex text
Public Input No. 232-NFPA 25-2020 [New Section after A.13.8.1(9)]	New related annex text
Public Input No. 238-NFPA 25-2020 [New Section after A.13.8.1(9)]	New related annex text
Public Input No. 230-NFPA 25-2020 [New Section after A.13.10.3(2)]	
Public Input No. 232-NFPA 25-2020 [New Section after A.13.8.1(9)]	
Public Input No. 238-NFPA 25-2020 [New Section after A.13.8.1(9)]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:13:03 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-100-NFPA 25-2020

Statement: The committee agrees that there should be pass fail criteria but does not agree to testing at 5 psi less than system pressure.

Public Input No. 253-NFPA 25-2020 [Section No. 13.8.5]

13.8.5

The piping from the fire department connection to the fire department check valve shall be hydrostatically tested at 150 psi (10 bar) for 2 hours at least once every 5 years. For exposed piping, no visibale leakage is allowed and drop in gauge pressure does not represent a failure. For cocealed piping, a drop of gauge pressure over 50 psi shall be considered a failure.

Statement of Problem and Substantiation for Public Input

Pass/fail criteria needs to be given to determine if the system is acceptable. I am open to changing my suggestions but criteria needs to be stated.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 11:40:42 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-100-NFPA 25-2020

Statement: The committee agrees that there should be pass fail criteria but does not agree to testing at 5 psi less than system pressure.

Public Input No. 136-NFPA 25-2020 [Section No. 14.2.1.4]

14.2.1.4*

If the presence of ~~sufficient~~ foreign organic or inorganic material is found to obstruct pipe or sprinklers, an obstruction investigation shall be conducted as described in Section 14.3.

Statement of Problem and Substantiation for Public Input

The term sufficient is subjective, not defined, and not quantifiable. The presence of rust, scale, and sediment in any amount is a concern for blockages that can adversely affect the operation of the sprinkler system in fire and non-fire conditions, plugging sprinklers and piping. A small amount of this organic or inorganic material near the supply piping for the system is pushed to the ends of the system where it accumulates in larger quantities.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 110-NFPA 25-2020 [Section No. 14.3.1]	Similar modification removing the term 'sufficient'.
Public Input No. 110-NFPA 25-2020 [Section No. 14.3.1]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 13 09:30:21 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-103-NFPA 25-2020

Statement: Wording helps clarify when and obstruction investigation is required and removes unenforceable language.

Public Input No. 109-NFPA 25-2020 [Section No. 14.3.1]

14.3.1*

An obstruction investigation shall be ~~conducted~~ recommended to the owner in writing to 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) The discharge of obstructive material during routine water tests

(3) Foreign materials in fire pumps, in dry pipe valves, or in check valves

(4) Foreign material in water during drain tests or plugging of inspector's test connection(s)

(5) Unknown materials are heard in the system piping during draining, refilling, or otherwise flowing water through the system

(6) Plugged sprinklers

(7) The presence of sufficient foreign organic or inorganic material is found in the pipe

(8) Failure to flush yard piping or surrounding public mains following new installations or repairs

(9) A record of broken public mains in the vicinity

(10) Abnormally frequent false tripping of a dry pipe valve(s)

(11) A system that is returned to service after an extended shutdown (greater than 1 year)

(12) There is reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems

(13) A system has been supplied with raw water via the fire department connection

(14) Pinhole leaks

(15) A 50 percent increase in the time it takes water to travel to the inspector's test connection from the time the valve trips during a full flow trip test of a dry pipe sprinkler system when compared to the original system acceptance test

Statement of Problem and Substantiation for Public Input

The standard does not state that the contractor is required to tell the owner when they find these conditions. This is very important because finding these conditions, observation of these conditions, needs to be clearly and thoroughly reported to the owner and if the standard does not make that reporting mandatory the owner will not be aware of the potential seriousness of these conditions.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 110-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this sections condition list, clarifying a condition. And corrosion and internal investigation
Public Input No. 111-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this section condition list, adding a condition. And corrosion and internal investigation
Public Input No. 135-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this sections condition list, modifying a condition. And corrosion and internal investigation
Public Input No. 110-NFPA 25-2020 [Section No. 14.3.1]	

Public Input No. 111-NFPA 25-2020 [Section No. 14.3.1]

Public Input No. 135-NFPA 25-2020 [Section No. 14.3.1]

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 07 09:05:57 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-104-NFPA 25-2020

Statement: Wording modified to better indicate intent of “sufficient” and clarify conditions that would trigger further action.

Public Input No. 110-NFPA 25-2020 [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) The discharge of obstructive material during routine water tests

(3) Foreign materials in fire pumps, in dry pipe valves, or in check valves

(4) Foreign material in water during drain tests or plugging of inspector's test connection(s)

(5) Unknown materials are heard in the system piping during draining, refilling, or otherwise flowing water through the system

(6) Plugged sprinklers

(7) The presence of ~~sufficient~~ foreign organic or inorganic material is found in the pipe

(8) Failure to flush yard piping or surrounding public mains following new installations or repairs

(9) A record of broken public mains in the vicinity

(10) Abnormally frequent false tripping of a dry pipe valve(s)

(11) A system that is returned to service after an extended shutdown (greater than 1 year)

(12) There is reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems

(13) A system has been supplied with raw water via the fire department connection

(14) Pinhole leaks

(15) A 50 percent increase in the time it takes water to travel to the inspector's test connection from the time the valve trips during a full flow trip test of a dry pipe sprinkler system when compared to the original system acceptance test

Statement of Problem and Substantiation for Public Input

The term sufficient is subjective, not defined, and not quantifiable. The presence of rust, scale, and sediment in any amount is a concern for blockages that can adversely affect the operation of the sprinkler system in fire and non-fire conditions, plugging sprinklers and piping. A small amount of this organic or inorganic material near the supply piping for the system is pushed to the ends of the system where it accumulates in larger quantities.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 109-NFPA 25-2020 [Section No. 14.3.1]	Modification of the section. And corrosion and internal investigation
Public Input No. 136-NFPA 25-2020 [Section No. 14.2.1.4]	Similar modification removing the term 'sufficient'.
Public Input No. 111-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this section condition list, adding a condition. And corrosion and internal investigation

Public Input No. 135-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this sections condition list, modifying a condition. And corrosion and internal investigation.
Public Input No. 109-NFPA 25-2020 [Section No. 14.3.1]	
Public Input No. 111-NFPA 25-2020 [Section No. 14.3.1]	
Public Input No. 135-NFPA 25-2020 [Section No. 14.3.1]	
Public Input No. 136-NFPA 25-2020 [Section No. 14.2.1.4]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 07 09:16:24 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-104-NFPA 25-2020
Statement: Wording modified to better indicate intent of “sufficient” and clarify conditions that would trigger further action.

Public Input No. 111-NFPA 25-2020 [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) The discharge of obstructive material during routine water tests

(3) Foreign materials in fire pumps, in dry pipe valves, or in check valves

(4) Foreign material in water during drain tests or plugging of inspector's test connection(s)

(5) Unknown materials are heard in the system piping during draining, refilling, or otherwise flowing water through the system

(6) Plugged sprinklers

(7) The presence of sufficient foreign organic or inorganic material is found in the pipe

(8) Failure to flush yard piping or surrounding public mains following new installations or repairs

(9) A record of broken public mains in the vicinity

(10) Abnormally frequent false tripping of a dry pipe valve(s)

(11) A system that is returned to service after an extended shutdown (greater than 1 year)

(12) There is reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems

(13) A system has been supplied with raw water via the fire department connection

(14) Pinhole leaks

(15) A 50 percent increase in the time it takes water to travel to the inspector's test connection from the time the valve trips during a full flow trip test of a dry pipe sprinkler system when compared to the original system acceptance test

(16) Observation of the deterioration of the end of steel piping at grooved couplings or threaded fittings

Statement of Problem and Substantiation for Public Input

Observation of the corrosion of the ends of steel piping when removed from grooved couplings or fittings is indicative of the corrosion related failures that lead to excessive air compressor operation in dry systems and additional related leaks in dry pipe systems. The observable corrosion of the ends of the piping means that rust, scale and sediment is also within the piping system and requires additional investigation. This rust, scale, and sediment leads to fire and non-fire related system failures.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 109-NFPA 25-2020 [Section No. 14.3.1]	modification to section removing term 'sufficient'. And corrosion and internal investigation
Public Input No. 110-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this sections condition list. And corrosion and internal investigation

Public Input No. 135-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this sections condition list Modifying #14 changing pinhole leak. And corrosion and internal investigation.
Public Input No. 109-NFPA 25-2020 [Section No. 14.3.1]	
Public Input No. 110-NFPA 25-2020 [Section No. 14.3.1]	
Public Input No. 135-NFPA 25-2020 [Section No. 14.3.1]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 07 09:22:05 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-104-NFPA 25-2020
Statement: Wording modified to better indicate intent of "sufficient" and clarify conditions that would trigger further action.

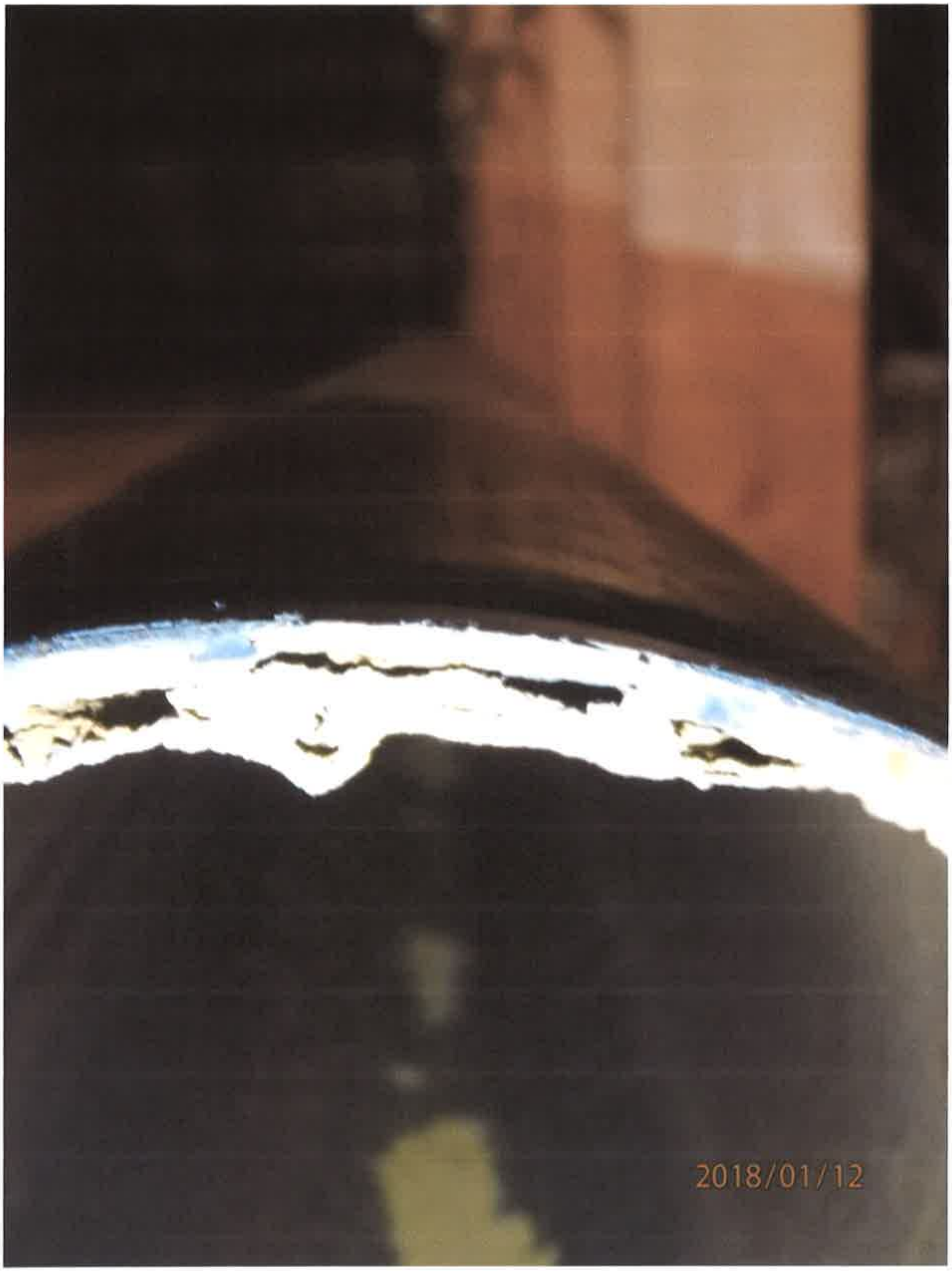

2019/05/30


2015/05/04


2015/05/04


2013/12/16


2013/12/16


2018/01/12

Public Input No. 135-NFPA 25-2020 [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) The discharge of obstructive material during routine water tests

(3) Foreign materials in fire pumps, in dry pipe valves, or in check valves

(4) Foreign material in water during drain tests or plugging of inspector's test connection(s)

(5) Unknown materials are heard in the system piping during draining, refilling, or otherwise flowing water through the system

(6) Plugged sprinklers

(7) The presence of sufficient foreign organic or inorganic material is found in the pipe

(8) Failure to flush yard piping or surrounding public mains following new installations or repairs

(9) A record of broken public mains in the vicinity

(10) Abnormally frequent false tripping of a dry pipe valve(s)

(11) A system that is returned to service after an extended shutdown (greater than 1 year)

(12) There is reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems

(13) A system has been supplied with raw water via the fire department connection

(14) ~~Pinhole leaks~~ Leaks in steel piping (e.g. pinhole, holes, pipe splits)

(15) A 50 percent increase in the time it takes water to travel to the inspector's test connection from the time the valve trips during a full flow trip test of a dry pipe sprinkler system when compared to the original system acceptance test

Statement of Problem and Substantiation for Public Input

The use of the word pinhole is now not being used in contractor reports. They write the word leaks to avoid the obstruction investigation that is mandated by the use of the word pinhole. Any leak in a steel pipe that is associated with corrosion needs to be investigated, but if we write corrosion related leaks someone will say they don't know it is corrosion. So, more generic terms to capture all leaks and start the obstruction investigation are required. Any leak, that turns out to be corrosion related, adds rust, scale, sediment, and sludge to the pipe that can result in system failures in fire and non-fire conditions.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 111-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this section condition list, adding a condition. And corrosion and internal investigation.
Public Input No. 110-NFPA 25-2020 [Section No. 14.3.1]	Additional change to this sections condition list, clarifying a condition. And corrosion and internal investigation.
Public Input No. 109-NFPA 25-2020 [Section No. 14.3.1]	Modification of the section. And corrosion and internal investigation.

Public Input No. 109-NFPA 25-2020 [Section No. 14.3.1]

Public Input No. 110-NFPA 25-2020 [Section No. 14.3.1]

Public Input No. 111-NFPA 25-2020 [Section No. 14.3.1]

Submitter Information Verification

Submitter Full Name:	Scott Futrell
Organization:	Futrell Fire Consult & Design, Inc.
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Sat Jun 13 09:06:17 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution:	FR-104-NFPA 25-2020
Statement:	Wording modified to better indicate intent of “sufficient” and clarify conditions that would trigger further action.

Public Input No. 114-NFPA 25-2020 [Section No. 14.3.2.2]

14.3.2.2*

Internal examination shall be performed at the following minimum ~~four~~ five points:

(1) System dry, preaction, or deluge valve

(2) ~~Riser~~

(3) Cross main - most remote end of remote cross main

(4) Branch line adjacent to most remote line at connection to cross main

(5) Branch line adjacent to most remote line at end of branch line

(6) Branch line piping directly connected to the most remote low point drain

Statement of Problem and Substantiation for Public Input

1 - "System valve" is not defined and a control valve would not be a reasonable location to investigate corrosion. Corrosion, rust, scale, or sediment draining back to dry, preaction, and deluge valves is a reasonable location to investigate. 2 - "Riser" is not a reasonable location as it is one of the least likely to experience corrosion. Additionally, technicians are known to separate the riser at its connection with the dry, preaction, or deluge valve because it is convenient. The remote end of the most remote cross main must be specified to investigate one of the areas that corrosion, rust, scale, and sediment is likely to be found. The end of a cross main nearest the supply is the least likely location. 3 - Often the remote branch line is an inspector test connection line and if it plugs the investigation is required. Looking at the adjacent branch line is a more likely area of the system where corrosion, rust, scale, and sediment is likely to be found. Investigating the connection between the branch line and the cross main is a location that corrosion, rust, scale, and sediment is often found. 4 - The end of the adjacent to remote branch line is also a likely location for corrosion, rusty, scale, and sediment to be pushed by the water from system operation or full trip testing. Verifying the end and the connection of this line gives a good indication of the extent of corrosion, rust, scale, and sediment in the system. 5 - The piping to low point drains often captures the corrosion, rust, scale, and sediment and is a very likely location for this to accumulate during operation of the system, full trip testing, or drainage of moisture to the low point drain.

Submitter Information Verification

Submitter Full Name: Scott Futrell

Organization: Futrell Fire Consult & Design, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Sun Jun 07 12:39:10 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Added wording does not clarify added testing. Wording left vague with annex wording to allow more judgement.

Public Input No. 166-NFPA 25-2020 [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.

~~1~~

2 When nitrogen is used as a supervisory gas and the nitrogen concentration has been maintained at 98% or higher since the previous internal inspection, the frequency of the internal inspection for ice obstructions shall be 3 years.

14.4.3

Alternative nondestructive examinations shall be permitted.

14.4.~~2~~ 4

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.

Statement of Problem and Substantiation for Public Input

Using nitrogen as a supervisory gas in these systems dramatically reduces the risk of ice plugs developing. Annual inspections can actually increase the risk due to the gas in the system being lost during the inspection.

Submitter Information Verification

Submitter Full Name: Jason Webb

Organization: Potter Electric Signal Company

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 25 14:33:30 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: There is insufficient information that nitrogen generators prevent ice plugs.

Public Input No. 11-NFPA 25-2020 [Section No. 15.3.1]

15.3.1*

A tag shall be used to indicate that a system, or part thereof, has been removed from service.

**the impairment manager shall make notification to the AHJ of the listed impairments.*

Statement of Problem and Substantiation for Public Input

Coordination between impairment mangers(building maintenance, etc...) and the AHJ allowing better notification to the responsible fire department during times that systems are impaired or completely down.

Submitter Information Verification

Submitter Full Name:	Mathew Winters
Organization:	Huntington Fire Dept
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jan 15 13:01:11 EST 2020
Committee:	INM-AAA

Committee Statement

Resolution: The intent was unclear and added wording is covered in 15.5.2(5).

Public Input No. 242-NFPA 25-2020 [Section No. A.1.1.3.1]

A.1.1.3.1

The requirement to evaluate the adequacy or accuracy of the design or installation of the ~~installed~~ 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, 4.1.7, and the Hazard Evaluation Form in Annex E.

Statement of Problem and Substantiation for Public Input

There is still confusion about the role of the inspector and what is expected during a periodic inspection and/or test. The current statement in section 1.1.3.1 has been in NFPA 25 since the 2011 edition and the technical committee understands that it's also to be applied to the accuracy of the design and installation. The expectation is that the system was designed and installed correctly and both the design and the installation were approved in accordance with the applicable standard at the time of installation. However, since the installation isn't specifically mentioned in this section, many building owners believe the inspector is looking at the installed system for compliance to the installation standard. The proposed change should clear up remaining misconceptions about the role of the inspector performing inspections and tests per NFPA 25.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 240-NFPA 25-2020 [Section No. 1.1.3.1]	Revised annex text to this revised section

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:57:47 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-38-NFPA 25-2020

Statement: The addition of accuracy or installation added to the annex further clarifies that the inspector is not responsible for the design or installation.

Public Input No. 4-NFPA 25-2019 [New Section after A.3.3.8]

Add to Table A.3.3.8 Chapter 5:

Item	Impairment	Finding Critical Deficiency	Non Critical Deficiency	Reference
All Sprinklers Standard Response		Recalled or Part of a Replacement Program	X	5.2.1.1.1(7)
All Sprinklers Fast Resonse or Residential		Recalled or Part of a Replacement Program	X	5.2.1.1.1(7)

Add to Table A.3.3.8 Chapter 13

Item	Impairment	Finding Critical Deficiency	Non Critical Deficiency	Reference
Any Valve, Valve Component or Trim		Recalled or Part of a Replacement Program	X	13.2.1.1

Statement of Problem and Substantiation for Public Input

Adding these items to the Table A.3.3.8 provides direction for ITM personnel when advising the owner or owner's representative of the problem associated with recalled products.
Leaving this requirement in Chapter 4 (only) does not provide specific matter of findings for the reporting process.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3-NFPA 25-2019 [New Section after 13.2.1]	
Public Input No. 2-NFPA 25-2019 [Section No. 5.2.1.1.1]	

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life safety America
Affiliation: NFPA 13 Installation Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Dec 04 17:41:58 EST 2019

Committee: INM-AAA

Committee Statement

Resolution: 4.1.5.1.1 simply requires the inspector to notify the owner if a component or equipment under recall or replacement program is discovered. It is not a part of the inspection scope and it is inappropriate for a classification of the finding to be assigned. The corrective action falls under the requirements associated with the recall or replacement program.

Public Input No. 167-NFPA 25-2020 [Section No. A.3.3.8]

A.3.3.8 ~~Deficiency~~ Classifying Conditions .

~~Depending on the nature and significance of the deficiency, it can result in a system impairment. Critical deficiencies will adversely impact performance but without the need for the implementing impairment procedures. Noncritical deficiencies have the potential to impact performance.~~

~~Table A.3.3.8 provides examples for classifying conditions needing repair or correction that are identified during the inspection, testing, and maintenance of water-based suppression systems. The conditions are~~ While conducting inspections and tests, various abnormalities or conditions may be encountered. Abnormalities or conditions requiring correction are classified as an impairment, critical deficiency, or noncritical deficiency. The ~~table is not all-inclusive but is included to~~ classification is used to provide guidance in responding to these conditions. For example, an impairment should be addressed promptly by either immediately correcting the condition or implementing the impairment procedures found in Chapter 15. Critical and noncritical deficiencies should be corrected as soon as practical after considering the nature and severity of the risk. It should be noted that many jurisdictions have requirements for the timely correction of impairments and/or deficiencies.

~~Table A.3.3.8 Water-Based Fire Protection System Inspection and Testing Findings~~

~~Item Finding Reference Impairment Critical Deficiency Noncritical Deficiency **Chapter 5: Sprinkler Systems — Inspection** - - - - All sprinklers Leaking — spraying or running water 5.2.1.1.1 X - - All sprinklers Leaking — dripping water 5.2.1.1.1 - X - All sprinklers Foreign material attached or suspended from 5.2.1.1.1 X - - All sprinklers Minimum clearance to storage not maintained 5.2.1.2 - X - All sprinklers Lightly loaded 5.2.1.1.1 - - X Standard-response sprinklers in nonresidential occupancies One sprinkler and less than 50% of sprinklers in compartment is heavily loaded or corroded; painted operating element, bulb, deflector, or coverplate; improper orientation; glass bulb has lost fluid; damaged 5.2.1.1.1 - X - Standard-response sprinklers in nonresidential occupancies Two or more sprinklers in compartment are heavily loaded or corroded; painted operating element, bulb, deflector, or coverplate; improper orientation; glass bulb has lost fluid; damaged 5.2.1.1.1 X - - Fast-response element, quick-response, electrically operated, residential sprinklers and standard-response in residential occupancies One or more sprinklers heavily loaded or corroded; painted operating element, bulb, deflector, or coverplate; improper orientation; glass bulb has lost fluid; damaged 5.2.1.1.1 X - - Coverplates Concealed sprinkler coverplates caulked or glued to ceiling 5.2.1.1.1 X - - Escutcheons and coverplates Missing recessed or flush escutcheons, concealed coverplate with deflector and operating element in correct position 5.2.1.1.5 - - X Escutcheons and coverplates Missing recessed or flush escutcheons, concealed coverplate with deflector and operating element not in correct position 5.2.1.1.5 X - - Escutcheons Recessed or flush escutcheons caulked or glued to ceiling 5.2.1.1.1 - X - Spare sprinkler cabinet Cabinet missing, temperature, above maximum permitted, not proper number and type, missing wrench for each type 5.2.1.4 Table 5.4.1.5.2 - X Pipe and fittings Leaking — slowly dripping and/or moisture on surface 5.2.2.1 - X - Pipe and fittings Leaking — spraying or running water 5.2.2.1 X - - Pipe and fittings Critical mechanical damage 5.2.2.1 - X - Hangers and seismic braces Loose 5.2.3.2 - - X Hangers and seismic braces Damaged or unattached 5.2.3.2 - X - Gauges Not operating or damaged 13.2.5.1.1 - - X Gauges Not showing normal water/air pressure 13.2.5.1.2, 13.7.5.1.3 - X - Gauges Freezer — system pressure lower than compressor 13.2.5.1.4 X - - Alarm devices Physical damage 5.2.4 - - X Hydraulic design information sign Not attached properly, illegible or missing 5.2.5 - - X Information sign Not attached, illegible, or missing 5.2.7 - - X General information sign Not attached, illegible, or missing 5.2.8 - - X Antifreeze information sign Not attached, illegible, or missing 5.2.9 - - X Heat tape Not in accordance with manufacturer's instructions 5.2.6 - X - **Chapter 5: Sprinkler Systems — Testing** - - - - Gauges Not replaced or calibrated in 5 years, not accurate within 3% of scale 13.2.5.2/13.2.5.3 - - X Alarm devices Water motor and gong not functioning 5.3.3.1 - X - Alarm devices Pressure-switch- or vane-type switch not functioning or no alarm 5.3.3.2 - X - Antifreeze systems Mixture and concentration does not meet requirements of 5.3.3.4.1 and 5.3.3(1)(a) 5.3.4 - X - Antifreeze systems Concentration is inadequate to prevent freezing Table A.5.3.4.4.1(1), 5.3.4.2.1, and Figure A.5.3.4 X - - Main drain More than 10% drop in full flow pressure 13.2.3.3 - X - Assessment of internal condition Assessment revealed presence of MIC, zebra mussels, rust, or scale 14.2.1 - X - Sprinklers Sprinkler(s) fail laboratory testing 5.3.1 X X - **Chapter 6: Standpipe and Hose Systems — Inspection** - - - - Pipe and fittings Leaking — slowly~~

~~dripping and/or moisture on surface 6.2.4 - X - Pipe and fittings Leaking — spraying or running water 6.2.4 X - - Pipe and fittings Critical mechanical damage 6.2.4 - X - Hangers and supports Damaged or missing 6.2.4 - X - Hose Cuts, couplings not of compatible threads 6.2.5, NFPA 1962 - X - Hose Deterioration, no gasket or damaged gaskets 6.2.5, NFPA 1962 - X - Hose Mildew present, corrosion present, hose not connected 6.2.5, NFPA 1962 - - X Hose nozzle Missing, broken parts or thread gasket damaged 6.2.6, NFPA 1962 - X - Hose storage Hose not properly racked or rolled, nozzle clip missing, nozzle not contained, damaged, obstructed 6.2.7, NFPA 1962 - X - Cabinet Corroded or damaged parts, not easy to open, not accessible, not identified, door glazing in poor condition, lock not functioning in break glass type, valve, hose nozzle, fire extinguisher, etc.; not readily accessible 6.2.8, NFPA 1962 - X - Hydraulic design information sign Missing 6.2.2 - - X~~ ~~**Chapter 6: Standpipe and Hose Systems — Testing**~~ ~~- - - - Hose storage device Rack will not swing out of cabinet at least 90 degrees 6.2.7, NFPA 1962 - - X Standpipe system Test results did not provide design pressure at required flow 6.3.1 - X - Hydrostatic test of manual and semiautomatic dry standpipe systems Leakage in inside piping 6.3.2.1 - - X Main drain More than 10% drop in full flow pressure 13.2.3.3 - X - Assessment of internal condition Assessment revealed presence of MIC, zebra mussels, rust, or scale 14.2.1 - X -~~ ~~**Chapter 7: Private Fire Service Mains — Inspection**~~ ~~- - - - Exposed piping Leaking — slowly dripping, and/or moisture on surface 7.2.2.1.2 - X - Exposed piping Leaking — spraying or running water 7.2.2.1.2 X - - Exposed piping Mechanical damage, corroded, not properly restrained 7.2.2.1.2 - X - Mainline strainers Plugged, fouled 7.2.2.3.2 X - - Mainline strainers Corroded 7.2.2.3.2 - X - Dry barrel, wet barrel, and wall hydrant Inaccessible, barrel contains ice, cracks in barrel 7.2.2.4, 7.2.2.5 X - - Dry barrel, wet barrel, and wall hydrant Barrel contains water, improper drainage from barrel, leaks at outlets or top of hydrant 7.2.2.4, 7.2.2.5 - X - Dry barrel, wet barrel, and wall hydrant Tightness of outlets, worn nozzle threads, worn operating nut, missing wrench 7.2.2.4, 7.2.2.5 - - X Monitor nozzles Damaged, corroded, leaking 7.2.2.7 - X - Hose/hydrant houses Inaccessible 7.2.2.8 X - - Hose/hydrant houses Damaged 7.2.2.8 - X - Hose/hydrant houses Not fully equipped 7.2.2.8 - - X~~ ~~**Chapter 7: Private Fire Service Mains — Testing**~~ ~~- - - - Underground and exposed piping Test results show deterioration in water supply when compared to previous results 7.3.1.1 - X - Dry barrel and wall hydrant Hydrant did not flow clear or did not drain within 60 minutes 7.3.2.1, 7.3.2.4 - - X Monitor nozzles Did not flow acceptable amount of water, did not operate throughout their full range 7.3.3 - X -~~ ~~**Chapter 8: Fire Pumps — Inspection**~~ ~~- - - - Pump house/room Ventilating louvers not free to operate 8.2.2(1)(c) - X - Pump house/room Heat not adequate, temperature less than 40°F (4°C) 8.2.2(1)(a) X - - Pump house/room Heat not adequate, temperature less than 70°F (21°C) for diesel pumps without engine heaters 8.2.2(1)(b) X - - Pump house/room Heat not adequate, temperature less than 40°F (4°C), not as recommended by the engine manufacturer, for diesel pumps with engine heaters 8.2.2(1)(a) and (b) X - - Pump house/room Excessive water on floor 8.2.2(1)(d) - X - Pump house/room Coupling guard not in place 8.2.2(1)(e) - X - Pump system Suction, discharge, or bypass valves not fully open, pipe leaking, suction line and system line pressure not normal, wet pit suction screens obstructed 8.2.2(2)(a–f) X - - Pump system Waterflow test valves open, hose connection valve open, test line contains water 8.2.2(2)(g) - X - Pump system suction Reservoir empty 8.2.2(2) X - - Pump system Suction reservoir does not have required water level, wet pit suction screens missing 8.2.2(2) - X - - - - - - - - - - - - - Electrical power to pump system No electrical power — controller pilot light not illuminated, transfer switch pilot light not illuminated, isolating switch not closed, reverse phase alarm pilot light on or normal phase light is off 8.2.2(3) X - - Electrical power to pump system Electrical power is provided — controller pilot light not illuminated, transfer switch pilot light not illuminated, reverse phase alarm pilot light on, normal phase light is not illuminated 8.2.2(3) - - X Electric pump system Oil level in vertical motor sight glass not normal 8.2.2(3)(e) - X - Pressure maintenance (jockey) pump No power 8.2.2(3)(f) - - X - - - - - - - - - - - - Diesel engine system Alarm pilot lights are on 8.2.2(4)(f) - X - Diesel engine system Battery charging current not normal 8.2.2(4)(d) - X - Diesel engine system Battery failure pilot lights on 8.2.2(4)(e) - X - Diesel engine system Battery pilot lights off 8.2.2(4)(e) - X - Diesel engine system Battery terminals corroded 8.2.2(4)(l) - X - Diesel engine system Battery voltage readings not normal 8.2.2(4)(c) - X - Diesel engine system Controller selector switch not in auto position 8.2.2(4)(b) X - - Diesel engine system Cooling water level not normal 8.2.2(4)(j) - - X Diesel engine system Cooling water level not visible 8.2.2(4)(j) - X - Diesel engine system Crankcase oil level not~~

~~normal 8.2.2(4)(i) - - X Diesel engine system Crankcase oil level below low level 8.2.2(4)(i) X - - Diesel engine system Electrolyte level in batteries not normal 8.2.2(4)(k) - - X Diesel engine system Electrolyte level in batteries below top of battery plates 8.2.2(4)(k) - X - Diesel engine system Engine running time meter not reading 8.2.2(4)(g) - - X Diesel engine system Fuel tank less than two-thirds full 8.2.2(4)(a) - X - - - - - - - Diesel engine system Fuel tank empty 8.2.2(4)(a) X - - Diesel engine system Water-jacket heater not operating 8.2.2(4)(m) - X - Diesel engine system Oil level in right angle gear drive not normal (not at level mark but visible in sight glass) 8.2.2(4)(h) - - X Diesel engine system Oil level in right angle gear drive below low level (not visible in sight glass or below one finger knuckle for inspection hole) 8.2.2(4)(h) - X - Diesel engine system Battery terminals corroded 8.2.2(4)(l) - X - Steam system Steam pressure gauge reading not normal 8.2.2(5) - X -~~ ~~**Chapter 8: Fire Pumps — Testing**~~ ~~- - - - Fire pump test Pump did not start automatically 8.3.2.2 X - - - Pump failed to run for 10 minutes 8.3.2.3 X - - - Pump failed to run for 30 minutes 8.3.2.4 X - - Fire pump test — pump system System suction and discharge gauge reading, or pump starting pressure outside the acceptable range 8.3.2.9(1) - X - Fire pump test — pump system Pump packing gland discharge not acceptable, unusual noise or vibration, packing boxes, bearings, or pump casing overheating 8.3.2.9(1) - X - Fire pump test — electrical-motor-driven system Time for motor to accelerate to full speed, time controller is on first step, or time pump runs after starting not acceptable 8.3.2.9(2) X - - Fire pump test — diesel-engine-driven system Time for engine to crank and time for engine to reach running speed not acceptable (engine to reach rated speed within 20 seconds per 11.2.7.1 of NFPA 20, 2019 edition) 8.3.2.9(3) - X - Fire pump test — diesel-engine-driven system Low rpm 8.3.2.9(3) X - - Fire pump test — diesel-engine-driven system Low oil pressure, high temperature, high cooling water pressure 8.3.2.9(3) - X - Fire pump test — diesel-engine-driven system Time for engine to crank and time for engine to reach running speed not acceptable, low rpm, low oil pressure, high temperature, high cooling water pressure 8.3.2 - X - - - - - - - Fire pump test — steam system Gauge reading and time for turbine to reach running speed not acceptable 8.3.2.9(4) - - X Fire pump annual test Circulation relief valve and/or pressure relief valve did not work properly at churn condition 8.3.3.10(1) - X - Fire pump annual test Pressure relief valve did not work properly at each flow condition 8.3.3.11 - X - Fire pump annual test (with transfer switch) Overcurrent protective devices opened when simulating a power failure condition at peak load, power not transferred to alternate source, pump did not continue to perform at peak load, pump did not reconnect to normal power after removing power failure condition 8.3.3.12 X - - Fire pump annual test Alarms did not properly operate 8.3.3.13 - X - Pump house/room Heating, lighting, ventilating systems did not pass test 8.2.2 - X - Fire pump annual test Parallel or angular alignment not correct 8.3.6.4 - X - Fire pump annual test Flow test does not meet most demanding system flow and pressure requirements 8.3.7.2.3(1) X - - Fire pump annual test Flow test results not within 5% of acceptance test or nameplate 8.3.7.2.3(2) - - X Fire pump annual test Voltage readings at motor not within 5% below or 10% above rated (nameplate) 8.3.7.2.9 - X - - - - - - - Diesel fuel annual test Diesel fuel tested for degradation and failed 8.3.4 X - -~~ ~~**Chapter 9: Water Storage Tanks — Inspection**~~ ~~- - - - Water level Water level and/or condition not correct 9.2.1 - X - Water level Tank is empty 9.2.1 X - - - - - - - - Heating system Heating system not operational, water temperature below 40°F (4°C) 9.2.2 - X - Heating system Water temperature at or below 32°F (0°C) 9.2.2 X - - Exterior Tank exterior, supporting structure, vents, foundation, catwalks, or ladders where provided damaged 9.2.4.1 - - X Exterior Area around tank has fire exposure hazard in form of combustible storage, trash, debris, brush, or material 9.2.4.2 - - X Exterior Accumulation of material on or near parts that could result in accelerated corrosion or rot 9.2.4.2 - - X Exterior Ice buildup on tank and support 9.2.4.2 - X - Exterior Erosion exists on exterior sides or top of embankments supporting coated fabric tanks 9.2.4.2 - - X Exterior Expansion joints leaking or cracking 9.2.4.3 - X - Exterior Hoops and grilles of wooden tanks in poor condition 9.2.4.4 - - X Exterior Exterior painted, coated, or insulated surfaces of tanks or supporting structure degraded 9.2.4.5 - - X Interior Pitting, corrosion, spalling, rot, other forms of deterioration, waste materials exist, aquatic growth, local or general failure of interior coating 9.2.5.3 - - X Interior Voids beneath floor, with sand in middle of tanks on ring-type foundations 9.2.5.5 - - X Interior Heating system components or piping in poor condition but working 9.2.5.6 - - X Interior Heating system components or heating system piping in poor condition and not working 9.2.5.6 X - - Interior Blockage of antivortex~~

~~plate 9.2.5.7 X - - Interior Deterioration of antivortex plate 9.2.5.7 - X - **Chapter 9: Water Storage Tanks — Testing** - - - - Interior testing Tank coating did not pass adhesion, coating thickness, or wet sponge test 9.2.6 - - X Interior testing Tank walls and bottoms did not pass ultrasonic test 9.2.6 - - X Interior testing Tank bottom seams did not pass vacuum-box test 9.2.6 - - X Level indicator Level indicator lacked freedom of movement, or not accurate 9.3.1 - X - Heating system Not in working order 9.3.2 - X - Low-temperature alarm Low-water-temperature alarm did not pass test 9.3.3 - X - High-temperature alarm High-water-temperature limit switch did not pass test 9.3.4 - - X Water level alarm High- and low-water-level alarms did not pass test 9.3.5 - X - Gauges Not tested in 5 years, not accurate within 3% of scale 13.2.5.2, 13.2.5.3 - - X **Chapter 10: Water Spray Fixed Systems — Inspection** - - - - Pipe and fittings Mechanical damage, missing or damaged paint or coating, rusted or corroded, not properly aligned or trapped sections, low point drains not functioning, improper location of rubber-gasketed fittings 10.2.3.1 - X - Hangers and seismic braces Damaged or missing, not securely attached to structural or piping, missing or damaged paint or coating, rusted or corroded 10.2.3.2 - X - Water spray nozzles Discharge devices missing, not properly positioned or pointed in design direction, loaded or corroded 10.2.4.1 - X - Water spray nozzles Missing caps or plugs if required, or not free to operate as intended 10.2.4.2 - X - Strainers Strainer plugged or fouled 10.2.6 X - - Strainers Strainer damaged or corroded 10.2.6 - - X Drainage Trap sumps and drainage trenches blocked, retention embankments or dikes in disrepair 10.2.7 - - X Ultra-high-speed Detectors have physical damage or deposits on lenses of optical detectors 10.4.2 - X - Ultra-high-speed Controllers found to have faults 10.4.3 - X - **Chapter 10: Water Spray Fixed Systems — Testing** - - - - Operational test Heat detection system did not operate within 40 seconds, flammable gas detection system did not operate within 20 seconds 10.3.3.1 X - - Operational test Nozzles plugged 10.3.3.3.1 X - - Operational test Nozzles not correctly positioned 10.3.3.3.1 - X - Operational test Pressure readings not comparable to original design requirements 10.3.3.4. - X - Operational test Manual actuation devices did not work properly 10.3.5 X - - Main drain More than 10% drop in full flow pressure 13.2.3.3 - X - Ultra-high-speed operational test Response time was more than 100 milliseconds 10.4.5.2 X - - Assessment of the internal condition Inspection revealed presence of MIC, zebra mussels, rust, and scale 14.2.1 - X - **Chapter 11: Foam-Water Sprinkler Systems — Inspection** - - - - Alarm devices Physical damage apparent 5.2.4 - - X Pipe and fittings Mechanical damage, missing or damaged paint or coating, rusted or corroded, not properly aligned or trapped sections, low point drains not functioning, improper location or poor condition of rubber-gasketed fittings 11.2.2 - X - Hangers and seismic braces Damaged or missing, not securely attached to structural or piping, missing or damaged paint or coating, rusted or corroded 11.2.3 - X - Foam-water discharge devices Discharge devices missing 11.2.4.1 X - - Foam-water discharge devices Discharge devices not properly positioned or pointed in design direction, loaded or corroded 11.2.4.1 - X - Foam-water discharge devices Not free to operate as intended 11.2.4.2 - X - Foam-water discharge devices Missing caps or plugs if required 11.2.4.2 - X - Foam-water discharge devices Incorrect foam concentrate for application and devices 11.2.4.4 - X - Foam concentrate strainers Blowdown valve open or not plugged 11.2.6.4 - X - Drainage Trap sumps and drainage trenches blocked, retention embankments or dikes in disrepair 11.2.7 - - X Proportioning systems (all) Proportioning system valves not in correct open/closed position in accordance with specified operating conditions 11.2.8.3 X - - Proportioning systems (all) Concentrate tank does not have correct quantity required by original design 11.2.8.4 - X - Proportioning systems (all) Concentrate tank empty 11.2.8.4 X - - Standard pressure proportioner Automatic drains (ball drip valves) not free or open, external corrosion on foam concentrate tanks 11.2.8.5.1 - - X Bladder tank proportioner Water control valve to foam concentrate in "closed" position 11.2.8.5.2 X - - Bladder tank proportioner Foam in water surrounding bladder 11.2.8.5.2 X - - Bladder tank proportioner External corrosion on foam concentrate tank 11.2.8.5.2 - - X Line proportioner Strainer damaged, corroded, pressure vacuum vent not operating freely 11.2.8.5.3 - X - Line proportioner Strainer plugged or fouled 11.2.8.5.3 X - - Line proportioner External corrosion on foam concentrate tank 11.2.8.5.3 - - X Standard balanced pressure proportioner Sensing line valves not open, no power to foam liquid pump 11.2.8.5.4 X - - Standard balanced pressure proportioner Strainer damaged, corroded, plugged, or fouled, pressure vacuum vent not~~

~~operating freely, gauges damaged or not showing proper pressures 11.2.8.5.4 - X - In-line balanced pressure proportioner Sensing line valves at pump unit or individual proportioner stations not open, no power to foam liquid pump 11.2.8.5.5 X - - In-line balanced pressure proportioner Strainer damaged, corroded, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures 11.2.8.5.5 - X - In-line balanced pressure proportioner Strainer plugged or fouled 11.2.8.5.5 X - - Orifice plate proportioner No power to foam liquid pump 11.2.8.5.6 X - - Orifice plate proportioner Strainer damaged, corroded, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures 11.2.8.5.6 - X - Orifice plate proportioner Strainer plugged or fouled 11.2.8.5.6 X - - Foam concentrate Fails quality testing 11.4.2 - X - **Chapter 11: Foam-Water Sprinkler Systems — Testing** - - - - Alarm devices Water motor and gong not functioning 13.2.4.1 - X - Alarm devices Pressure switch or vane-type switch not functioning or no alarm 13.2.4.2 - X - Operational test Fire detection system did not operate within requirements of *NFPA 72* 11.3.2.4 - X - Operational test Nozzles plugged 11.3.2.6.1 X - - Operational test Nozzles not correctly positioned 11.3.2.6.1 - X - Operational test Pressure readings not comparable to original design requirements 11.3.2.7 - X - Operational test Manual actuation devices not working properly 11.3.4 X - - Operational test Foam sample failed concentration test 11.3.5 X - - Main drain More than 10% drop in full flow pressure 13.2.3.3 - X - Assessment of internal condition Inspection revealed presence of MIC, zebra mussels, rust, and scale 14.2.1 - X - **Chapter 13: Valves, Valve Components, and Trim — Inspection** Gauges Not operating or damaged 13.2.5.1 - - - Gauges Not showing normal water/air pressure 13.2.5.1 - X - Control valve Improper closed position 13.3.2.2 X - - Control valve Improper open position, leaking 13.3.2.2 - X - Control valve Not accessible, no appropriate wrench if required, no identification 13.3.2.2 - - X Control valve Not sealed, locked, or supervised 13.3.2.2 - X - Alarm valve External physical damage, trim valves not in appropriate open or closed position, retard chamber or alarm drain leaking 13.4.1.1 - X - Valve enclosure Upon visual observation, enclosure not maintaining minimum 40°F (4°C) temperature 4.1.2.5 - X - Valve enclosure Low-temperature alarms (if installed) are physically damaged 4.1.2.5.1, 4.1.2.5.2 - X - Preaction valve and deluge valve External physical damage, trim valves not in appropriate open or closed position, valve seat leaking 13.4.3.1.1, 13.4.4.1.1 - X - Preaction valve and deluge valve Electrical components not in service 13.4.3.1.1, 13.4.4.1.1 X - - Dry pipe valve/quick-opening device External physical damage, trim valves not in appropriate open or closed position, intermediate chamber leaking 13.4.5.1.2 - X - Sprinkler pressure-reducing control valves Not in open position 13.5.1.1 X - - Sprinkler pressure-reducing control valves Not maintaining downstream pressures in accordance with design criteria 13.5.1.1 - X - Sprinkler pressure-reducing control valves Leaking, valve damaged, hand wheel missing or broken 13.5.1.1 - X - Hose connection pressure-reducing valves Hand wheel broken or missing, hose threads damaged, leaking, reducer missing 13.5.2.1 - X - Hose connection pressure-reducing valves Cap missing 13.5.2.1 - - X Hose rack assembly pressure-reducing valve Hand wheel broken or missing, leaking 13.5.3.1 - X - Hose valves Leaking, visible obstructions, caps, hose threads, valve handle, cap gasket, no restricting device, damaged, or in poor condition 13.6.1 - X - Hose valves Hose threads not compatible 6.2.5.1 X - - Backflow prevention assemblies Reduced-pressure assemblies, differential-sensing valve relief port continuously discharging 13.7.1.1 - X - Fire department connection Not accessible, damaged couplings, or clapper not operating properly or missing 13.8.1 X - - Fire department connection Couplings and swivels damaged, do not rotate smoothly, check valve leaking, automatic drain not operating properly or missing 13.8.1 - X - Fire department connection Missing identification sign 13.8.1 - - X **Chapter 13: Valves, Valve Components, and Trim — Testing** - - - - Main drain More than 10% drop in full flow pressure 13.2.3.3 - X - Alarm devices Water motor and gong not functioning 5.3.3.1, 13.2.4.3.2 - X - Alarm devices Pressure switch or vane-type switch not functioning, no alarm 5.3.3.2, 13.2.4.4.2 - X - Gauges Not replaced or calibrated in 5 years, not accurate within 3% of scale 13.2.5.2, 13.2.5.3 - - X Control valve Valve not operating through its full range 13.3.3.1 - X - Control valve No spring or torsion felt in rod when opening post indicator valve 13.3.3.2 X - - Supervisory switches No signal from two revolutions of hand-wheel from normal position or when stem has moved one-fifth of~~

~~distance from normal position, signal restored in position other than normal 13.3.3.5.2 - X - Preaction valve Priming water level not correct 13.4.3.2.1 - X - Preaction valve Three-year air leakage test failed 13.4.3.2.6 - X - Deluge valve Annual full flow trip test revealed plugged nozzles, manual actuation devices did not operate properly 13.4.4.2.4 X - - - - - - - - Deluge valve Pressure reading at hydraulically most remote nozzle and/or at valve not compatible with original design values 13.4.4.2.7 - X - Preaction valve Low air pressure switch did not send signal, no alarm 13.4.3.2.11 - X - Preaction and deluge valve Low-temperature switch did not send signal, no alarm 13.4.3.2.12, 13.4.4.2.14 - X - Preaction valve Automatic air maintenance device did not pass test 13.4.3.2.13 - - X Dry pipe valve Priming water level not correct 13.4.5.2.1 - X - Dry pipe valve Does not trip during test 13.4.5.2.2 X - - Dry pipe valve Test results not comparable with previous results 13.4.5.2.2 - X - Quick-opening device Quick-opening device did not pass test 13.4.5.2.4 - X - Dry pipe valve Low air pressure switch did not send signal, no alarm 13.4.5.2.6 - X - Dry pipe valve Low-temperature switch did not send signal, no alarm 13.4.5.2.7 - X - Dry pipe valve Automatic air maintenance device did not pass test 13.4.5.2.8 - X - Dry pipe system Three-year leakage test failed 13.4.5.2.9 - X - Sprinkler pressure-reducing control valves Test results not comparable to previous results 13.5.1.2 - X - Hose connection pressure-regulating valves Test results not comparable to previous results 13.5.2.2 - X - Hose rack assembly pressure-regulating valve Test results not comparable to previous results 13.5.3.2 - X - Hose valves (Class I and Class III standpipe system) Annual test revealed valve leaking or difficult to operate 13.6.2.1.1 - X - Hose valves (Class II standpipe system) Test revealed valve leaking or difficult to operate 13.6.2.2.1 - X - Backflow prevention assemblies Did not pass minimum flow requirement for forward flow test 13.7.2.1 X - - Air compressors and nitrogen generators Unit does not start at required air pressure, does not restore normal supervisory air pressure in required time frame, unit overheats while operating 13.10.3 - X -~~

~~The table does not take into account every variation of the conditions needing repair or correction. For example, a single lightly painted sprinkler Only qualified personnel should assign a classification to an abnormality or condition. A number of factors can impact whether a condition is classified as an impairment, critical deficiency, or noncritical deficiency. For example, a single or widely spaced lightly painted sprinklers in a large warehouse might be noncritical in its risk while a single painted sprinkler in a battery-charging station might be considered a critical deficiency or perhaps an impairment. In addition, the nature of the hazard or the life safety exposure of the occupancy should be considered when assigning a classification. The table should be used with Assigning classifications should be done using with good judgment and could require may require input from the authority having jurisdiction.~~

Statement of Problem and Substantiation for Public Input

Table A.3.3.8 is problematic. Even though the table is annex material and the text cautions against doing so, there are numerous inspection providers, AHJs, and others who use the table to classify conditions verbatim without any regard to other factors which may impact the assignment of a classification. This causes particular challenges in jurisdictions where classifications require specific reporting and corrective response times. By providing a single classification to the various listed conditions, it creates situations where conditions are over or under-classified as to their severity. The 2013 California edition of NFPA 25, which is based on the 2011 edition of NFPA 25, deletes Annex E which was the where this table was originally located prior to its move to Annex A. I believe this action was correct. While the intent of providing this guidance was worthy, the classifications are frequently misapplied. This can cause incorrect response times (too long or short), unnecessary or inappropriate reporting burdens on the owner and AHJ, or added costs to the owner and AHJ.

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State:
Zip:
Submittal Date: Fri Jun 26 08:24:03 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-48-NFPA 25-2020

Statement: Table A.3.3.8 provides guidance for the classification of abnormal conditions and should not be deleted. However, additional text related to the process of assigning classifications is needed. In addition, while all findings (abnormalities) should be considered in context before assigning a condition, the table is revised to reinforce the concept that different classifications might be appropriate for certain findings depending on the context in which the abnormality occurs.

Public Input No. 227-NFPA 25-2020 [Section No. A.3.3.8]

A.3.3.8 Deficiency.

Depending on the nature and significance of the deficiency, it can result in a system impairment. Critical deficiencies will adversely impact performance but without the need for the implementing impairment procedures. Noncritical deficiencies have the potential to impact performance.

Table A.3.3.8 provides examples for classifying conditions needing repair or correction that are identified during the inspection, testing, and maintenance of water-based suppression systems. The conditions are classified as an impairment, critical deficiency, or noncritical deficiency. The table is not all-inclusive but is included to provide guidance in responding to these conditions. For example, an impairment should be addressed promptly by either immediately correcting the condition or implementing the impairment procedures found in Chapter 15. Critical and noncritical deficiencies should be corrected as soon as practical after considering the nature and severity of the risk. It should be noted that many jurisdictions have requirements for the timely correction of impairments and/or deficiencies.

Table A.3.3.8 Water-Based Fire Protection System Inspection and Testing Findings

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
Chapter 5: Sprinkler Systems — Inspection		–	–	–	–	
All sprinklers	Leaking — spraying or running water	5.2.1.1.1	X	–	–	
All sprinklers	Leaking — dripping water	5.2.1.1.1	–		X	–
All sprinklers	Foreign material attached or suspended from	5.2.1.1.1	X	–	–	
All sprinklers	Minimum clearance to storage not maintained	5.2.1.2	–		X	–
All sprinklers	Lightly loaded	5.2.1.1.1	–	–		X
Standard-response sprinklers in nonresidential occupancies	One sprinkler and less than 50% of sprinklers in compartment is heavily loaded or corroded; painted operating element, bulb, deflector, or coverplate; improper orientation; glass bulb has lost fluid; damaged	5.2.1.1.1	–		X	–
Standard-response sprinklers in nonresidential occupancies	Two or more sprinklers in compartment are heavily loaded or corroded; painted operating element, bulb, deflector, or coverplate;	5.2.1.1.1	X	–	–	

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
	improper orientation; glass bulb has lost fluid; damaged					
Fast-response element, quick-response, electrically operated, residential sprinklers and standard-response in residential occupancies	One or more sprinklers heavily loaded or corroded; painted operating element, bulb, deflector, or coverplate; improper orientation; glass bulb has lost fluid; damaged	5.2.1.1.1	X	-	-	
Coverplates	Concealed sprinkler coverplates caulked or glued to ceiling	5.2.1.1.1	X	-	-	
Escutcheons and coverplates	Missing recessed or flush escutcheons, concealed coverplate with deflector and operating element in correct position	5.2.1.1.5	-	-		X
Escutcheons and coverplates	Missing recessed or flush escutcheons, concealed coverplate with deflector and operating element not in correct position	5.2.1.1.5	X	-	-	
Escutcheons	Recessed or flush escutcheons caulked or glued to ceiling	5.2.1.1.1	-		X	-
Spare sprinkler cabinet	Cabinet missing, temperature, above maximum permitted, not proper number and type, missing wrench for each type	5.2.1.4	Table 5.4.1.5.2	-		X

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Pipe and fittings	Leaking — slowly dripping and/or moisture on surface	5.2.2.1	–	X	–
Pipe and fittings	Leaking — spraying or running water	5.2.2.1	X	–	–
Pipe and fittings	Critical mechanical damage	5.2.2.1	–	X	–
Hangers and seismic braces	Loose	5.2.3.2	–	–	X
Hangers and seismic braces	Damaged or unattached	5.2.3.2	–	X	–
Gauges	Not operating or damaged	13.2.5.1.1	–	–	X
Gauges	Not showing normal water/air pressure	13.2.5.1.2, 13.7.5.1.3	–	X	–
Gauges	Freezer — system pressure lower than compressor	13.2.5.1.4	X	–	–
Alarm devices	Physical damage	5.2.4	–	–	X
Hydraulic design information sign	Not attached properly, illegible or missing	5.2.5	–	–	X
Information sign	Not attached, illegible, or missing	5.2.7	–	–	X
General information sign	Not attached, illegible, or missing	5.2.8	–	–	X
Antifreeze information sign	Not attached, illegible, or missing	5.2.9	–	–	X
Heat tape	Not in accordance with manufacturer's instructions	5.2.6	–	X	–
Chapter 5: Sprinkler Systems — Testing		–	–	–	–
Gauges	Not replaced or calibrated in 5 years, not accurate within 3% of scale	13.2.5.2/13.2.5.3	–	–	X
Alarm devices	Water motor and gong not functioning	5.3.3.1	–	X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
Alarm devices	Pressure-switch- or vane-type switch not functioning or no alarm	5.3.3.2	-		X	-
Antifreeze systems~~Mixture and concentration does not meet requirements of 5.3.3.4.1 and 5.3.3(1)(a~~	~~)~~ Solution is not listed or the tested samples to not meet manufacturer's requirement	5.3.4	-		X	-
Antifreeze systems	~~Concentration~~ Solution is inadequate to prevent freezing	~~Table A.5.3.4.4.1(1),~~ 5.3.4~~.2.1, and Figure A.5.3.4~~	X	-	-	
Main drain	More than 10% drop in full flow pressure	13.2.3.3	-		X	-
Assessment of internal condition	Assessment revealed presence of MIC, zebra mussels, rust, or scale	14.2.1	-		X	-
Sprinklers	Sprinkler(s) fail laboratory testing	5.3.1	X	X	-	
Chapter 6: Standpipe and Hose Systems — Inspection		-	-	-	-	
Pipe and fittings	Leaking — slowly dripping and/or moisture on surface	6.2.4	-		X	-
Pipe and fittings	Leaking — spraying or running water	6.2.4	X	-	-	
Pipe and fittings	Critical mechanical damage	6.2.4	-		X	-
Hangers and supports	Damaged or missing	6.2.4	-		X	-
Hose	Cuts, couplings not of compatible threads	6.2.5, NFPA 1962	-		X	-
Hose	Deterioration, no gasket or damaged gaskets	6.2.5, NFPA 1962	-		X	-
Hose	Mildew present, corrosion present, hose not connected	6.2.5, NFPA 1962	-	-		X

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Hose nozzle	Missing, broken parts or thread gasket damaged	6.2.6, NFPA 1962	–	X	–
Hose storage	Hose not properly racked or rolled, nozzle clip missing, nozzle not contained, damaged, obstructed	6.2.7, NFPA 1962	–	X	–
Cabinet	Corroded or damaged parts, not easy to open, not accessible, not identified, door glazing in poor condition, lock not functioning in break glass type, valve, hose nozzle, fire extinguisher, etc.; not readily accessible	6.2.8, NFPA 1962	–	X	–
Hydraulic design information sign	Missing	6.2.2	–	–	X
Chapter 6: Standpipe and Hose Systems — Testing		–	–	–	–
Hose storage device	Rack will not swing out of cabinet at least 90 degrees	6.2.7, NFPA 1962	–	–	X
Standpipe system	Test results did not provide design pressure at required flow	6.3.1	–	X	–
Hydrostatic test of manual and semiautomatic dry standpipe systems	Leakage in inside piping	6.3.2.1	–	–	X
Main drain	More than 10% drop in full flow pressure	13.2.3.3	–	X	–
Assessment of internal condition	Assessment revealed presence of MIC, zebra mussels, rust, or scale	14.2.1	–	X	–
Chapter 7: Private Fire Service Mains — Inspection		–	–	–	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Exposed piping	Leaking — slowly dripping, and/or moisture on surface	7.2.2.1.2	–	X	–
Exposed piping	Leaking — spraying or running water	7.2.2.1.2	X	–	–
Exposed piping	Mechanical damage, corroded, not properly restrained	7.2.2.1.2	–	X	–
Mainline strainers	Plugged, fouled	7.2.2.3.2	X	–	–
Mainline strainers	Corroded	7.2.2.3.2	–	X	–
Dry barrel, wet barrel, and wall hydrant	Inaccessible, barrel contains ice, cracks in barrel	7.2.2.4, 7.2.2.5	X	–	–
Dry barrel, wet barrel, and wall hydrant	Barrel contains water, improper drainage from barrel, leaks at outlets or top of hydrant	7.2.2.4, 7.2.2.5	–	X	–
Dry barrel, wet barrel, and wall hydrant	Tightness of outlets, worn nozzle threads, worn operating nut, missing wrench	7.2.2.4, 7.2.2.5	–	–	X
Monitor nozzles	Damaged, corroded, leaking	7.2.2.7	–	X	–
Hose/hydrant houses	Inaccessible	7.2.2.8	X	–	–
Hose/hydrant houses	Damaged	7.2.2.8	–	X	–
Hose/hydrant houses	Not fully equipped	7.2.2.8	–	–	X
Chapter 7: Private Fire Service Mains — Testing		–	–	–	–
Underground and exposed piping	Test results show deterioration in water supply when compared to previous results	7.3.1.1	–	X	–
Dry barrel and wall hydrant	Hydrant did not flow clear or did not drain within 60 minutes	7.3.2.1, 7.3.2.4	–	–	X

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
Monitor nozzles	Did not flow acceptable amount of water, did not operate throughout their full range	7.3.3	–		X	–
Chapter 8: Fire Pumps — Inspection		–	–	–	–	
Pump house/room	Ventilating louvers not free to operate	8.2.2(1)(c)	–		X	–
Pump house/room	Heat not adequate, temperature less than 40°F (4°C)	8.2.2(1)(a)	X	–	–	
Pump house/room	Heat not adequate, temperature less than 70°F (21°C) for diesel pumps without engine heaters	8.2.2(1)(b)	X	–	–	
Pump house/room	Heat not adequate, temperature less than 40°F (4°C), not as recommended by the engine manufacturer, for diesel pumps with engine heaters	8.2.2(1)(a) and (b)	X	–	–	
Pump house/room	Excessive water on floor	8.2.2(1)(d)	–		X	–
Pump house/room	Coupling guard not in place	8.2.2(1)(e)	–		X	–
Pump system	Suction, discharge, or bypass valves not fully open, pipe leaking, suction line and system line pressure not normal, wet pit suction screens obstructed	8.2.2(2)(a–f)	X	–	–	
Pump system	Waterflow test valves open, hose connection valve open, test line contains water	8.2.2(2)(g)	–		X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Pump system suction	Reservoir empty	8.2.2(2)	X	–	–
Pump system	Suction reservoir does not have required water level, wet pit suction screens missing	8.2.2(2)	–	X	–
–	–	–	–	–	–
–	–	–	–	–	–
Electrical power to pump system	No electrical power — controller pilot light not illuminated, transfer switch pilot light not illuminated, isolating switch not closed, reverse phase alarm pilot light on or normal phase light is off	8.2.2(3)	X	–	–
Electrical power to pump system	Electrical power is provided — controller pilot light not illuminated, transfer switch pilot light not illuminated, reverse phase alarm pilot light on, normal phase light is not illuminated	8.2.2(3)	–	–	X
Electric pump system	Oil level in vertical motor sight glass not normal	8.2.2(3)(e)	–	X	–
Pressure maintenance (jockey) pump	No power	8.2.2(3)(f)	–	–	X
–	–	–	–	–	–
–	–	–	–	–	–
Diesel engine system	Alarm pilot lights are on	8.2.2(4)(f)	–	X	–
Diesel engine system	Battery charging current not normal	8.2.2(4)(d)	–	X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
Diesel engine system	Battery failure pilot lights on	8.2.2(4)(e)	-		X	-
Diesel engine system	Battery pilot lights off	8.2.2(4)(e)	-		X	-
Diesel engine system	Battery terminals corroded	8.2.2(4)(l)	-		X	-
Diesel engine system	Battery voltage readings not normal	8.2.2(4)(c)	-		X	-
Diesel engine system	Controller selector switch not in auto position	8.2.2(4)(b)	X	-	-	
Diesel engine system	Cooling water level not normal	8.2.2(4)(j)	-	-		X
Diesel engine system	Cooling water level not visible	8.2.2(4)(j)	-		X	-
Diesel engine system	Crankcase oil level not normal	8.2.2(4)(i)	-	-		X
Diesel engine system	Crankcase oil level below low level	8.2.2(4)(i)	X	-	-	
Diesel engine system	Electrolyte level in batteries not normal	8.2.2(4)(k)	-	-		X
Diesel engine system	Electrolyte level in batteries below top of battery plates	8.2.2(4)(k)	-		X	-
Diesel engine system	Engine running time meter not reading	8.2.2(4)(g)	-	-		X
Diesel engine system	Fuel tank less than two-thirds full	8.2.2(4)(a)	-		X	-
-	-	-	-	-	-	
Diesel engine system	Fuel tank empty	8.2.2(4)(a)	X	-	-	
Diesel engine system	Water-jacket heater not operating	8.2.2(4)(m)	-		X	-
Diesel engine system	Oil level in right angle gear drive not normal (not at level mark but visible in sight glass)	8.2.2(4)(h)	-	-		X
Diesel engine system	Oil level in right angle gear drive below low level (not visible in	8.2.2(4)(h)	-		X	-

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
	sight glass or below one finger knuckle for inspection hole)					
Diesel engine system	Battery terminals corroded	8.2.2(4)(l)	–		X	–
Steam system	Steam pressure gauge reading not normal	8.2.2(5)	–		X	–
Chapter 8: Fire Pumps — Testing		–	–	–	–	
Fire pump test	Pump did not start automatically	8.3.2.2	X	–	–	
	–	Pump failed to run for 10 minutes	8.3.2.3	X	–	– –
	Pump failed to run for 30 minutes	8.3.2.4	X	–	–	
Fire pump test — pump system	System suction and discharge gauge reading, or pump starting pressure outside the acceptable range	8.3.2.9(1)	–		X	–
Fire pump test — pump system	Pump packing gland discharge not acceptable, unusual noise or vibration, packing boxes, bearings, or pump casing overheating	8.3.2.9(1)	–		X	–
Fire pump test — electrical-motor-driven system	Time for motor to accelerate to full speed, time controller is on first step, or time pump runs after starting not acceptable	8.3.2.9(2)	X	–	–	
Fire pump test — diesel-engine-driven system	Time for engine to crank and time for engine to reach running speed not acceptable (engine to reach rated speed within 20 seconds per	8.3.2.9(3)	–		X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
	11.2.7.1 of NFPA 20, 2019 edition)					
Fire pump test — diesel-engine-driven system	Low rpm	8.3.2.9(3)	X	-	-	
Fire pump test — diesel-engine-driven system	Low oil pressure, high temperature, high cooling water pressure	8.3.2.9(3)	-		X	-
Fire pump test — diesel-engine-driven system	Time for engine to crank and time for engine to reach running speed not acceptable, low rpm, low oil pressure, high temperature, high cooling water pressure	8.3.2	-		X	-
-	-	-	-	-	-	
Fire pump test — steam system	Gauge reading and time for turbine to reach running speed not acceptable	8.3.2.9(4)	-	-		X
Fire pump annual test	Circulation relief valve and/or pressure relief valve did not work properly at churn condition	8.3.3.10(1)	-		X	-
Fire pump annual test	Pressure relief valve did not work properly at each flow condition	8.3.3.11	-		X	-
Fire pump annual test (with transfer switch)	Overcurrent protective devices opened when simulating a power failure condition at peak load, power not transferred to alternate source, pump did not continue to perform at peak load, pump did not reconnect to	8.3.3.12	X	-	-	

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
	normal power after removing power failure condition				
Fire pump annual test	Alarms did not properly operate	8.3.3.13	-	X	-
Pump house/room	Heating, lighting, ventilating systems did not pass test	8.2.2	-	X	-
Fire pump annual test	Parallel or angular alignment not correct	8.3.6.4	-	X	-
Fire pump annual test	Flow test does not meet most demanding system flow and pressure requirements	8.3.7.2.3(1)	X	-	-
Fire pump annual test	Flow test results not within 5% of acceptance test or nameplate	8.3.7.2.3(2)	-	-	X
Fire pump annual test	Voltage readings at motor not within 5% below or 10% above rated (nameplate)	8.3.7.2.9	-	X	-
-	-	-	-	-	-
Diesel fuel annual test	Diesel fuel tested for degradation and failed	8.3.4	X	-	-
Chapter 9: Water Storage Tanks — Inspection		-	-	-	-
Water level	Water level and/or condition not correct	9.2.1	-	X	-
Water level	Tank is empty	9.2.1	X	-	-
-	-	-	-	-	-
Heating system	Heating system not operational, water temperature below 40°F (4°C)	9.2.2	-	X	-
Heating system	Water temperature at or below 32°F (0°C)	9.2.2	X	-	-

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Exterior	Tank exterior, supporting structure, vents, foundation, catwalks, or ladders where provided damaged	9.2.4.1	–	–	X
Exterior	Area around tank has fire exposure hazard in form of combustible storage, trash, debris, brush, or material	9.2.4.2	–	–	X
Exterior	Accumulation of material on or near parts that could result in accelerated corrosion or rot	9.2.4.2	–	–	X
Exterior	Ice buildup on tank and support	9.2.4.2	–	X	–
Exterior	Erosion exists on exterior sides or top of embankments supporting coated fabric tanks	9.2.4.2	–	–	X
Exterior	Expansion joints leaking or cracking	9.2.4.3	–	X	–
Exterior	Hoops and grilles of wooden tanks in poor condition	9.2.4.4	–	–	X
Exterior	Exterior painted, coated, or insulated surfaces of tanks or supporting structure degraded	9.2.4.5	–	–	X
Interior	Pitting, corrosion, spalling, rot, other forms of deterioration, waste materials exist, aquatic growth, local or general failure of interior coating	9.2.5.3	–	–	X

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Interior	Voids beneath floor, with sand in middle of tanks on ring-type foundations	9.2.5.5	–	–	X
Interior	Heating system components or piping in poor condition but working	9.2.5.6	–	–	X
Interior	Heating system components or heating system piping in poor condition and not working	9.2.5.6	X	–	–
Interior	Blockage of antivortex plate	9.2.5.7	X	–	–
Interior	Deterioration of antivortex plate	9.2.5.7	–	X	–
Chapter 9: Water Storage Tanks — Testing		–	–	–	–
Interior testing	Tank coating did not pass adhesion, coating thickness, or wet sponge test	9.2.6	–	–	X
Interior testing	Tank walls and bottoms did not pass ultrasonic test	9.2.6	–	–	X
Interior testing	Tank bottom seams did not pass vacuum-box test	9.2.6	–	–	X
Level indicator	Level indicator lacked freedom of movement, or not accurate	9.3.1	–	X	–
Heating system	Not in working order	9.3.2	–	X	–
Low-temperature alarm	Low-water-temperature alarm did not pass test	9.3.3	–	X	–
High-temperature alarm	High-water-temperature limit switch did not pass test	9.3.4	–	–	X
Water level alarm	High- and low-water-level alarms did not	9.3.5	–	X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
	pass test				
Gauges	Not tested in 5 years, not accurate within 3% of scale	13.2.5.2, 13.2.5.3	-	-	X
Chapter 10: Water Spray Fixed Systems — Inspection		-	-	-	-
Pipe and fittings	Mechanical damage, missing or damaged paint or coating, rusted or corroded, not properly aligned or trapped sections, low point drains not functioning, improper location of rubber-gasketed fittings	10.2.3.1	-	X	-
Hangers and seismic braces	Damaged or missing, not securely attached to structural or piping, missing or damaged paint or coating, rusted or corroded	10.2.3.2	-	X	-
Water spray nozzles	Discharge devices missing, not properly positioned or pointed in design direction, loaded or corroded	10.2.4.1	-	X	-
Water spray nozzles	Missing caps or plugs if required, or not free to operate as intended	10.2.4.2	-	X	-
Strainers	Strainer plugged or fouled	10.2.6	X	-	-
Strainers	Strainer damaged or corroded	10.2.6	-	-	X

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Drainage	Trap sumps and drainage trenches blocked, retention embankments or dikes in disrepair	10.2.7	–	–	X
Ultra-high-speed	Detectors have physical damage or deposits on lenses of optical detectors	10.4.2	–	X	–
Ultra-high-speed	Controllers found to have faults	10.4.3	–	X	–
Chapter 10: Water Spray Fixed Systems — Testing		–	–	–	–
Operational test	Heat detection system did not operate within 40 seconds, flammable gas detection system did not operate within 20 seconds	10.3.3.1	X	–	–
Operational test	Nozzles plugged	10.3.3.3.1	X	–	–
Operational test	Nozzles not correctly positioned	10.3.3.3.1	–	X	–
Operational test	Pressure readings not comparable to original design requirements	10.3.3.4.	–	X	–
Operational test	Manual actuation devices did not work properly	10.3.5	X	–	–
Main drain	More than 10% drop in full flow pressure	13.2.3.3	–	X	–
Ultra-high-speed operational test	Response time was more than 100 milliseconds	10.4.5.2	X	–	–
Assessment of the internal condition	Inspection revealed presence of MIC, zebra mussels, rust, and scale	14.2.1	–	X	–
Chapter 11: Foam-Water Sprinkler Systems — Inspection		–	–	–	–
Alarm devices	Physical damage apparent	5.2.4	–	–	X

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Pipe and fittings	Mechanical damage, missing or damaged paint or coating, rusted or corroded, not properly aligned or trapped sections, low point drains not functioning, improper location or poor condition of rubber-gasketed fittings	11.2.2	–	X	–
Hangers and seismic braces	Damaged or missing, not securely attached to structural or piping, missing or damaged paint or coating, rusted or corroded	11.2.3	–	X	–
Foam-water discharge devices	Discharge devices missing	11.2.4.1	X	–	–
Foam-water discharge devices	Discharge devices not properly positioned or pointed in design direction, loaded or corroded	11.2.4.1	–	X	–
Foam-water discharge devices	Not free to operate as intended	11.2.4.2	–	X	–
Foam-water discharge devices	Missing caps or plugs if required	11.2.4.2	–	X	–
Foam-water discharge devices	Incorrect foam concentrate for application and devices	11.2.4.4	–	X	–
Foam concentrate strainers	Blowdown valve open or not plugged	11.2.6.4	–	X	–
Drainage	Trap sumps and drainage trenches blocked, retention embankments or dikes in disrepair	11.2.7	–	–	X

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Proportioning systems (all)	Proportioning system valves not in correct open/closed position in accordance with specified operating conditions	11.2.8.3	X	–	–
Proportioning systems (all)	Concentrate tank does not have correct quantity required by original design	11.2.8.4	–	X	–
Proportioning systems (all)	Concentrate tank empty	11.2.8.4	X	–	–
Standard pressure proportioner	Automatic drains (ball drip valves) not free or open, external corrosion on foam concentrate tanks	11.2.8.5.1	–	–	X
Bladder tank proportioner	Water control valve to foam concentrate in “closed” position	11.2.8.5.2	X	–	–
Bladder tank proportioner	Foam in water surrounding bladder	11.2.8.5.2	X	–	–
Bladder tank proportioner	External corrosion on foam concentrate tank	11.2.8.5.2	–	–	X
Line proportioner	Strainer damaged, corroded, pressure vacuum vent not operating freely	11.2.8.5.3	–	X	–
Line proportioner	Strainer plugged or fouled	11.2.8.5.3	X	–	–
Line proportioner	External corrosion on foam concentrate tank	11.2.8.5.3	–	–	X
Standard balanced pressure proportioner	Sensing line valves not open, no power to foam liquid pump	11.2.8.5.4	X	–	–
Standard balanced pressure	Strainer damaged, corroded,	11.2.8.5.4	–	X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
proportioner	plugged, or fouled, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures				
In-line balanced pressure proportioner	Sensing line valves at pump unit or individual proportioner stations not open, no power to foam liquid pump	11.2.8.5.5	X	-	-
In-line balanced pressure proportioner	Strainer damaged, corroded, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures	11.2.8.5.5	-	X	-
In-line balanced pressure proportioner	Strainer plugged or fouled	11.2.8.5.5	X	-	-
Orifice plate proportioner	No power to foam liquid pump	11.2.8.5.6	X	-	-
Orifice plate proportioner	Strainer damaged, corroded, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures	11.2.8.5.6	-	X	-
Orifice plate proportioner	Strainer plugged or fouled	11.2.8.5.6	X	-	-
Foam concentrate	Fails quality testing	11.4.2	-	X	-
Chapter 11: Foam-Water Sprinkler Systems — Testing		-	-	-	-
Alarm devices	Water motor and gong not functioning	13.2.4.1	-	X	-
Alarm devices	Pressure switch or vane-type switch not functioning or no	13.2.4.2	-	X	-

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
	alarm				
Operational test	Fire detection system did not operate within requirements of *NFPA 72*	11.3.2.4	-	X	-
Operational test	Nozzles plugged	11.3.2.6.1	X	-	-
Operational test	Nozzles not correctly positioned	11.3.2.6.1	-	X	-
Operational test	Pressure readings not comparable to original design requirements	11.3.2.7	-	X	-
Operational test	Manual actuation devices not working properly	11.3.4	X	-	-
Operational test	Foam sample failed concentration test	11.3.5	X	-	-
Main drain	More than 10% drop in full flow pressure	13.2.3.3	-	X	-
Assessment of internal condition	Inspection revealed presence of MIC, zebra mussels, rust, and scale	14.2.1	-	X	-
Chapter 13: Valves, Valve Components, and Trim — Inspection					
Gauges	Not operating or damaged	13.2.5.1	-	-	-
Gauges	Not showing normal water/air pressure	13.2.5.1	-	X	-
Control valve	Improper closed position	13.3.2.2	X	-	-
Control valve	Improper open position, leaking	13.3.2.2	-	X	-
Control valve	Not accessible, no appropriate wrench if required, no identification	13.3.2.2	-	-	X
Control valve	Not sealed, locked, or supervised	13.3.2.2	-	X	-
Alarm valve	External physical damage, trim valves not in appropriate open	13.4.1.1	-	X	-

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
	or closed position, retard chamber or alarm drain leaking					
Valve enclosure	Upon visual observation, enclosure not maintaining minimum 40°F (4°C) temperature	4.1.2.5	–		X	–
Valve enclosure	Low-temperature alarms (if installed) are physically damaged	4.1.2.5.1, 4.1.2.5.2	–		X	–
Preaction valve and deluge valve	External physical damage, trim valves not in appropriate open or closed position, valve seat leaking	13.4.3.1.1, 13.4.4.1.1	–		X	–
Preaction valve and deluge valve	Electrical components not in service	13.4.3.1.1, 13.4.4.1.1	X	–	–	
Dry pipe valve/quick-opening device	External physical damage, trim valves not in appropriate open or closed position, intermediate chamber leaking	13.4.5.1.2	–		X	–
Sprinkler pressure-reducing control valves	Not in open position	13.5.1.1	X	–	–	
Sprinkler pressure-reducing control valves	Not maintaining downstream pressures in accordance with design criteria	13.5.1.1	–		X	–
Sprinkler pressure-reducing control valves	Leaking, valve damaged, hand wheel missing or broken	13.5.1.1	–		X	–
Hose connection pressure-reducing valves	Hand wheel broken or missing, hose threads damaged, leaking, reducer missing	13.5.2.1	–		X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Hose connection pressure-reducing valves	Cap missing	13.5.2.1	-	-	X
Hose rack assembly pressure-reducing valve	Hand wheel broken or missing, leaking	13.5.3.1	-	X	-
Hose valves	Leaking, visible obstructions, caps, hose threads, valve handle, cap gasket, no restricting device, damaged, or in poor condition	13.6.1	-	X	-
Hose valves	Hose threads not compatible	6.2.5.1	X	-	-
Backflow prevention assemblies	Reduced-pressure assemblies, differential-sensing valve relief port continuously discharging	13.7.1.1	-	X	-
Fire department connection	Not accessible, damaged couplings, or clapper not operating properly or missing	13.8.1	X	-	-
Fire department connection	Couplings and swivels damaged, do not rotate smoothly, check valve leaking, automatic drain not operating properly or missing	13.8.1	-	X	-
Fire department connection	Missing identification sign	13.8.1	-	-	X
Chapter 13: Valves, Valve Components, and Trim — Testing		-	-	-	-
Main drain	More than 10% drop in full flow pressure	13.2.3.3	-	X	-

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
Alarm devices	Water motor and gong not functioning	5.3.3.1, 13.2.4.3.2	–	X	–
Alarm devices	Pressure switch or vane-type switch not functioning, no alarm	5.3.3.2, 13.2.4.4.2	–	X	–
Gauges	Not replaced or calibrated in 5 years, not accurate within 3% of scale	13.2.5.2, 13.2.5.3	–	–	X
Control valve	Valve not operating through its full range	13.3.3.1	–	X	–
Control valve	No spring or torsion felt in rod when opening post indicator valve	13.3.3.2	X	–	–
Supervisory switches	No signal from two revolutions of hand-wheel from normal position or when stem has moved one-fifth of distance from normal position, signal restored in position other than normal	13.3.3.5.2	–	X	–
Preaction valve	Priming water level not correct	13.4.3.2.1	–	X	–
Preaction valve	Three-year air leakage test failed	13.4.3.2.6	–	X	–
Deluge valve	Annual full flow trip test revealed plugged nozzles, manual actuation devices did not operate properly	13.4.4.2.4	X	–	–
–	–	–	–	–	–
Deluge valve	Pressure reading at hydraulically most remote nozzle and/or at valve not compatible with original design	13.4.4.2.7	–	X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency
	values				
Preaction valve	Low air pressure switch did not send signal, no alarm	13.4.3.2.11	–	X	–
Preaction and deluge valve	Low-temperature switch did not send signal, no alarm	13.4.3.2.12, 13.4.4.2.14	–	X	–
Preaction valve	Automatic air maintenance device did not pass test	13.4.3.2.13	–	–	X
Dry pipe valve	Priming water level not correct	13.4.5.2.1	–	X	–
Dry pipe valve	Does not trip during test	13.4.5.2.2	X	–	–
Dry pipe valve	Test results not comparable with previous results	13.4.5.2.2	–	X	–
Quick-opening device	Quick-opening device did not pass test	13.4.5.2.4	–	X	–
Dry pipe valve	Low air pressure switch did not send signal, no alarm	13.4.5.2.6	–	X	–
Dry pipe valve	Low-temperature switch did not send signal, no alarm	13.4.5.2.7	–	X	–
Dry pipe valve	Automatic air maintenance device did not pass test	13.4.5.2.8	–	X	–
Dry pipe system	Three-year leakage test failed	13.4.5.2.9	–	X	–
Sprinkler pressure-reducing control valves	Test results not comparable to previous results	13.5.1.2	–	X	–
Hose connection pressure-regulating valves	Test results not comparable to previous results	13.5.2.2	–	X	–
Hose rack assembly pressure-regulating valve	Test results not comparable to previous results	13.5.3.2	–	X	–

Item	Finding	Reference	Impairment	Critical Deficiency	Noncritical Deficiency	
Hose valves (Class I and Class III standpipe system)	Annual test revealed valve leaking or difficult to operate	13.6.2.1.1	–		X	–
Hose valves (Class II standpipe system)	Test revealed valve leaking or difficult to operate	13.6.2.2.1	–		X	–
Backflow prevention assemblies	Did not pass minimum flow requirement for forward flow test	13.7.2.1	X	–	–	
Air compressors and nitrogen generators	Unit does not start at required air pressure, does not restore normal supervisory air pressure in required time frame, unit overheats while operating	13.10.3	–		X	–

The table does not take into account every variation of the conditions needing repair or correction. For example, a single lightly painted sprinkler in a large warehouse might be noncritical in its risk while a single painted sprinkler in a battery-charging station might be considered a critical deficiency or perhaps an impairment. In addition, the nature of the hazard or the life safety exposure of the occupancy should be considered when assigning a classification. The table should be used with good judgment and could require input from the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:15:25 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-48-NFPA 25-2020

Statement: Table A.3.3.8 provides guidance for the classification of abnormal conditions and should not be deleted. However, additional text related to the process of assigning classifications is needed. In addition, while all findings (abnormalities) should be considered in context before assigning a condition, the table is revised to reinforce the concept that different classifications might be appropriate for certain findings depending on the context in which the abnormality occurs.

Public Input No. 251-NFPA 25-2020 [New Section after A.3.3.14]

A.3.3.15 This term only applies to climatic conditions when the outside air temperature falls below the threshold when some sort of supplemental heat or other remedies may be needed to protect fire protection systems from freezing. General freeze protection requirements are included in section 4.1.2.

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Statement of Problem and Substantiation for Public Input

Annex text for a new definition added to Chapter 3. There were numerous changes made in the 2020 edition that tied inspection and testing activities to either before the heating season begins or during the heating season. This definition will help the user know when this term applies.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 250-NFPA 25-2020 [New Section after 3.3.15]	Annex text for new definition.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 11:32:08 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This proposed change relates to a definition that was not accepted into the body of the standard, therefore this annex language is not needed.

Public Input No. 152-NFPA 25-2020 [New Section after A.3.3.27]

A.3.3.29. Mechanical Injury

Areas where sprinkler heads may be subject to mechanical damage include such spaces and processes as the following:

(1) Athletic facilities including, gymnasiums, locker rooms, workout areas, racquetball courts, basketball courts, volleyball courts, indoor tennis courts, soccer and baseball facilities

(2) Distribution and warehouse facilities including, in-rack storage areas, mezzanines, conveyor areas, and overhead doors

(3) Multi-family residential units (hotels, dormitories, apartments) including, within individual rooms, closets, and hallways

(4) Hospitals and healthcare facilities, specifically within the following spaces, emergency rooms, hallways, boiler rooms, and storage closets

(5) One- and two-family dwellings, specifically within, the attic space, basement, garage, bedrooms, and closets

Statement of Problem and Substantiation for Public Input

This provides explanatory information related to PI 151.

NFPA 13:16.2.6 uses the term “mechanical injury”. For consistency we are using the same terminology in this proposed change to NFPA 25. This term is not defined within any NFPA document. This code change proposes a definition, with clarifying information in the annex, for this term to eliminate any ambiguity on what may constitute “mechanical injury”.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 151-NFPA 25-2020 [New Section after 3.3.28]	Annex information to clarify

Submitter Information Verification

Submitter Full Name: Aaron Johnson
Organization:
Affiliation: SprinkGUARD
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 22 17:13:11 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The term “mechanical injury” is not used in the standard. The definition does not relate to the term, it is identifying spaces where mechanical injury might occur. The annex is very broad and would not have any practical application.

Public Input No. 18-NFPA 25-2020 [Section No. A.3.3.48]

A.3.3.48 Testing.

These tests follow up on the original acceptance test at intervals specified in the appropriate chapter of this standard. Examples of such tests might include, but not be limited to, waterflow tests, fire pump tests, alarm tests, and trip tests of dry pipe, deluge, or preaction valves.

Statement of Problem and Substantiation for Public Input

This PI removes these examples of tests from the definition of Testing and relocates them more properly to the associated annex note.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 17-NFPA 25-2020 [Section No. 3.3.48]	
Public Input No. 17-NFPA 25-2020 [Section No. 3.3.48]	

Submitter Information Verification

Submitter Full Name: Joe Scibetta
Organization: BuildingReports
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 05 15:38:32 EST 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-8-NFPA 25-2020
Statement: Examples should be in the annex to align with the MOS.

Public Input No. 175-NFPA 25-2020 [Section No. A.4.1.1]

A.4.1.1

Any portion or all of the inspection, testing, and maintenance can be permitted to be contracted with an inspection, testing, and maintenance service. When an inspection, testing, and maintenance service company agrees to perform inspections, tests, and ~~tests~~ maintenance at a specific frequency required by this standard, the inspection, testing, and maintenance service company should perform all inspections, tests, and ~~tests~~ maintenance that are required more frequently than the specified frequency. For example, the ITM service provider agrees to perform required inspections , tests, and ~~tests on~~ maintenance on an annual basis. Those inspections, tests, and ~~tests required~~ maintenance required on a daily, weekly, quarterly, and semiannual frequency should also be performed during the annual inspections and tests.

Statement of Problem and Substantiation for Public Input

The important term maintenance was left out of this section and needs to be included. It is very confusing to have inspection, testing, and maintenance service contractors only providing inspection and testing when the maintenance requirements are also in the standard. This section needs to be edited as above and then moved to the body of the standard and out of the Annes.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 174-NFPA 25-2020 [New Section after 4.1.1.2]	Remove A.4.1.1 from the Annex and add as 4.1.1.2.2.
Public Input No. 174-NFPA 25-2020 [New Section after 4.1.1.2]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 11:48:05 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-12-NFPA 25-2020

Statement: Clarifies that the owner is responsible for maintenance and the inspection, testing and management of impairments for water-based fire protection systems.

Public Input No. 229-NFPA 25-2020 [Section No. A.4.1.2]

A.4.1.2

In areas that have the potential for freezing temperatures below the level that can be adequately protected by ~~an allowable~~ a listed antifreeze solution, supplemental heat can be provided when temperatures fall below the level of the antifreeze solution. Other means of freeze protection for water-filled piping, including heated valve enclosures, heat tracing, insulation, or other methods, are allowed by the applicable installation standard. Installation standards require heat tracing protecting fire protection piping against freezing to be supervised.

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 10:19:54 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: This is consistent with the revision made to section 4.1.2.

Public Input No. 173-NFPA 25-2020 [Section No. A.4.1.5.1]

A.4.1.5.1

System deficiencies not explained by normal wear and tear, such as hydraulic shock or internal pipe corrosion , can often be indicators of system problems and should be investigated and evaluated by a qualified person or engineer. Failure to address these issues could lead to catastrophic failure. Examples of deficiencies that can be caused by issues beyond normal wear and tear are as follows:

(1) Pressure gauge deficiencies as follows:

- (2) Gauge not returning to zero
- (3) Gauge off scale
- (4) Gauge with bent needle

(5) Support devices deficiencies as follows:

- (6) Bent hangers and/or rods
- (7) Hangers pulled out/off structure
- (8) Indication of pipe or hanger movement such as the following:
  - (9) Hanger scrape marks on pipe, exposed pipe surface where pipe and hangers are painted
  - (10) Firestop material damaged at pipe penetration of fire-rated assembly

(11) Unexplained system damage as follows:

- (12) Unexplained system damage beyond normal wear and tear , such as holes or pinholes
- (13) Bent or broken shafts on valves
- (14) Bent or broken valve clappers
- (15) Unexplained leakage at branch lines, cross main, or feed main piping
- (16) Unexplained leakage at closed nipples , pipe connections to fittings, and sprinklers
- (17) Loose bolts on flanges and couplings

(18) Fire pump deficiencies as follows:

- (19) Fire pump driver out of alignment
- (20) Vibration of fire pump and/or driver
- (21) Unusual sprinkler system piping noises (sharp report, loud bang)

Statement of Problem and Substantiation for Public Input

Wear and tear is not well defined and needs to be further developed to include additional common items such as corrosion that is not wear and tear and has potentially significant implications to system operation, impairment, and system failure. "Hydraulic shock" may not be understood by the chapter 4 user and additional leakage failure scenarios need to be included for the benefit of the chapter 4 user that is intended to be the owner and / or occupant.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 172-NFPA 25-2020 [Section No. 4.1.5.1 [Excluding any Sub-Sections]]	Improves the owner / occupants chances of understanding the intent of this section.
Public Input No. 172-NFPA 25-2020 [Section No. 4.1.5.1 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 10:52:16 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-36-NFPA 25-2020

Statement: Internal pipe corrosion can be an indicator of system problems not related to wear and tear. Additional text provides some examples of issues related to corrosion.

Public Input No. 275-NFPA 25-2020 [New Section after A.4.1.5.1.1]

A.4.1.5.1.2 The process of correcting or repairing a critical deficiency should begin as soon as it is discovered and with a sense of urgency. If the necessary parts are on hand the correction or repair can be accomplished in a matter of a few hours. However, in many cases it make take several days to order repair parts, have them shipped, and schedule manpower to make the repair. There are very few instances when a critical deficiency cannot be corrected or repaired within 30 days. If the correction or repair can't be accomplished within 30 days, the AHJ should be notified and permission obtained for an exception to this requirement.

Statement of Problem and Substantiation for Public Input

Annex text for new section 4.1.5.1.2 explaining the need for a sense of urgency to correct a critical deficiency, dependent on the availability of parts and labor.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 273-NFPA 25-2020 [New Section after 4.1.5.1]	Annex text for this new section.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 14:49:27 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 should not address specific timelines for correcting deficiencies and impairments. This is under the purview of the AHJ, owner, and insuring body.

Public Input No. 276-NFPA 25-2020 [New Section after A.4.1.5.1.1]

A.4.1.5.1.2.1 The AHJ can establish a different time frame for repairing critical deficiencies. Some AHJs want repairs performed sooner than within 30 days, while others want to allow longer time frames.

Statement of Problem and Substantiation for Public Input

Annex text for new section 4.1.5.1.2.1 explaining that AHJs may want different time frames than those specified, and giving them the authority to do so.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 273-NFPA 25-2020 [New Section after 4.1.5.1]	Annex text for this new requirement.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 14:54:04 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 should not address specific timelines for correcting deficiencies and impairments. This is under the purview of the AHJ, owner, and insuring body.

Public Input No. 277-NFPA 25-2020 [New Section after A.4.1.5.1.1]

A.4.1.5.1.3 Non-critical deficiencies do not have an effect on system performance and therefore correcting or repairing them is allowed to take longer. If the correction or repair can't be accomplished within 90 days, the AHJ should be notified and permission obtained for an exception to this requirement.

Statement of Problem and Substantiation for Public Input

Annex text for new section 4.1.5.1.3 explaining that non-critical deficiencies are allowed to have a longer time frame for repair or correction.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 273-NFPA 25-2020 [New Section after 4.1.5.1]	Annex text for new section.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 15:01:54 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 should not address specific timelines for correcting deficiencies and impairments. This is under the purview of the AHJ, owner, and insuring body.

Public Input No. 278-NFPA 25-2020 [New Section after A.4.1.5.1.1]

A.4.1.5.1.3.1 The AHJ can establish a different time frame for repairing non-critical deficiencies. Some AHJs want repairs performed sooner than within 90 days, while others want to allow longer time frames.

Statement of Problem and Substantiation for Public Input

Annex text for new section 4.1.5.1.3.1 explaining that AHJs can require different time frames than those specified.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 273-NFPA 25-2020 [New Section after 4.1.5.1]	Annex text for new section.

Submitter Information Verification

Submitter Full Name: Terry Victor

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 15:06:29 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 should not address specific timelines for correcting deficiencies and impairments. This is under the purview of the AHJ, owner, and insuring body.

Public Input No. 265-NFPA 25-2020 [New Section after A.4.1.7]

A.4.1.8 **(see A.4.1.7)**

A.4.1.8.3 (see A.4.1.6.2)

Statement of Problem and Substantiation for Public Input

These annex references go with Public Input No. 263 and will only be needed if that PI is accepted.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 263-NFPA 25-2020 [New Section after 4.1.7.3]	Annex text for new requirement.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 13:57:03 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: NFPA 25 is based on the premise that the system was designed and installed correctly with the applicable standard at the time. If changes are made to the building, water supply, or its use, section 4.1.6 and 4.1.7 already requires an evaluation.This recommendation may also conflict with the retroactivity clause of NFPA 13.

Public Input No. 155-NFPA 25-2020 [New Section after A.4.5]

NEW Annex A.4.6

A.4.6.1 Using screwdrivers or other means to jam paddle-type waterflow alarm devices into position can damage the device and should be avoided. Tools and devices being used in this manner often get left behind rendering the waterflow alarm out of service until they are discovered.

A.4.6.2 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 ot maintenance essentially impairing the device itself. There are many ways to indicate signal interruption, including but not limited to initiation an audible and visual trouble condition, or a light near the waterflow alarm device.

Statement of Problem and Substantiation for Public Input

A new prohibition against rendering a vane-type waterflow alarm out of service is proposed for chapter 4. This annex language is intended to help clarify the intent and inherent dangers of these practices.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 154-NFPA 25-2020 [New Section after 4.6.5]	Code language proposed for chapter 4
Public Input No. 154-NFPA 25-2020 [New Section after 4.6.5]	

Submitter Information Verification

Submitter Full Name: Jason Webb
Organization: Potter Electric Signal Company
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 23 12:21:32 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The proposed language does not belong in Chapter 4. If a change is made it should be to Chapter 13.

Public Input No. 181-NFPA 25-2020 [Section No. A.4.9.5]

A.4.9.5

Most places using or storing hazardous materials have stations set up for employees ~~where material safety~~ where safety data sheets (~~MSDSs~~ SDSs) are stored. The inspector should be familiar with the types of materials present and the appropriate actions to take in an emergency.

Statement of Problem and Substantiation for Public Input

The term Material Safety Data Sheets is no longer utilized in the safety world. The new term is Safety Data Sheets, abbreviated SDS.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Fri Jun 26 22:10:18 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-37-NFPA 25-2020

Statement: Editorial correction.

Public Input No. 98-NFPA 25-2020 [Section No. A.5.2.1.1]

A.5.2.1.1

The coverplates of concealed sprinklers do not need to be removed for inspection. Where the inspection of coverplates for concealed sprinklers reveals possible signs of leakage, damage, corrosion, or other adverse conditions, those coverplates should be removed to facilitate a closer inspection of the concealed sprinkler.

<u>The Floor level can include normally walkable or occupiable space. This can include mezzanines and catwalks. using these walkways can be practical to get closer to sprinklers, pipe, and other appurtenances for a more in-depth inspection.</u>

Statement of Problem and Substantiation for Public Input

Mezzanine is not clearly defined as a floor. Inspectors sometimes do not utilize mezzanine or catwalks if available to perform inspection of sprinklers and components because the standard states “from the floor level.” This language will provide some guidance on using other available means to conduct a thorough inspection of sprinkler system components.

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 03 16:00:07 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-60-NFPA 25-2020

Statement: The term floor level is used in multiple places throughout chapters 5 and 12 and does cause some confusion when trying to determine to what lengths the qualified person performing the inspection should go to when inspecting sprinklers, water mist nozzles, pipe, tubing, fittings, hangers, braces, and supports.

Public Input No. 190-NFPA 25-2020 [Section No. A.5.2.1.2]

A.5.2.1.2

NFPA 13 in the storage definitions defines clearance as the distance from the top of storage to the ceiling sprinkler deflectors. Other obstruction rules are impractical to enforce under this standard. However, if obstructions that might cause a concern are present, the owner is advised to have an engineering evaluation performed. <u>The reference to storage does not only apply to storage facilities but includes the contents of the room and should not eliminate the clearance requirements to deflectors of stored contents within a compartment covered by standard spray pendents.</u>

Statement of Problem and Substantiation for Public Input

There seems to be some confusion to the use of storage and that it only pertains to storage applications but this annex I feels provides a little more clarity by introducing the word "content" to help clarify the intent.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 21:40:21 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: <u>FR-61-NFPA 25-2020</u>

Statement: The addition clarifies the committee's intent to cover storage and contents within a room.

Public Input No. 182-NFPA 25-2020 [Section No. A.5.2.1.2.3]

A.5.2.1.2.3

The special sprinklers that the minimum 36 in. (915 mm) clearance rule generally applies to includes ~~large drop~~ sprinklers, CMSA sprinklers, and early suppression fast-response (ESFR) sprinklers.

Statement of Problem and Substantiation for Public Input

The term "Large Drop" has been eliminated from NFPA 13 since the 2010 edition. The term CMSA covers what was formerly known as large drop sprinklers.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 22:16:37 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Large drop sprinklers need to remain referenced in the annex because of those still existing in sprinkler systems. See alternate action taken on this annex section in FR42.

Public Input No. 40-NFPA 25-2020 [Section No. A.5.2.1.2.3]

A.5.2.1.2.3

The ~~special sprinklers that the~~ minimum 36 in. (915 mm) clearance rule ~~generally~~ applies to ~~includes large drop sprinklers, CMSA sprinklers, and early suppression fast-response (ESFR) sprinklers.~~ most CMSA however a small number of listings allow reduced clearances..

Statement of Problem and Substantiation for Public Input

The section as written made no sense. And the comment included ESFR which, was not correct- both the comment and being in this section.

Submitter Information Verification

Submitter Full Name: Bruce Clarke
Organization: American International Group,
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 04 08:41:41 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The committee isn't aware of any CSMA sprinklers that has less than a 36" clearance. See alternate action taken on this annex section in FR42.

Public Input No. 286-NFPA 25-2020 [Sections A.5.2.2, A.5.2.2.1]

Sections A.5.2.2, A.5.2.2.1

~~A~~ A .5.2.2 — .1

The conditions described in 5.2.2.1 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.

~~**A.5.2.2.1**~~ —

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 exercised in the determination of the extent of corrosion that would necessitate replacement.

Statement of Problem and Substantiation for Public Input

The Annex material should be a part of A.5.2.2.1

Submitter Information Verification

Submitter Full Name: Tracey Bellamy

Organization: Telgian Corporation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 16:00:48 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: There are other conditions in 5.2.2 other than corrosion.

Public Input No. 104-NFPA 25-2020 [Section No. A.5.2.2.1]

A.5.2.2.1

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 ~~exercised~~ applied in the determination of the extent of corrosion that would necessitate replacement.

Statement of Problem and Substantiation for Public Input

The word exercise has increased in usage with the 2020 edition but there is no definition. There are one or two uses of this term in the document regarding judgment, changing the word from exercise to applied will limit its use to equipment only.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 105-NFPA 25-2020 [Section No. A.13.5.2.2]	
Public Input No. 91-NFPA 25-2020 [New Section after 3.3.11.2]	
Public Input No. 91-NFPA 25-2020 [New Section after 3.3.11.2]	
Public Input No. 105-NFPA 25-2020 [Section No. A.13.5.2.2]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 03 16:39:06 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-62-NFPA 25-2020

Statement: The technical committee agrees with changing the terminology for clarity.

Public Input No. 218-NFPA 25-2020 [Section No. A.5.2.5]

A.5.2.5

The hydraulic design information sign should be secured to the riser with durable wire, chain, or equivalent. *(See Figure A.5.2.5.)*

Figure A.5.2.5 Sample Hydraulic Design Information Sign.

This system as shown on______________ company
print no. ______________ dated__________
for ______________________________
at______________ contract no.__________
is designed to discharge at a rate of____________
gpm per ft^2 (L/min per m^2) of floor area over a maximum
area of______________ ft^2 (m^2) 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.

Statement of Problem and Substantiation for Public Input

Update to match the current sample hydraulic design information sign in NFPA 13. Reference NFPA 13-2019 Figure A.28.5

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 09:51:03 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-63-NFPA 25-2020
Statement: The technical committee agrees with extracting the latest sign from NFPA 13.

Public Input No. 97-NFPA 25-2020 [Section No. A.5.3.1.1.1.3]

~~**A.5.3.1.1.1.3**~~

~~Sprinklers defined as fast response have a thermal element with an RTI of 50 (meters-seconds)~~ $^{1}/_{2}$ ~~or less. A quick-response sprinkler, residential sprinkler, and early suppression fast-response (ESFR) sprinklers are examples of fast-response sprinklers.~~

Statement of Problem and Substantiation for Public Input

"From Manufacturers Council to the ITM Committee.

Incorporate UL test data."

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 95-NFPA 25-2020 [Section No. 5.3.1.1.1]	
Public Input No. 270-NFPA 25-2020 [Section No. 5.3.1.1]	
Public Input No. 271-NFPA 25-2020 [Section No. 5.3.1.1.1.3]	
Public Input No. 272-NFPA 25-2020 [New Section after 5.3.1.1.1.2]	
Public Input No. 274-NFPA 25-2020 [Section No. 5.3.1.1.1.5]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 03 15:50:32 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This annex text is accurate and should not be removed. The UL test data does not affect this annex text.

Public Input No. 292-NFPA 25-2020 [New Section after A.5.3.1.1.2]

A.5.3.1.1.4 Section 5.2.1.1.4 allows for sprinklers that show signs of corrosion or loading not detrimental to the sprinkler performance to remain in service. Testing is the only way to be sure if the corrosion or loading is detrimental to the sprinkler performance.

Statement of Problem and Substantiation for Public Input

There is language in section 5.2.1.1.1 that infers that as long as corrosion or loaded on a sprinkler isn't detrimental to the sprinkler performance the corroded sprinklers can remain in service. Many sprinkler contractors submit samples to the testing laboratories to determine if the sprinkler performance is acceptable. However, there isn't any criteria for retesting the remaining sprinklers. This new section provides criteria for submitting these sprinklers for testing as well as criteria for retesting the remaining sprinklers.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 291-NFPA 25-2020 [New Section after 5.3.1.1.3]	Annex text to new section.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 16:42:42 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: This criteria isn't necessary and a degree of judgement is needed to determine if a sprinkler is severely loaded or corroded. Guidance is in the annex to help determine the severity. See A.5.2.1.1.1.

Public Input No. 188-NFPA 25-2020 [New Section after A.5.3.1.2]

A.5.3.1.4

A sign or label should be attached to each system riser where the sample test covers more than one system. For example, if a sample area covers multiple floors in a high-rise building, a sign or label should be attached at each floor control valve assembly.

It is possible for a single system to have a variety of sprinkler types or environments having different test frequencies. Multiple labels or signs may be needed to accurately reflect the extent of sprinkler replacements or sample testing.

Statement of Problem and Substantiation for Public Input

If PI 187 is accepted, this annex language provides some guidance on where labels or signs should be posted.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 187-NFPA 25-2020 [New Section after 5.3.1.3.1]	
Public Input No. 187-NFPA 25-2020 [New Section after 5.3.1.3.1]	

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 29 18:10:27 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: Record keeping is the responsibility of the owner and is already covered in Chapter 4. A Task Group will be looking at this issue and any others that address documentation.

Public Input No. 231-NFPA 25-2020 [Section No. A.5.3.4.3.1]

A.5.3.4.3.1

Where inspecting antifreeze systems employing listed CPVC piping, the solution should be verified to be ~~glycerine based.~~ listed for use with fire sprinkler systems. Antifreezes that are listed for fire sprinkler use are tested for compatibility with CPVC.

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use. The antifreeze listing protocol tests for CPVC compatibility.

Submitter Information Verification

Submitter Full Name: Manuel Silva

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 10:25:34 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 234-NFPA 25-2020 [Section No. A.5.3.4.4.1]

~~**A.5.3.4.4.1**~~

~~All antifreeze systems installed after September 30, 2012, are assumed to meet the minimum requirements of NFPA 13, 2013 edition. For systems installed after September 30, 2012, that do not meet the requirements of the 2013 edition of NFPA 13, consideration should be given to applying 5.3.4.4.1 .~~

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva
Organization: Johnson Controls
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jun 30 10:32:55 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 243-NFPA 25-2020 [Sections A.5.3.4.4.1, A.5.3.4.4.1(1), A.5.3.4.4.1(2)]

~~Sections A.5.3.4.4.1, A.5.3.4.4.1(1), A.5.3.4.4.1(2)~~

~~A.5.3.4.4.1~~ —

~~All antifreeze systems installed after September 30, 2012, are assumed to meet the minimum requirements of NFPA 13, 2013 edition. For systems installed after September 30, 2012, that do not meet the requirements of the 2013 edition of NFPA 13, consideration should be given to applying 5.3.4.4.1 .~~

~~A.5.3.4.4.1(1)~~ —

~~The use of factory premixed solutions is required because solutions that are not mixed properly have a possibility of separating from the water, allowing the pure concentrate (which is heavier than water) to drop out of solution and collect in drops or low points of the system. Such concentrations are combustible and could present problems during fires. The properties of glycerine are shown in Table A.5.3.4.4.1(1) .~~

~~Table A.5.3.4.4.1(1) Properties of Glycerine and Propylene Glycol~~

~~Material Solution~~

~~(% by Volume) Specific~~

~~Gravity at 77°F~~

~~(25°C) Freezing Point °F °C Glycerine (C.P. or U.S.P.~~
~~grade) 0 1.000 32 0 5 1.014 31 –0.5 10 1.029 28 –2.2 - 15 1.043 25 –3.9 - 20 1.059 20 –6.7 - 25 1.071~~
~~glycol 0 1.000 32 0 5 1.004 26 –3 - 10 1.008 25 –4 - 15 1.012 22 –6 - 20 1.016 19 –7 - 25 1.020 15 –10~~

~~A.5.3.4.4.1(2)~~ —

~~Antifreeze solutions with a maximum concentration of 38 percent glycerine or 30 percent propylene glycol do not require a deterministic hazard analysis. The risk assessment should be prepared by individual(s) who can demonstrate an ability to prepare a risk assessment by education and experience and who can demonstrate an understanding of the issues associated with antifreeze sprinkler systems, including the available related fire tests. For additional information regarding the risk assessment process, documentation to be submitted, and the AHJ's role, refer to NFPA 551 and the SFPE *Engineering Guide: Fire Risk Assessment* .~~

~~Propylene glycol and glycerine antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables might influence the potential for large-scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, ceiling height, and size of fire at the time of sprinkler discharge. All relevant data and information should be carefully reviewed and considered in the deterministic risk assessment. As appropriate, the risk assessment should consider factors such as the following:~~

(1) ~~Occupancy use group per NFPA 13~~

(2) ~~Ceiling height~~

(3) ~~Antifreeze solution concentration and type~~

(4) ~~Maximum system pressure (normal static pressures)~~

(5) ~~Sprinkler type, including K-factor~~

(6) ~~Potential and actual fuel load (Christmas trees)~~

(7) ~~Type of structure (construction types)~~

(8) ~~Size of structure~~

(9) ~~Ability of the sprinkler system to control the fire~~

(10) ~~Occupied spaces versus unoccupied spaces such as trash enclosures and dust collectors as follows:~~

(11) ~~Adjacent occupancies (spaces adjacent to the area protected by antifreeze~~

~~systems)~~

(12) ~~Separation between areas protected with an antifreeze system and other areas~~

(13) ~~Ventilation of areas protected with an antifreeze system to prevent damage to adjacent areas~~

(14) ~~Duration of antifreeze discharge~~

~~Tests summarized in Table A.5.3.4.4.1(2) show that large-scale ignition of the sprinkler spray did not occur in tests with 50 percent glycerine and 40 percent propylene glycol antifreeze solutions discharging onto a fire having a nominal heat release rate (HRR) of 1.4 MW. A deterministic risk assessment that demonstrates that the heat release rate for reasonably credible fire scenarios will be less than 1.4 MW at the time of sprinkler activation should be acceptable. The risk assessment should also address issues associated with management of change, such as change in occupancy and temporary fuel loads. A natural Christmas tree can result in an HRR well above 1.4 MW at the time of sprinkler activation. In addition to the variables identified previously, the deterministic risk assessment should include occupancy, quantity of solution, impact on life safety, and potential increase in heat release rate.~~

~~The following is a list of research reports that have been issued by the Fire Protection Research Foundation (FPRF) related to the use of antifreeze in sprinkler systems that should be considered in the development of the deterministic risk assessment:~~

(1) ~~*Antifreeze Systems in Home Fire Sprinkler Systems — Literature Review and Research Plan* , Fire Protection Research Foundation, June 2010.~~

(2) ~~*Antifreeze Systems in Home Fire Sprinkler Systems — Phase II Final Report* , Fire Protection Research Foundation, December 2010.~~

(3) ~~*Antifreeze Solutions Supplied through Spray Sprinklers — Interim Report* , Fire Protection Research Foundation, February 2012.~~

~~Table A.5.3.4.4.1(2) provides an overview of the testing conducted by the FPRF.~~

~~Table A.5.3.4.4.1(2) FPRF Testing Summary~~

~~Topic Information Scope of sprinklers tested The following sprinklers were used during the residential sprinkler research program described in the report dated December 2010: - (1) Residential pendent style having nominal K-factors of 3.1, 4.9, and 7.4 gpm/psi $^{1/2}$ - (2) Residential concealed pendent style having a nominal K-factor of 4.9 gpm/psi $^{1/2}$ - (3) Residential sidewall style having nominal K-factors of 4.2 and 5.5 gpm/psi $^{1/2}$ - The following sprinklers were used during the spray sprinkler research program described in the report dated February 2012: - (1) Residential pendent style having a nominal K-factor of 3.1 gpm/psi $^{1/2}$ - (2) Standard spray pendent style having nominal K-factors of 2.8, 4.2, 5.6, and 8.0 gpm/psi $^{1/2}$ - (3) Standard spray concealed pendent style having a nominal K-factor of 5.6 gpm/psi $^{1/2}$ - (4) Standard spray upright style having a nominal K-factor of 5.6 gpm/psi $^{1/2}$ - (5) Standard spray extended coverage pendent style having a nominal K-factor of 5.6 gpm/psi $^{1/2}$ Antifreeze solution concentration <50% glycerine and <40% propylene glycol antifreeze solutions — solutions were not tested. - 50% glycerine and 40% propylene glycol antifreeze solutions — large-scale ignition of the sprinkler spray did not occur in tests with sprinkler discharge onto a fire having a nominal heat release rate (HRR) of 1.4 MW. Large-scale ignition of the sprinkler spray occurred in multiple tests with sprinkler discharge onto a fire having a nominal HRR of 3.0 MW. - 55% glycerine and 45% propylene glycol antifreeze solutions — large-scale ignition of the sprinkler spray occurred in tests with sprinkler discharge onto a fire having a nominal HRR of 1.4 MW. - >55% glycerine and >45% propylene glycol antifreeze solutions — large-scale ignition of the sprinkler spray occurred in tests with sprinkler discharge onto a fire having an HRR of less~~

~~than 500 kW. 70% glycerine and 60% propylene glycol antifreeze solutions — maximum antifreeze solution concentrations tested. Sprinkler inlet pressure Large-scale ignition of the sprinkler discharge spray was not observed when the sprinkler inlet pressure was 50 psi or less for tests using 50% glycerine or 40% propylene glycol. Ceiling height When discharging 50% glycerine and 40% propylene glycol antifreeze solutions onto fires having an HRR of 1.4 MW, no large-scale ignition of the sprinkler spray was observed with ceiling heights up to 20 ft. When discharging 50% glycerine and 40% propylene glycol antifreeze solutions onto fires having an HRR of 3.0 MW, large-scale ignition of the sprinkler spray was observed at a ceiling height of 20 ft. Fire control The test results described in the test reports of December 2010 and February 2012 indicated that discharging glycerine and propylene glycol antifreeze solutions onto a fire can temporarily increase the fire size until water is discharged. As a part of the residential sprinkler research described in report dated December 2010, tests were conducted to evaluate the effectiveness of residential sprinklers to control fires involving furniture and simulated furniture. The results of these tests indicated that 50% glycerine and 40% propylene glycol antifreeze solutions demonstrated the ability to control the furniture-type fires in a manner similar to water. For standard spray–type sprinklers, no tests were conducted to investigate the ability of these sprinklers to control the types and sizes of fires that these sprinklers are intended to protect.~~

Statement of Problem and Substantiation for Public Input

The language in these annex sections will not longer be applicable as all antifreeze will have to be listed before the release of the 2023 edition of this standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 94-NFPA 25-2020 [Section No. 5.3.4.4.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers
Organization: National Fire Sprinkler Associ
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 11:03:59 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 235-NFPA 25-2020 [Section No. A.5.3.4.4.1(1)]

~~**A.5.3.4.4.1(1)**~~

~~The use of factory premixed solutions is required because solutions that are not mixed properly have a possibility of separating from the water, allowing the pure concentrate (which is heavier than water) to drop out of solution and collect in drops or low points of the system. Such concentrations are combustible and could present problems during fires. The properties of glycerine are shown in Table A.5.3.4.4.1(1).~~

~~Table A.5.3.4.4.1(1) Properties of Glycerine and Propylene Glycol~~

~~Material Solution~~

~~(% by Volume) Specific~~

~~Gravity at 77°F~~

~~(25°C) Freezing Point °F °C Glycerine (C.P. or U.S.P. grade) 0 1.000 32 0 5 1.014 31 −0.5 10 1.029 28 −2.2 - 15 1.043 25 −3.9 - 20 1.059 20 −6.7 - 25 1.071 glycol 0 1.000 32 0 5 1.004 26 −3 - 10 1.008 25 −4 - 15 1.012 22 −6 - 20 1.016 19 −7 - 25 1.020 15 −10~~

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:34:03 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 236-NFPA 25-2020 [Section No. A.5.3.4.4.1(2)]

~~**A.5.3.4.4.1(2)**~~

~~Antifreeze solutions with a maximum concentration of 38 percent glycerine or 30 percent propylene glycol do not require a deterministic hazard analysis. The risk assessment should be prepared by individual(s) who can demonstrate an ability to prepare a risk assessment by education and experience and who can demonstrate an understanding of the issues associated with antifreeze sprinkler systems, including the available related fire tests. For additional information regarding the risk assessment process, documentation to be submitted, and the AHJ's role, refer to NFPA 551 and the SFPE *Engineering Guide: Fire Risk Assessment* .~~

~~Propylene glycol and glycerine antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables might influence the potential for large-scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, ceiling height, and size of fire at the time of sprinkler discharge. All relevant data and information should be carefully reviewed and considered in the deterministic risk assessment. As appropriate, the risk assessment should consider factors such as the following:~~

(1) ~~Occupancy use group per NFPA 13~~

(2) ~~Ceiling height~~

(3) ~~Antifreeze solution concentration and type~~

(4) ~~Maximum system pressure (normal static pressures)~~

(5) ~~Sprinkler type, including K-factor~~

(6) ~~Potential and actual fuel load (Christmas trees)~~

(7) ~~Type of structure (construction types)~~

(8) ~~Size of structure~~

(9) ~~Ability of the sprinkler system to control the fire~~

(10) ~~Occupied spaces versus unoccupied spaces such as trash enclosures and dust collectors as follows:~~

  (11) ~~Adjacent occupancies (spaces adjacent to the area protected by antifreeze systems)~~

  (12) ~~Separation between areas protected with an antifreeze system and other areas~~

  (13) ~~Ventilation of areas protected with an antifreeze system to prevent damage to adjacent areas~~

  (14) ~~Duration of antifreeze discharge~~

~~Tests summarized in Table A.5.3.4.4.1(2) show that large-scale ignition of the sprinkler spray did not occur in tests with 50 percent glycerine and 40 percent propylene glycol antifreeze solutions discharging onto a fire having a nominal heat release rate (HRR) of 1.4 MW. A deterministic risk assessment that demonstrates that the heat release rate for reasonably credible fire scenarios will be less than 1.4 MW at the time of sprinkler activation should be acceptable. The risk assessment should also address issues associated with management of change, such as change in occupancy and temporary fuel loads. A natural Christmas tree can result in an HRR well above 1.4 MW at the time of sprinkler activation. In addition to the~~

~~variables identified previously, the deterministic risk assessment should include occupancy, quantity of solution, impact on life safety, and potential increase in heat release rate.~~

~~The following is a list of research reports that have been issued by the Fire Protection Research Foundation (FPRF) related to the use of antifreeze in sprinkler systems that should be considered in the development of the deterministic risk assessment:~~

(1) ~~*Antifreeze Systems in Home Fire Sprinkler Systems — Literature Review and Research Plan* , Fire Protection Research Foundation, June 2010.~~

(2) ~~*Antifreeze Systems in Home Fire Sprinkler Systems — Phase II Final Report* , Fire Protection Research Foundation, December 2010.~~

(3) ~~*Antifreeze Solutions Supplied through Spray Sprinklers — Interim Report* , Fire Protection Research Foundation, February 2012.~~

~~Table A.5.3.4.4.1(2) provides an overview of the testing conducted by the FPRF.~~

~~Table A.5.3.4.4.1(2) FPRF Testing Summary~~

~~Topic Information Scope of sprinklers tested The following sprinklers were used during the residential sprinkler research program described in the report dated December 2010: - (1) Residential pendent style having nominal K-factors of 3.1, 4.9, and 7.4 gpm/psi 1/2 - (2) Residential concealed pendent style having a nominal K-factor of 4.9 gpm/psi 1/2 - (3) Residential sidewall style having nominal K-factors of 4.2 and 5.5 gpm/psi 1/2 - The following sprinklers were used during the spray sprinkler research program described in the report dated February 2012: - (1) Residential pendent style having a nominal K-factor of 3.1 gpm/psi 1/2 - (2) Standard spray pendent style having nominal K-factors of 2.8, 4.2, 5.6, and 8.0 gpm/psi 1/2 - (3) Standard spray concealed pendent style having a nominal K-factor of 5.6 gpm/psi 1/2 - (4) Standard spray upright style having a nominal K-factor of 5.6 gpm/psi 1/2 - (5) Standard spray extended coverage pendent style having a nominal K-factor of 5.6 gpm/psi 1/2 Antifreeze solution concentration <50% glycerine and <40% propylene glycol antifreeze solutions — solutions were not tested. - 50% glycerine and 40% propylene glycol antifreeze solutions — large-scale ignition of the sprinkler spray did not occur in tests with sprinkler discharge onto a fire having a nominal heat release rate (HRR) of 1.4 MW. Large-scale ignition of the sprinkler spray occurred in multiple tests with sprinkler discharge onto a fire having a nominal HRR of 3.0 MW. - 55% glycerine and 45% propylene glycol antifreeze solutions — large-scale ignition of the sprinkler spray occurred in tests with sprinkler discharge onto a fire having a nominal HRR of 1.4 MW. - >55% glycerine and >45% propylene glycol antifreeze solutions — large-scale ignition of the sprinkler spray occurred in tests with sprinkler discharge onto a fire having an HRR of less than 500 kW. - 70% glycerine and 60% propylene glycol antifreeze solutions — maximum antifreeze solution concentrations tested. Sprinkler inlet pressure Large-scale ignition of the sprinkler discharge spray was not observed when the sprinkler inlet pressure was 50 psi or less for tests using 50% glycerine or 40% propylene glycol. Ceiling height When discharging 50% glycerine and 40% propylene glycol antifreeze solutions onto fires having an HRR of 1.4 MW, no large-scale ignition of the sprinkler spray was observed with ceiling heights up to 20 ft. - When discharging 50% glycerine and 40% propylene glycol antifreeze solutions onto fires having an HRR of 3.0 MW, large-scale ignition of the sprinkler spray was observed at a ceiling height of 20 ft. Fire control The test results described in the test reports of December 2010 and February 2012 indicated that discharging glycerine and propylene glycol antifreeze solutions onto a fire can temporarily increase the fire size until water is discharged. - As a part of the residential sprinkler research described in report dated December 2010, tests were conducted to evaluate the effectiveness of residential sprinklers to control fires involving furniture and simulated furniture. The results of these tests indicated that 50% glycerine and 40% propylene glycol antifreeze solutions demonstrated the ability to control the furniture-type fires in a manner similar to water. - For standard spray–type sprinklers, no tests were conducted to investigate the ability of these sprinklers to control the types and sizes of fires that these sprinklers are intended to protect.~~

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:35:25 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-75-NFPA 25-2020

Statement: Various changes needed to be made to 5.3.4 Antifreeze Systems based on the following:

The existence of listed antifreeze solutions that weren't available when NFPA 25-2020 was released.

The need to include some of the listing requirements and limitations of these new antifreeze solutions.

The need to provide requirements and limitations for systems installed using legacy solutions of glycerine and propylene glycol.

The sunset date has been deleted as the release of this document is beyond that date.

Additional data was provided in a UL report dated September 16, 2020 that included information on the ability of low concentrations of propylene glycol and glycerin to resist ignition and substantial contribution to a fire. This report is available on the UL website for public review.

Public Input No. 183-NFPA 25-2020 [Section No. A.5.4.1.2]

A.5.4.1.2

To help in the replacement of like sprinklers, unique sprinkler identification numbers (SINs) are provided on all sprinklers manufactured after January 1, 2001. The SIN accounts for differences in ~~orifice size,~~ K-factor deflector characteristics, pressure rating, and thermal sensitivity.

Statement of Problem and Substantiation for Public Input

NFPA 13 no longer utilize the term orifice. It was replaced with the term K-factor.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 26 22:20:38 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-65-NFPA 25-2020

Statement: NFPA 13 no longer utilizes the term orifice. It was replaced with the term K-factor.

Public Input No. 207-NFPA 25-2020 [Section No. A.7.3.1]

A.7.3.1

Full flow tests of underground piping can be accomplished by methods including, but not limited to, ~~flow through yard hydrants, fire department connections once the check valve has been removed~~ fire pump test headers, standpipe connections , main drain connections, and hose connections. ~~The flow test should be conducted in accordance with NFPA 291.~~ Temporary modifications to existing systems for purely testing of the underground water flows should not be required per NFPA 13, 2019 edition (section 16.14.5.1.1)

Statement of Problem and Substantiation for Public Input

A.7.3.1 needs to be revised to clarify the intent of the test. By referencing NFPA 291 in the annex it gives the indication that a high degree of accuracy is required but in the same annex section it lists other options that do not attain the same accuracy. If we are looking to verify a degree of assurance that all underground (including the feed into the building) is of good condition, then the flow tests per NFPA 291 would not meet that requirement. Furthermore, not all service supply mains have attached hydrants downstream of the supply to test from.

Submitter Information Verification

Submitter Full Name: Jeff Lewis

Organization: VSC Fire Security

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 08:50:37 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Annex text was added to A.7.3.1 addressing the use of a standpipe or fire pump test for the underground and exposed piping flow tests. Section 7.3.1.2 addresses the scenario when a means is not provided.

Public Input No. 37-NFPA 25-2020 [Section No. A.8.1.1.2.1]

A.8.~~1~~ 3 ~~.1.~~ 2.~~1~~ — 9 (j)

~~Shaft movement should be less than~~ ~~1⁄8~~
Checking for excess shaft movement (commonly called a run out check with production pumps) is typically done with the pump and driver shafts marked, run, then decoupled for inspection of marking movement as a way to assess overall bearing and shaft connection condition. Worn bearings on the pump or driver can transfer (or try to transfer) radial load to the end bearing. Typical fire pump unit horizontal shaft movement over 1⁄8 in. (3 mm) at start up (i . e. when cool and not operating over along period of time) would trigger investigation.

Statement of Problem and Substantiation for Public Input

Section revised to relocate to more applicable section and give more detail on what this inspection is... is for.

Submitter Information Verification

Submitter Full Name: Bruce Clarke
Organization: American International Group,
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 01 15:12:20 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: The technical committee did not incorporate the language proposed to the body so it is not appropriate to add this annex text.

Public Input No. 7-NFPA 25-2019 [Section No. A.8.2.2(5)]

A.8.2.2(~~5~~ 1) — (f)

~~Visual indicators other than pilot lights can be used for the same purpose.~~

Where the fire pump base plate has not been grouted by the original installer, the owner should be advised to add grout below the baseplate to ensure proper alignment is maintained between the pump and driver. Both angualar and parallel alignment should be verified prior to adding grout to the baseplate of existing fire pump assemblies. Where the existing pump and driver are not in proper angular and parallel alignment, refer to NFPA 25 section A.6.5 for guidance.

Statement of Problem and Substantiation for Public Input

It is NOT my intent to delete the section above, only to add supporting language to associate 8.2.2(1)(f)

The additional annex language provides some direction for ITM personnel or owner's to take action where existing fire pump base plates have not been properly grouted

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 6-NFPA 25-2019 [Section No. 8.2.2]	
Public Input No. 6-NFPA 25-2019 [Section No. 8.2.2]	

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire and life safety America
Affiliation: NFPA 13 Installation Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Dec 04 18:34:32 EST 2019
Committee: INM-AAA

Committee Statement

Resolution: The technical committee did not incorporate the language proposed to the body so it is not appropriate to add this annex text.

Public Input No. 44-NFPA 25-2020 [Section No. A.8.3.7.2.3(3)]

A.8.3.7.2.3(3)

~~While pressures that exceed the original unadjusted field test curve or fire pump nameplate are considered acceptable, the test could~~ Annual pump test results that indicate a pump is operating above original specifications or, "better than new" while no longer considered a failed test should be questioned. As with a test performing below a curve, a test performing significantly above a pump curve could also be flawed and should be thoroughly reviewed by a qualified person. As example, noncalibrated or damaged gages set at 15% above "zero" could create a pump test that shows 5% "better than new" when in reality, the test would show a pump operating at 10% below the manufacturers curve. Other causes for such test results could include error reading pitot tubes, a flow meter out-of-calibration, or improper recording of dropping tank pressures.

Statement of Problem and Substantiation for Public Input

While this was part of NFPA 25 and removed, I still see 10-15% of pump tests with comments such as "pump performing 20% better than new... great." Wording in NFPA 25 needs to clarify this should could a concern... if we are not going to re-add the "5% over criteria" back as part of pump test criteria.

Submitter Information Verification

Submitter Full Name: Bruce Clarke

Organization: American International Group,

Street Address:

City:

State:

Zip:

Submittal Date: Mon May 04 10:54:07 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The technical committee did not incorporate the language proposed to the body so it is not appropriate to add this annex text.

Public Input No. 161-NFPA 25-2020 [Section No. A.13.2.3]

A.13.2.3

Assessing the status of 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 test 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 waterflow 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 (flowing) pressure indicated by the water supply gauge.

(5) Close the main drain valve slowly.

Statement of Problem and Substantiation for Public Input

This annex change helps clarify the intent of 13.2.3 and further clarifies that the main drain test is one of the options for assessing the adequacy of the water supply.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 160-NFPA 25-2020 [Section No. 13.2.3]	Main code change
Public Input No. 160-NFPA 25-2020 [Section No. 13.2.3]	
Public Input No. 163-NFPA 25-2020 [Section No. A.13.5.4.2]	

Submitter Information Verification

Submitter Full Name: Jason Webb

Organization: Potter Electric Signal Company

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 25 11:33:02 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-135-NFPA 25-2020

Statement: Information adds direction on intent of main drain testing.

Public Input No. 201-NFPA 25-2020 [New Section after A.13.2.5.1.4]

A.13.2.5.2

The normal life expectancy of a gauge is between 10 and 15 years. A gauge can be permitted to have a reading with an error of ± 3 percent of the maximum (full scale) gauge reading. For example, a gauge having 200 psi (13.8 bar) maximum radius 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 either 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, not divided by a check valve and the gauges for all systems read within 3 percent of the other(s), only one gauge shall be required to be tested to determine if replacement is required.

Statement of Problem and Substantiation for Public Input

This information was lost when gauges were moved to Chapter 13 in the 2017 edition. Not only the explanation of "full scale" from A.5.3.2, but the alternative for testing gauges at the same elevation. Previously stated in 5.3.2.3 of NFPA 25, 2014 edition. Where multiple system risers are supplied by a common water supply source with gauges located at the same elevation, and the gauges for all systems read within 3 percent of the other(s), only one gauge shall be required to be tested to determine if replacement is required.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 23:35:55 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-113-NFPA 25-2020

Statement: Reinstates language that was in previous editions. Gauge life expectancy removed as this could vary and 10-15 years is not justified. Radius changed to range as more common terminology.

Public Input No. 196-NFPA 25-2020 [Section No. A.13.3.2.2(2)]

A.13.3.2.2(2)

The purpose of the valve sealing program is as follows:

(1) The valve is to be located within an enclosure under the control of the owner.

(2) The presence of a seal on a control valve is a deterrent to closing a valve indiscriminately without obtaining the proper authority.

(3) A broken or missing seal on a valve is cause for the plant inspector to verify that protection is not impaired and to notify superiors of the fact that a valve could have been closed without following procedures.

Statement of Problem and Substantiation for Public Input

The intent of NFPA 13 was to have a tamper seal for valves that are secured and accessible only by the owner. A seal itself in an area accessible by the public cannot provide adequate supervision and should be clarified.

Submitter Information Verification

Submitter Full Name:	Jason Williams
Organization:	American Fire Sprinkler Associ
Affiliation:	AFSA
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jun 29 23:05:13 EDT 2020
Committee:	INM-AAA

Committee Statement

Resolution: Language not appropriate for section discussing reason for program.

Public Input No. 117-NFPA 25-2020 [Section No. A.13.4.3.3.3]

A.13.4.3.3.3

Suitable facilities should be provided to dispose of drained water. Low points equipped with a single valve should be drained as follows:

(1) Open the low-point drain valve slowly.

(2) Close the drain valve as soon as water ceases to discharge, and allow time for additional accumulation above the valve.

(3) Repeat this procedure until water ceases to discharge.

(4) Replace plug or nipple and cap as necessary.

Low points equipped with dual valves should be drained as follows:

(1) Close the upper valve.

(2) Open the lower valve, and drain the accumulated water.

(3) Close the lower valve, open the upper valve, and allow time for additional water accumulation.

(4) Repeat this procedure until water ceases to discharge.

(5) Replace plug or nipple and cap in lower valve.

Removing water from a ~~deluge~~ preaction system is an essential part of a good maintenance program. Failure to keep these systems free of water can result in damage and expensive repairs to both the system and the building. A program for monitoring the condition of the system and the operation of the auxiliary drains should be instituted. Auxiliary drains should be operated on a daily basis after a system operation until several days pass with no discharge of water from the drain valve. Thereafter, it might be possible to decrease the frequency to weekly or longer intervals, depending on the volume of water discharged. Likewise, when preparing for cold weather, the auxiliary drains should be operated daily, with the frequency of operation decreasing depending on the discharge of accumulated water. In many cases, the frequency of the operation can decrease significantly if a system is shown to be dry.

Statement of Problem and Substantiation for Public Input

Apparently the annex sections for preaction and deluge systems have been mixed up. Both A.13.4.3.3.3 and A.13.4.4.3.3 refer to the wrong valves. Changes proposed correct this.

Submitter Information Verification

Submitter Full Name: David Warren

Organization: ETI Consultants, LLC

Affiliation: Port Authority of NY & NJ

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 08 12:34:15 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-107-NFPA 25-2020

Statement: This wording corrects a previous error.

Public Input No. 116-NFPA 25-2020 [Section No. A.13.4.4.3.3]

A.13.4.4.3.3

Suitable facilities should be provided to dispose of drained water. Low points equipped with a single valve should be drained as follows:

(1) Open the low-point drain valve slowly.

(2) Close the drain valve as soon as water ceases to discharge, and allow time for additional accumulation above the valve.

(3) Repeat this procedure until water ceases to discharge.

(4) Replace plug or nipple and cap as necessary.

Low points equipped with dual valves should be drained as follows:

(1) Close the upper valve.

(2) Open the lower valve, and drain the accumulated water.

(3) Close the lower valve, open the upper valve, and allow time for additional water accumulation.

(4) Repeat this procedure until water ceases to discharge.

(5) Replace plug or nipple and cap in lower valve.

Removing water from a ~~preaction~~ deluge system is an essential part of a good maintenance program. Failure to keep these systems free of water can result in damage and expensive repairs to both the system and the building. A program for monitoring the condition of the system and the operation of the auxiliary drains should be instituted. Auxiliary drains should be operated on a daily basis after a system operation until several days pass with no discharge of water from the drain valve. Thereafter, it might be possible to decrease the frequency to weekly or longer intervals depending on the volume of water discharged. Likewise, when preparing for cold weather, the auxiliary drains should be operated daily, with the frequency of operation decreasing depending on the discharge of accumulated water. In many cases, the frequency of the operation can decrease significantly if a system is shown to be dry.

Statement of Problem and Substantiation for Public Input

Since the revisions in 2017 edition and separating requirements for preaction and deluge systems, the same explanatory information is provided for both. This change makes it clear that it is intended for deluge systems and not preaction systems.

Submitter Information Verification

Submitter Full Name: David Warren

Organization: ETI Consultants, LLC

Affiliation: Port Authority of NY & NJ

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 08 09:14:39 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-108-NFPA 25-2020

Statement: This wording corrects a previous error.

Public Input No. 105-NFPA 25-2020 [Section No. A.13.5.2.2]

A.13.5.2.2

PRV devices can be bench tested in accordance with the manufacturer's instructions or tested in place. 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 PRV 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 should be ~~exercised~~ applied because of the high pressure involved when testing.

Statement of Problem and Substantiation for Public Input

The word exercise has increased in usage with the 2020 edition but there is no definition. There are one or two uses of this term in the document regarding judgment, changing the word from exercise to applied will limit its use to equipment only.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 104-NFPA 25-2020 [Section No. A.5.2.2.1]	
Public Input No. 91-NFPA 25-2020 [New Section after 3.3.11.2]	
Public Input No. 91-NFPA 25-2020 [New Section after 3.3.11.2]	
Public Input No. 104-NFPA 25-2020 [Section No. A.5.2.2.1]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 03 16:42:15 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-109-NFPA 25-2020

Statement: Editorial revision.

Public Input No. 163-NFPA 25-2020 [Section No. A.13.5.4.2]

A.13.5.4.2

~~The~~ A partial flow test of the master PRV can be performed during the ~~quarterly~~ water supply status test if performed using the main drain ~~test~~ . *(See 13.2.3. ~~2.~~)*

Statement of Problem and Substantiation for Public Input

If the changes to 13.2.3 are accepted this annex note will need to be modified. This proposal clarifies that one method of moving the PRV from its seat is by conducting a main drain test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 160-NFPA 25-2020 [Section No. 13.2.3]	Main code change
Public Input No. 161-NFPA 25-2020 [Section No. A.13.2.3]	Annex note regarding main drain test
Public Input No. 160-NFPA 25-2020 [Section No. 13.2.3]	

Submitter Information Verification

Submitter Full Name: Jason Webb
Organization: Potter Electric Signal Company
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 25 12:28:25 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: No revision was made to the requirement.

Public Input No. 255-NFPA 25-2020 [Section No. A.13.6.2.1]

A.13.6.2.1

Hose valves can be tested without a full flow if the cap is left on the hose threads. The installed cap needs to be verified that it is designed to handle the pressure it will be exposed too. If necessary, a temporary cap may be installed for this test. The purpose of this requirement is to exercise the valve so it can be operated easily.

Statement of Problem and Substantiation for Public Input

Many caps on the market are not design for system pressure. These caps are designed to only protect the threads. This needs to be noted to inform the users of the standard.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 11:51:07 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: This may be a safety concern, but there is no common way to tell the rating by visually looking at the caps on some models. Caps are not required to be marked with a pressure rating.

Public Input No. 247-NFPA 25-2020 [New Section after A.13.7.2.1]

A.13.8.1(5) NFPA 14 requires that all standpipe systems be properly identified. This includes labels for manual wet and manual dry standpipe systems.

Statement of Problem and Substantiation for Public Input

In many cases the incorrect ID plate is installed on the FDC, specifically when it relates to testing manual wet standpipe systems. Adding properly identified to this section will assist in verifying the FDC is correctly labeled.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 123-NFPA 25-2020 [Section No. 13.8]	

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 11:20:17 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: There was no change made to the main body requirement. The additional annex language goes beyond the requirements of NFPA 14.

Public Input No. 106-NFPA 25-2020 [Section No. A.13.7.2.1]

A.13.7.2.1

The full flow test of the backflow prevention valve can be performed with a test header or other connections downstream of the valve. A bypass around the check valve in the fire department connection line with a control valve in the normally closed position can be an acceptable arrangement. When flow to a visible drain cannot be accomplished, closed loop flow can be acceptable if a flowmeter or sight glass is incorporated into the system to ensure flow. <u>Minimum rate of flow can be determined by using sensing/measuring devices such as a pitot or other devices capable of measuring rate of flow. It can be difficult to measure flow properly from 2in. and smaller orifices. If connections do not permit minimum flow rate, tests should be flowed at the maximum flow rate possible in accordance with 13.7.2.3</u>

Statement of Problem and Substantiation for Public Input

Section 13.7.2.3 states that where minimum flow rate cannot be verified then flow maximum flow rate possible. There is no way to verify minimum flow rate without measuring the flow. This adds clarification on different methods to achieve the minimum flow rate.

Submitter Information Verification

Submitter Full Name: Vincent Powers

Organization: National Fire Sprinkler Associ

Affiliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 03 16:44:41 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: FR-110-NFPA 25-2020

Statement: Wording adds clarification that, where accurate measurement cannot be made, the maximum possible flow rate shall be utilized for test.

Public Input No. 193-NFPA 25-2020 [New Section after A.13.8.1(9)]

13.8.1 (10)

Remote or stand-alone Fire Department Connections are exposed to the outdoor elements, soil erosion and other conditions that can damage or compromise the FDC pipe. It's recommended that the riser of the FDC be put under slight pressure by hand from side to side and vertically to ensure the riser is in good condition and piping will not easily break or dislodge.

Statement of Problem and Substantiation for Public Input

Contractors have found that this is a good practice between flow tests (or lack or tests) of FDCs and an easy inspection check to verify the integrity of the riser.

Submitter Information Verification

Submitter Full Name: Jason Williams

Organization: American Fire Sprinkler Associ

Affiliation: AFSA

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 29 22:27:05 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: There was no change made to the main body requirement.

Public Input No. 232-NFPA 25-2020 [New Section after A.13.8.1(9)]

A.13.8.5.1 The intent of this requirement is to check the integrity of the dry piping between the FDC and the check valve. The test is acceptable based on either one of the two options.

The gauge pressure can exceed a 5 psi loss and is acceptable as long as there aren't any visible leaks in the pipe or fittings during the two hour test. If portions of the piping are concealed and can't be visually examined, then checking for visible leaks isn't practical and therefore the gauge pressure can only fall by less than 5 psi.

Statement of Problem and Substantiation for Public Input

The current language in 13.8.5 doesn't provide the pass/fail criteria or address an acceptable leakage rate for this test. It's unreasonable to think there won't be some minor leakage during the test. Adding the pass/fail criteria for the test along with annex text explaining that some leakage is anticipated, especially for the FDC piping that is either concealed and can't be visually examined, or when buried, allows for an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 226-NFPA 25-2020 [Section No. 13.8.5]	Pass/fail criteria for FDC testing
Public Input No. 230-NFPA 25-2020 [New Section after A.13.10.3(2)]	Additional annex text for FDC testing
Public Input No. 226-NFPA 25-2020 [Section No. 13.8.5]	
Public Input No. 238-NFPA 25-2020 [New Section after A.13.8.1(9)]	

Submitter Information Verification

Submitter Full Name: Terry Victor

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 10:26:22 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: Wording in newly added 13.8.5.1 clearly states intent.

Public Input No. 238-NFPA 25-2020 [New Section after A.13.8.1(9)]

A.13.8.5.2 Even though the check valve is inaccessible, the hydrostatic test should still be performed. Because the check valve can't be removed for inspection and the FDC piping plugged off for the hydrostatic test, the piping must be pressurized with the check valve in place. Testing at a pressure equal to or higher than the normal system pressure will force the check valve open and pressurize the entire system, which is not recommended.

Statement of Problem and Substantiation for Public Input

The current language in 13.8.5 doesn't provide the pass/fail criteria or address an acceptable leakage rate for this test. It's unreasonable to think there won't be some minor leakage during the test. Adding the pass/fail criteria for the test along with annex text explaining that some leakage is anticipated, especially for the FDC piping that is either concealed and can't be visually examined, or when buried, allows for an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 226-NFPA 25-2020 [Section No. 13.8.5]	New pass/fail criteria for FDC test
Public Input No. 230-NFPA 25-2020 [New Section after A.13.10.3(2)]	New annex text
Public Input No. 232-NFPA 25-2020 [New Section after A.13.8.1(9)]	New annex text
Public Input No. 226-NFPA 25-2020 [Section No. 13.8.5]	

Submitter Information Verification

Submitter Full Name: Terry Victor

Organization: Johnson Controls

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 30 10:38:47 EDT 2020

Committee: INM-AAA

Committee Statement

Resolution: The proposed revision to the body of the standard was not accepted.

Public Input No. 230-NFPA 25-2020 [New Section after A.13.10.3(2)]

A.13.8.5 The frequency of this test correlates with the internal check valve inspection required every five years. When the check valve is removed for the internal inspection, the FDC piping can be capped off and hydrostatically tested.

Statement of Problem and Substantiation for Public Input

The current language in 13.8.5 doesn't provide the pass/fail criteria or address an acceptable leakage rate for this test. It's unreasonable to think there won't be some minor leakage during the test. Adding the pass/fail criteria for the test along with annex text explaining that some leakage is anticipated, especially for the FDC piping that is either concealed and can't be visually examined, or when buried, allows for an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 226-NFPA 25-2020 [Section No. 13.8.5]	Annex text to existing section 13.8.5
Public Input No. 226-NFPA 25-2020 [Section No. 13.8.5]	
Public Input No. 232-NFPA 25-2020 [New Section after A.13.8.1(9)]	
Public Input No. 238-NFPA 25-2020 [New Section after A.13.8.1(9)]	

Submitter Information Verification

Submitter Full Name: Terry Victor
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Submittal Date: Tue Jun 30 10:21:03 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-101-NFPA 25-2020
Statement: Wording adds beneficial explanation in two tests.

Public Input No. 8-NFPA 25-2019 [Section No. F.5.2]

F.5.2 Information Recorded for External Access.

Table F.5.2(a) Inspection, Test, Maintenance, and Repair Record Layout

Category	Item Format	Format	Possible Values
Basic information	Type of record	String (48)	Inspection, test, and maintenance
	Facility name	String (96)	Alphanumeric
	Location — GPS coordinates (longitude)	Number	−183333330° to +180°
	Location — GPS coordinates (latitude)	Number	−90° to +90°
	Location — GPS coordinates (elevation)	Number	Feet or meters
	Location adjusted for privacy — GPS coordinates (longitude)	Number	−180° to +180°
	Location adjusted for privacy — GPS coordinates (latitude)	Number	−90° to +90°
	Location adjusted for privacy — GPS coordinates (elevation)	Number	Feet or meters
	Reporting units pressure	Character	(1) psi
			(2) bar
			(3) Pascals
			(4) other
	Reporting units flow	Character	(1) gpm
			(2) L/min
			(3) L/sec
			(4) m^3/min
			(5) ft^3/min
			(6) Other
	Type of inspection or test	Character	(I) Inspection
			(T) Test
			(M) Maintenance

			(R) Repair
Item inspected, tested, maintained, or repaired — repeat for each item	Start of record marker for item	String (16)	Record start

-

Unit type identifier (develop list)	String (48)	Alphanumeric

-

Passed; failed; passed, but needs attention	Character	(P) Passed

---

(F) Failed

(A) Passed, but needs attention

-

See Table F.2.5(d).

-

See Table F.2.5(d).

-

Passed visual inspection	Character	(Y) Yes

(N) No

(A) Not Applicable

-

Maintenance required	Number	≥ 0

-

Maintenance done	Character	(1) Not applicable

---

(2) Completed

---

(3) Ordered but not completed

---

(4) Not ordered

-

	End of item record marker	String (16)	Record end
End of ITC record	End of ITC (all components reported)	String (48)	End of inspection, test, and maintenance report

Table F.5.2(b) Equipment Repair Data Record Layout

Equipment repair data	Type of record	String (48)	Repair

-

Facility name	String (96)	Alphanumeric

-

Location — GPS coordinates (longitude)	Number	−180° to +180°

-

Location — GPS coordinates (latitude)	Number	−90° to +90°
Location — GPS coordinates (elevation)	Number	Feet or meters
Location adjusted for privacy — GPS coordinates (longitude)	Number	−180° to +180°
Location adjusted for privacy — GPS coordinates (latitude)	Number	−90° to +90°
Location adjusted for privacy — GPS coordinates (elevation)	Number	Feet or meters
Repair date	Date	Year/month/day
Common data		
See Table F.5.2(c).		
Repair preventative or result of failure	Character	(P) Preventative
		(F) Failure
Failure mode (develop list)	5 Characters	Correspond to list
Failure impaired fire protection system	Character	(I) Impaired
		(P) Partially functional
		(N) Not impaired
Repair code (develop list)	5 Characters	Correspond to list
Component replaced (develop list)	5 Characters	Correspond to list
Repair description	String (96)	Alphanumeric
Component replacement date	Date	Year/month/day
End of repair record	String (48)	End of repair

Table F.5.2(c) Common Equipment Data

Category	**Item**	**Format**	**Possible Values**
Manufacturer (develop list)		String (48)	Alphanumeric

Model number	String (48)	Alphanumeric
Size	String (48)	Alphanumeric
Serial number	String (48)	Alphanumeric
Year manufactured	4 Characters	xxxx (year)
Device/component identifier tag	String (48)	Alphanumeric

Table F.5.2(d) Item Information

Item	Item Component	Format	Possible Values
Air compressor	Common data		See Table F.5.2(c).
	Type of system served	Character	(1) Dry
			(2) Non-interlock preaction
			(3) Single interlock preaction
			(4) Double interlock preaction
			(5) Other
	Filled system in 30 minutes or less	Character	(Y) Yes
			(N) No
			(3) N/A
Alarm check valve	Common data		See Table F.5.2(c).
	Operated satisfactorily	Character	(Y) Yes
			(N) No
			(3) N/A
Alarm device	Common data		See Table F.5.2(c).
	Operated satisfactorily	Character	(Y) Yes
			(N) No
			(3) N/A

Alarm valves	Common data	See Table F.5.2(c).	
Operated satisfactorily		Character	(Y) Yes
(N) No			
			(3) N/A
Antifreeze solution	Unit type identifier	String (48)	
Type of antifreeze		Character	(1) Glycerin
(2) Ethylene glycol			
(3) Other			
Tested satisfactorily		Character	(Y) Yes
(1) Concentration too low/high			
(2) Antifreeze dirty			
			(3) Other
Auxiliary drains	Operated satisfactorily	Character	(Y) Yes
(N) No			
		(3) N/A	
Backflow preventer	Common data	See Table F.5.2(c).	
Type			
(1) DC			
(2) DDC			
(3) RPZ			
(4) RPZDC			
(5) Air gap			
(6) Check valve			

(7) Single-check DC			
– – –			
(8) Other			
–			
Nonflow upstream pressure	Number	Two decimal places	
–			
Nonflow intermediate chamber pressure	Number	Two decimal places	
–			
Nonflow downstream pressure	Number	Two decimal places	
–			
ITC flow upstream pressure	Number	Two decimal places	
–			
ITC flow intermediate chamber pressure	Number	Two decimal places	
–			
ITC flow downstream pressure	Number	Two decimal places	
–			
Demand test flow rate	Number	Two decimal places	
–			
Demand flow upstream pressure	Number	Two decimal places	
–			
Demand flow intermediate chamber pressure	Number	Two decimal places	
–			
	Demand flow downstream pressure	Number	Two decimal places
Balancing valve diaphragm	Common data		See Table F.5.2(c).
–			
Operated satisfactorily	Character	(Y) Yes	
– – –			
(N) No			
– – –			
		(3) N/A	
Ball drip (automatic type) drain valves	Common data	See Table F.5.2(c).	
–			
Operated satisfactorily	Character	(Y) Yes	
– – –			
(N) No			
– – –			
		(3) N/A	
Bladder tank	Common data	See Table F.5.2(c).	
–			
Fill level OK	Character	(Y) Yes	
– – –			
(N) No			
– – –			

(3) N/A

-

Operated satisfactorily		Character	(Y) Yes

- - -

(N) No

- - -

(3) N/A

-

	Comment if needed	String (80)	Alphanumeric
Spare head cabinet	Unit type identifier	String (48)	Alphanumeric

-

Adequate stock of spare sprinklers		Character	(Y) Yes

- - -

(N) No

- - -

(3) N/A

-

	Comment if needed	String (80)	Alphanumeric
Check valve(s)	Common data		See Table F.5.2(c).

-

Type	Character	(1) Flanged swing

- - -

(2) Grooved swing

- - -

(3) Sprinkler-loaded flanged swing

- - -

(4) Spring-loaded grooved swing

- - -

(5) Spring-loaded duo-wafer

- - -

(6) Spring-loaded duo-grooved

- - -

(7) Spring-loaded duo-flanged

- - -

(8) Other

-

Prevents backflow		Character	(Y) Yes

- - -

(N) No

- - -

(3) N/A

-

Nonflow upstream pressure		Number	≥0

Nonflow downstream pressure	Number	≥0
Demand test flow rate	Number	≥0
Demand flow upstream pressure	Number	≥0
Demand flow downstream pressure	Number	≥0
Unit type identifier	String (48)	Alphanumeric
Where installed	Character	(1) On fire pump discharge
		(2) Loop piped back to suction
Operated satisfactorily	Character	(Y) Yes
		(N) No
		(3) N/A
Control valve(s)	Common data	See Table F.5.2(c).
Type of valve	Character	(1) OS&Y
		(2) Butterfly
		(3) Ball
		(4) NRS gate
		(5) Post indicator gate
		(6) Post indicator butterfly
		(7) Wall indicator gate
		(8) Wall indicator butterfly
		(9) Other
Nominal valve size [in. (mm)]	Number	≥0
Original position of valve	Character	(1) Normally open valve, open

(N) Normally open valve, closed		
(3) Normally closed valve, closed		
(4) Normally closed valve, open		
(5) Valve partially closed		
Stops flow of water when closed	Character	(Y) Yes
(2) Minor leakage		
(3) No		
(4) Not tested for flow		
Obstructs flow of water when open	Character	(Y) Yes
(N) No		
(3) Not tested for flow		
Operated satisfactorily	Character	(Y) Yes
(N) No		
		(3) N/A
Deluge/preaction valve	Common data	See Table F.5.2(c).
Type of system	Character	(1) Deluge
(2) Non-interlock preaction		
(3) Single interlock preaction		
(4) Double interlock preaction		
(5) Other		
Activation mechanism	Character	(1) Pilot line
(2) Heat detection		

(3) Smoke detection		
(4) Manual		
(5) Other		
Automatic actuation OK	Character	(Y) Yes
(N) No		
(3) Not tested		
(4) N/A		
Manual actuation OK	Character	(Y) Yes
(N) No		
(3) Not tested		
(4) N/A		
Operated satisfactorily	Character	(Y) Yes
(N) No		
(3) N/A		
See Backflow Prevention Devices.		
Detector check valve	Common data	See Table F.5.2(c).
Nozzle size [in. (mm)]	Number	≥0
Flowed without obstruction	Character	(Y) Yes
(2) Minor obstructed nozzles		
(3) Significant obstructions		
Flowed at or above system design	Character	(Y) Yes
(N) No		

	(3) Not determined		
	Concentrate percentage correct	Character	(Y) Yes
			(N) No
Drain riser	Operated satisfactorily	Character	(Y) Yes
			(N) No
			(3) N/A
Dry pipe valve	Common data	See Table F.5.2(c).	
	Accelerator	Character	(Y) Yes
			(N) No
	Time to trip with accelerator (sec)	Number	≥0
	Water delivery time with accelerator (sec)	Number	≥0
	Time to trip without accelerator (sec)	Number	≥0
	Water delivery time without accelerator (sec)	Number	≥0
	System passed	Character	(Y) Yes
			(N) No
Accelerator	Common data	See Table F.5.2(c).	
	Time to trip with accelerator (sec)	Number	≥0
	System passed	Character	(Y) Yes
			(N) No
Enclosure (during cold weather)	Adequate heat	Character	(Y) Yes
			(N) No
Fire department connection	Connection supplies	Character	(1) Sprinkler
			(2) Standpipe
			(3) Standpipe and sprinkler

	(4) Other		
_			
Connection flushed		Character	(Y) Yes
_ _ _			
	(N) No		
_			
Connection tested		Character	(Y) Yes
_ _ _			
	(N) No		
_			
System passed		Character	(Y) Yes
_ _ _			
			(N) No
Fire hose	Hydrostatically tested within last 5 years	Character	(Y) Yes
_ _ _			
			(N) No
Fire pumps	See NFPA 20 and Table F.5.2(e).		
_			
Fittings — except those with rubber gaskets	Indication of leakage present	Character	(1) No
_ _			
	(2) Minor		
_ _ _			
			(3) Significant
Fittings — those with rubber gaskets	Indication of leakage present	Character	(1) No
_ _			
	(2) Minor		
_ _ _			
			(3) Significant
Foam concentrate	Manufacturer	String (48)	Alphanumeric
_			
Type	String (48)	Alphanumeric	
_			
Adequate quantity		Character	(Y) Yes
_ _ _			
	(N) No		
_			
Samples submitted for testing		Character	(Y) Yes
_ _ _			
	(N) No		
_			
Samples tested satisfactory		Character	(Y) Yes
_ _ _			
			(N) No

Foam concentrate strainer(s)	Strainer clear initial	Character	(Y) Yes (N) No
Foam concentrate tank	Tank full	Character	(Y) Yes (N) No
	Protective coating (mineral oil) on top of foam concentrate OK	Character	(Y) Yes (N) No
Foam-water solution	Foam percentage	Number	≥0
	Solution passed	Character	(Y) Yes (N) No
Gauges	Gauge on	Character	(1) System side, wet pipe system (2) Supply side, wet pipe system (3) Air side, dry pipe system (4) Supply side, dry pipe system (5) Air side, preaction system (6) Supply side, preaction system (7) Fire pump suction (8) Fire pump discharge (9) Water mist system (10) Pressure tank (11) Water storage tank (12) Other
	Gauges reading correctly	Character	(Y) Yes (N) No
General information sign	Required signs provided	Character	(Y) Yes

			(N) No
	Signs readable and correct	Character	(Y) Yes
			(N) No
Gravity tanks	Water level OK	Character	(Y) Yes
			(N) No
	Adequate heat provided	Character	(Y) Yes
			(N) No
Hanger/pipe supports	Passed visual inspection	Character	(Y) Yes
			(N) No
High and low air pressure switch	Common data	See Table F.5.2(c).	
	Sends low air signal at the appropriate pressure setting	Character	(Y) Yes
			(N) No
	Sends high air signal at the appropriate pressure setting	Character	(Y) Yes
			(N) No
Hose houses	Properly equipped and maintained	Character	(Y) Yes
			(N) No
Hose nozzle	Type of nozzle	Character	(1) Straight stream
			(2) Fog
			(3) Other
	Properly maintained	Character	(Y) Yes
			(N) No
Hose racks	Properly maintained	Character	(Y) Yes
			(N) No
Hose storage device	Properly maintained	Character	(Y) Yes
			(N) No
Hose valve (non–pressure-regulating)	Properly maintained	Character	(Y) Yes

		(N) No	
Hose valve pressure-regulating devices	Common data	See Table F.5.2(c).	
	Inlet pressure while flowing	Character	(Y) Yes
			(N) No
	Outlet pressure while flowing	Character	(Y) Yes
			(N) No
	Test flow rate	Number	≥0
	Passed test	Character	(Y) Yes
			(N) No
Hydrants (dry barrel and wall)	Common data	See Table F.5.2(c).	
	Hydrant opened and closed	Character	(Y) Yes
			(N) No
	Hydrant barrel drained	Character	(Y) Yes
			(N) No
	Hydrant shows need of maintenance	Character	(Y) Yes
			(N) No
Hydrants (wet barrel)	Common data	See Table F.5.2(c).	
	Hydrant opened and closed	Character	(Y) Yes
			(N) No
	Hydrant shows need of maintenance	Character	(Y) Yes
			(N) No
Hydraulic design, information sign, and hydraulic placards	Required signs/placards provided	Character	(Y) Yes
			(N) No

	Signs readable and correct	Character	(Y) Yes (N) No
Identification signs	Required signs/placards provided	Character	(Y) Yes (N) No
	Signs readable and correct	Character	(Y) Yes (N) No
Information sign	Required signs/placards provided	Character	(Y) Yes (N) No
	Signs readable and correct	Character	(Y) Yes (N) No
Inspector's test connection	~~Flowed without obstruction~~ Full flow under pressure	Character	(Y) Yes (N) No
	Activated alarm	Character	(Y) Yes (N) No
Low-point drains (dry pipe system)	Drained without obstruction	Character	(Y) Yes (N) No
	Passed visual inspection	Character	(Y) Yes (N) No
	Excessive water at drain	Character	(Y) Yes (N) No
Main drain	Static pressure	Number	≥0
	Residual pressure	Number	≥0
Main drain valves	Free of corrosion and damage	Character	(Y) Yes

Mainline strainers	Strainer without excessive debris and damage	Character	(N) No (Y) Yes
---			
Manual actuation device(s)	Passed test	Character	(N) No (Y) Yes
---			
Mist system compressed gas cylinder	Cylinders full	Character	(N) No (Y) Yes
--			
Mist system control equipment	Passed test	Character	(N) No (Y) Yes
---			
Mist system plant air, compressors, and receivers	Operated satisfactorily	Character	(N) No (Y) Yes
--			
Mist system pneumatic valves, cylinder valves, and master release valves	Passed test	Character	(N) No (Y) Yes
--			
Mist system standby pump	Passed test	Character	(N) No (Y) Yes
---			
Mist system water storage cylinder (additive storage cylinder)	Passed test	Character	(N) No (Y) Yes
--			
Mist system water storage cylinder (high pressure)	Passed test	Character	(N) No (Y) Yes
--			
Mist system water storage cylinder (high pressure), filters on refill connection	Passed test	Character	(N) No (Y) Yes
--			
Mist system water storage cylinder (high pressure), support frame/restraints	Passed visual inspection	Character	(N) No (Y) Yes
--			
Mist system water storage cylinder (high pressure), vent plugs at refilling	Operated satisfactorily	Character	(N) No (Y) Yes
--			
Mist system water storage cylinder (high pressure), water level (load cells)	Passed test	Character	(N) No (Y) Yes
--			
		(N) No	

Mist system water storage tank	Tank full without leaks	Character	(Y) Yes
---			
			(N) No
Mist system water storage tank, all valves and appurtenances	Passed test	Character	(Y) Yes
--			
			(N) No
Mist system water storage tank, sight glass valves (confirm open)	Operated satisfactorily	Character	(Y) Yes
--			
			(N) No
Mist system water storage tank, water level (supervised)	Passed test	Character	(Y) Yes
--			
			(N) No
Monitor nozzles	Passed test	Character	(Y) Yes

			(N) No
Pipes (above ground)	Type of system	Character	(1) Wet pipe sprinkler
---			
(2) Dry pipe sprinkler			
---			
(3) Preaction			
---			
(4) Deluge			
---			
(5) Water mist			
---			
(6) Other			
-			
Environment		Character	(1) Indoors, heated
---			
(2) Indoors, unheated			
---			
(3) Covered, exposed to exterior atmosphere			
---			
(4) Covered, exposed to exterior, salt air			
---			
(5) Exposed, exterior			
---			
(6) Exposed, exterior, salt air			
---			
(7) Hostile chemical			
---			
(8) Other			
-			

Free of leads and excessive corrosion		Character	(Y) Yes

			(N) No
Fittings (above ground)	Type of system	Character	(1) Wet pipe sprinkler
---			
			(2) Dry pipe sprinkler
---			
			(3) Preaction
---			
			(4) Deluge
---			
			(5) Water mist
---			
			(6) Other
-			
Environment		Character	(1) Indoors, heated
---			
			(2) Indoors, unheated
---			
			(3) Covered, exposed to exterior atmosphere
---			
			(4) Covered, exposed to exterior, salt air
---			
			(5) Exposed, exterior
---			
			(6) Exposed, exterior, salt air
---			
			(7) Hostile chemical
---			
			(8) Other
-			
Free of leaks and excessive corrosion		Character	(Y) Yes

			(N) No
Pipes and fittings (underground)	Environment	Character	(1) Sandy soil
---			
			(2) Clay soil
---			
			(3) Corrosive soil
---			
			(4) Other
-			
Unit type identifier	String (48)	Alphanumeric	

_

Type of pipe Character (1) Ductile iron

_ _ _

(2) Steel

_ _ _

(3) CPVC

_ _ _

(4) Polyethylene

_ _ _

(5) Other

_

Pipe encasement Character (1) Polyethylene wrap

_ _ _

(2) Culvert

_ _ _

(3) None

_

Water supply source Character (1) From municipal system

_ _ _

(2) From water storage tank

_ _ _

(3) From pond, lake, river, etc.

_ _ _

(4) Other

_

Free of excessive leakage Character (Y) Yes

_ _ _

(N) No

_

Excessive friction loss Character (Y) Yes

_ _ _

(N) No

Pipe stands Passed visual inspection Character (Y) Yes

_ _ _

(N) No

Post indicator and wall indicator valves Opened and closed Character (Y) Yes

_ _

(N) No

_

Stopped flow of water when closed Character (Y) Yes

_ _ _

(N) No

_ _ _

(3) Not

			verified
Low flow pressure relief valves (e.g., sprinkler system)	Relief pressure	Number	≥0
Functioning properly	Character	(Y) Yes	
		(N) No	
High flow pressure relief valves (e.g., fire pump)	Common data	See Table F.5.2(c).	
Type	Character	(1) Pilot-operated	
		(2) Spring-loaded	
		(3) Other	
Discharge to…	Character	(1) Atmosphere	
		(2) Tank	
		(3) Fire pump suction	
		(4) Other	
Relief pressure	Number	≥0	
Shutoff pressure	Number	≥0	
Functioning properly	Character	(Y) Yes	
		(N) No	
Pressure reducing valves	Common data	See Table F.5.2(c).	
Type	Character	(1) Pilot-operated	
		(2) Spring-loaded	
		(3) Other	
Installation with other pressure reducing valves	Character	(1) Standalone	
		(2) Series upstream	
		(3) Series downstream	

(4) Parallel, with smaller		
(5) Parallel, with larger		
(6) Parallel, same size		
(7) Combination series and parallel		
(8) Other		
Static inlet pressure	Number	≥0
Static outlet pressure	Number	≥0
Residual low flow inlet pressure	Number	≥0
Residual low flow outlet pressure	Number	≥0
Residual low flow inlet pressure	Number	≥0
Residual low flow outlet pressure	Number	≥0
Functioning properly	Character	(Y) Yes
		(N) No
Pump suction control valves	Common data	See Table F.5.2(c).
Type	Character	(1) Pilot-operated
		(2) Spring-loaded
		(3) Other
Set suction pressure	Number	≥0
Static inlet pressure	Number	≥0
Static outlet pressure	Number	≥0
Inlet pressure at 100 percent rated pump capacity	Number	≥0
Outlet pressure at 100 percent rated pump capacity	Number	≥0

Inlet pressure at 150 percent rated pump capacity		Number	≥0
Outlet pressure at 150 percent rated pump capacity		Number	≥0
Functioning properly		Character	(Y) Yes
			(N) No
Pressure tanks	Air pressure (supervised)	Character	(Y) Yes
			(N) No
	Air pressure	Number	≥0
	Water level OK	Character	(Y) Yes
			(N) No
	Air pressure water level normal	Character	(Y) Yes
			(N) No
Pressure vacuum vents	Functioning correctly	Character	(Y) Yes
			(N) No
			(3) Not verified
Proportioning system(s)	Common data	See Table F.5.2(c).	
	Functioning properly	Character	(Y) Yes
			(N) No
Reduced-pressure detectors	Common data	See Table F.5.2(c).	
	Functioning properly	Character	(Y) Yes
			(N) No
Retainer glands	No visible leakage or damage	Character	(Y) Yes
			(N) No
Sight glass	No visible leakage or damage	Character	(Y) Yes
			(N) No
Spare sprinklers	Adequate number of each type	Character	(Y) Yes

			(N) No
	Visible leakage or damage	Character	(Y) Yes
			(N) No
Sprinkler systems	Visible leakage or significant corrosion or damage	Character	(Y) Yes
			(N) No
Sprinklers	Manufacturer	String (48)	Alphanumeric
	SIN	String (48)	Alphanumeric
	Quick response	Character	(Y) Yes
			(N) No
	Year manufactured	4 Characters	xxxx (year)
	Approximate number of sprinkler	Number	≥0
	Visible leakage or significant corrosion or damage	Character	(Y) Yes
			(N) No
	Approximate percent substandard	Number	0–100
Sprinklers (dry)	Manufacturer	String (48)	Alphanumeric
	SIN	String (48)	Alphanumeric
	Quick response	Character	(Y) Yes
			(N) No
	Year manufactured	4 Characters	xxxx (year)
	Approximate number of sprinkler	Number	≥0
	Visible leakage or significant corrosion or damage	Character	(Y) Yes
			(N) No
	Approximate percent substandard	Number	0–100

Sprinklers (extra-high or greater temperature solder type)	Manufacturer	String (48)	Alphanumeric
	SIN	String (48)	Alphanumeric
	Quick response	Character	(Y) Yes
			(N) No
	Year manufactured	4 Characters	xxxx (year)
	Approximate number of sprinkler	Number	≥0
	Visible leakage or significant corrosion or damage	Character	(Y) Yes
			(N) No
	Approximate percent substandard	Number	0–100
	Approximate percent substandard	Number	0–100
Sprinklers (in harsh environments)	Manufacturer	String (48)	Alphanumeric
	SIN	String (48)	Alphanumeric
	Quick response	Character	(Y) Yes
			(N) No
	Year manufactured	4 Characters	xxxx (year)
	Approximate number of sprinkler	Number	≥0
	Visible leakage or significant corrosion or damage	Character	(Y) Yes
			(N) No
	Approximate percent substandard	Number	0–100
	Approximate percent substandard	Number	0–100
Sprinklers and automatic spray nozzles protecting commercial cooking equipment and ventilation systems	Manufacturer	String (48)	Alphanumeric

_

SIN	String (48)	Alphanumeric

_

Quick response	Character	(Y) Yes

_ _ _

(N) No

_

Year manufactured	4 characters	xxxx (year)

_

Approximate number of sprinkler	Number	≥0

_

Visible leakage or significant corrosion or damage	Character	(Y) Yes

_ _

(N) No

_

Approximate percent substandard	Number	0 –100

_

	Approximate percent substandard	Number	0 –100
Suction tanks	Tank full	Character	(Y) Yes

_ _ _

			(N) No
Supervisory device	Functioned correctly	Character	(Y) Yes

_ _ _

			(N) No
Supports	Correctly installed	Character	(Y) Yes

_ _ _

			(N) No
System pressure-regulating devices	Functioned correctly	Character	(Y) Yes

_ _ _

			(N) No
Tank alarm and supervisory component, enclosure temperature	Connected to constantly monitored location	Character	(Y) Yes

_ _

(N) No

_

Functioned correctly	Character	(Y) Yes

_ _ _

			(N) No
Tank alarm and supervisory component, high and low water level	Connected to constantly monitored location	Character	(Y) Yes

_ _

(N) No

_

Functioned correctly		Character	(Y) Yes

			(N) No
Tank alarm and supervisory component, low water temperature alarms	Connected to constantly monitored location	Character	(Y) Yes
--			
(N) No			
-			
Functioned correctly		Character	(Y) Yes

			(N) No
Tank alarm and supervisory component, temperature alarms	Connected to constantly monitored location	Character	(Y) Yes
--			
(N) No			
-			
Functioned correctly		Character	(Y) Yes

			(N) No
Tank alarm and supervisory component, valve supervision	Connected to constantly monitored location	Character	(Y) Yes
--			
(N) No			
-			
Functioned correctly		Character	(Y) Yes

			(N) No
Tank alarm and supervisory component, water level alarms	Connected to constantly monitored location	Character	(Y) Yes
--			
(N) No			
-			
Functioned correctly		Character	(Y) Yes

			(N) No
Tank alarm and supervisory component, water temperature	Connected to constantly monitored location	Character	(Y) Yes
--			
(N) No			
-			
Functioned correctly		Character	(Y) Yes

- - -

			(N) No
Tank catwalks and ladders	Passed visual inspection	Character	(Y) Yes

- - -

			(N) No
Tank check valves	Functioned correctly	Character	(Y) Yes

- - -

(N) No

- - -

(3) Not verified

Table F.5.2(e) Fire Pump Information and Testing

Item	Item Component	Item	Item
Basic information (should be supplied by the fire pump package integrator)	Common equipment data	See Table F.5.2(c).	
	Fire pump type	String (40)	P
	Rated flow	Number	>0
	Rated pressure	Number	>0

-

Rated speed	Number	>0

-

Rated horsepower	Number	>0

-

Factory test pressure	Number	>0

-

Design net churn pressure	Number	>0

-

	Design net 150 percent pressure	Number	>0
Basic information	Pump start pressure	Number	>0

-

Pump reset pressure	Number	>0

-

Design suction pressure	Number	>0

-

Design discharge pressure	Number	>0

-

Electric motor manufacturer	String (40)	Alphanumeric

-

Electric motor type	String (40)	Alphanumeric

-

Electric motor serial number	String (40)	Alphanumeric

-

Electric motor model number	String (40)	Alphanumeric

-

Electric motor date in service	Date	Year/month/day
Nominal system voltage	Number	>0
Electric motor rated horsepower	Number	>0
Electric motor rated speed	Number	>0
Motor rated FLA at the system nominal voltage	Number	>0
Motor service factor	Number	>0
Motor starting code	ASCII	A–H
Nameplate full load amps	Number	>0
Diesel engine manufacturer	String (40)	Alphanumeric
Diesel engine serial number	String (40)	Alphanumeric
Diesel engine model number	String (40)	Alphanumeric
Diesel engine date in service	Date	Year/month/day
Diesel engine rated horsepower	Number	>0
Diesel engine rated speed	Number	>0
Controller manufacturer	String (40)	Alphanumeric
Controller type	String (40)	Alphanumeric
Controller serial number	String (40)	Alphanumeric
Controller model number	String (40)	Alphanumeric
Controller date in service	Date	Year/month/day
Jockey pump manufacturer	String (40)	Alphanumeric
Jockey pump type	String (40)	Alphanumeric
Jockey pump serial number	String (40)	Alphanumeric

Jockey pump model number		String (40)	Alphanumeric
Jockey pump date in service		Date	Year/month/day
Jockey pump horsepower		Number	>0
Jockey pump start pressure		Number	>0
Jockey pump reset pressure		Number	>0
Jockey pump controller manufacturer		String (40)	Alphanumeric
Jockey pump controller type		String (40)	Alphanumeric
Jockey pump controller serial number		String (40)	Alphanumeric
Jockey pump controller model number		String (40)	Alphanumeric
Jockey pump controller date in service		Date	Year/month/day
Maximum system flow demand (at pump discharge flange)		Number	>0
	Maximum system pressure demand (at pump discharge flange)	Number	>0
Continuously monitored data	Fire pump power status	Number	(0) Off
	(1) On		
	Fire pump running status		
	(0) Off		
	(1) Running		
	Fire pump test running		
	(0) No		
	(1) Yes		
Suction pressure [psi (bar)]		Number	>0

System pressure [psi (bar)]	Number	>0
Pump discharge pressure [psi (bar)]	Number	>0
Water temperature in pump casing	Number	>0
Room temperature	Number	>0
Last pump start date	Date	Year/month/day
Last pump start time	Time	Hour(n)/min(n)/sec(n)
Pressure at pump start	Number	>0
Type of start		
(1) Automatic demand		
(2) Automatic test		
(3) Manual		
Last pump shutdown date	Date	Year/month/day
Last pump shutdown time	Time	Hour(n)/min(n)/sec(n)
System pressure at pump shutdown	Number	>0
Type of shutdown	Number	(1) Automatic demand
		(2) Automatic test
		(3) Manual
		(4) Overspeed
		(5) Other trouble
Loss of power	Number	(1) Power on
		(2) Power off
Transfer of power	Number	(1) Normal power

- - -

(2) Standby power

_

Fuel tank level (0-Above 2/3, 1-below 2/3)	Number	>0

_

Fuel tank level (percentage full)	Number	>0

_

Fuel maintenance system status	Number	(1) On

- - -

(2) Off

- - -

			(3) Needs maintenance
Nonflow test data sets — 10 sets maintained in local equipment	Last nonflow monitoring reset date	Date	Year/month/day
	Last nonflow monitoring reset time	Time	Hour(n)/min(n)/sec(n)

_

Total number of nonflow tests during monitored period	Number	>0

_

Total pump test run time during monitored period (minutes)	Number	>0

_

Nonflow test date start	Date	Year/month/day

_

Nonflow test time start

_

Hour(n)/min(n)/sec(n)

_

Nonflow test date end	Date	Year/month/day

_

Nonflow test time end

_

Hour(n)/min(n)/sec(n)

_

Nonflow test reference identifier	Number	>0

_

Nonflow test data set reference identifier	Number	>0

_

Nonflow test suction pressure [psi (bar)]	Number	>0

_

Nonflow test system pressure [psi (bar)]	Number	>0

_

Nonflow test pump discharge pressure [psi (bar)]	Number	>0

_

Nonflow test net pressure [psi (bar)]	Number	>0
Nonflow test water temperature in pump casing	Number	>0
Nonflow test room temperature	Number	>0
Nonflow test pump start date	Date	Year/month/day
Nonflow test pump start time	Time	Hour(n)/min(n)/sec(n)
Nonflow test pressure at pump start	Number	>0
Nonflow test minimum transducer pressure	Number	>0
Nonflow test type of start (1-automatic demand, 2-automatic test, 3-manual)	Number	>0
Nonflow test pump shutdown time	Number	>0
Nonflow test system pressure at pump shutdown	Number	>0
Nonflow test type of shutdown	Number	(1) Automatic demand
(2) Automatic test		
(3) Manual		
(4) Overspeed		
(5) Other trouble		
Nonflow test RPM	Number	>0
Nonflow test voltage, Phase A–B	Analog signal converted to number	>0
Nonflow test voltage, Phase B–C	Analog signal converted to number	>0
Nonflow test voltage, Phase C–A	Analog signal converted to number	>0
Nonflow test amperage, Phase 1	Analog signal converted to number	>0
Nonflow test amperage, Phase 2	Analog signal converted to number	>0

	Nonflow test amperage, Phase 3	Analog signal converted to number	>0
Acceptance test data set (percentage) — permanent — 0, 25, 50, 75, 100, 125, and 150	Test date acceptance test	Date	Year/month/day
	Test reference identifier acceptance test	Number	>0
	Data set reference identifier acceptance test	Number	>0
	Suction pressure acceptance test	Number	>0

_

System pressure acceptance test	Number	>0

_

Discharge pressure acceptance test	Number	>0

_

Net pressure	Number	>0

_

Water temperature in pump casing acceptance test	Number	>0

_

Room temperature — acceptance test	Number	>0

_

Initial pump start date — acceptance test	Date	Year/month/day

_

Initial pump start time — acceptance test	Time	Hour(n)/min(n)/sec(n)

_

Final pump stop date — acceptance test	Date	Year/month/day

_

Final pump stop time — acceptance test	Time	Hour(n)/min(n)/sec(n)

_

Pump start dates — acceptance test (record up to 10)	Date	Year/month/day

_

Pump start times — acceptance test (record up to 10)	Date	Year/month/day

_

Pump stop dates — acceptance test (record up to 10)	Date	Year/month/day

_

Pump Stop Times — acceptance test (record up to 10)	Number	>0

_

Pressure at pump start acceptance test	Number	>0

_

Type of start acceptance test	Number	(1) Automatic demand

_ _ _

		(2) Automatic test

_ _ _

(3) Manual		
Minimum transducer pressure at startup acceptance test	Number	>0
Number of starts and stops during acceptance test	Number	>0
Final pump shutdown time acceptance test	Number	>0
System pressure at final pump shutdown	Number	>0
Type of shutdown		
(1) Automatic demand		
(2) Automatic test		
(3) Manual		
(4) Overspeed		
(5) Other trouble		
Loss of power (for transfer) date	Date	Year/month/day
Loss of power (for transfer) time	Time	Hour(n)/min(n)/sec(n)
Transfer of power date	Date	Year/month/day
Transfer of power time	Time	Hour(n)/min(n)/sec(n)
Day power restored to normal	Date	Year/month/day
Time power restored to normal	Time	Hour(n)/min(n)/sec(n)
Date readings recorded	Date	Year/month/day
Time readings recorded	Time	Hour(n)/min(n)/sec(n)
RPM	Number	>0
Voltage Phase A–B acceptance test	Analog signal converted to number	>0
Voltage Phase B–C acceptance test	Analog signal converted to number	>0

Voltage Phase C–A acceptance test	Analog signal converted to number	>0
Amperage Phase 1 acceptance test	Analog signal converted to number	>0
Amperage Phase 2 acceptance test	Analog signal converted to number	>0
Amperage Phase 3 acceptance test	Analog signal converted to number	>0
Nozzle coefficient acceptance test, up to 20 per test	Number	>0
Nozzle size acceptance test, up to 20 per test [in. (mm)]	Number	>0
Nozzle pitot pressure acceptance test, up to 20 per test	Number	>0
Fuel tank level acceptance test (0-Above 2/3, 1-below 2/3)	Number	>0
Fuel tank level acceptance test (percentage full)	Number	>0
Flow through pump acceptance test	Number	>0
RPM adjusted net pressure acceptance test	Number	>0
RPM adjusted flow acceptance test [gpm (L/min)]	Number	>0
Percentage of factory-certified curve acceptance test	Number	>0
Hours on diesel engine or electric motor at start of acceptance test	Number	>0
Hours on diesel engine or electric motor at conclusion of acceptance test	Number	>0
Pump passed initial acceptance test	Character	(Y) Yes
		(N) No
Pump could supply maximum system demand acceptance test	Number	(1) Yes
		(2) No
		(3) Demand not known
Pump was significantly impaired acceptance test	Character	(Y) Yes

(N) No			
Pump was partially impaired acceptance test		Character	(Y) Yes
(N) No			
Pump passed after adjustments acceptance test		Character	(Y) Yes
(N) No			
Failure mode acceptance test (See Standardized List.)		Number	>0
	Explanation of failure acceptance test	String (80)	Alphanumeric
Current performance test data set (percentage) — permanent — 0, 25, 50, 75, 100, 125, and 150	Test date — current performance test	Date	Year/month/day
	Test reference identifier — current performance test	Number	>0
	Data set reference identifier — current performance test	Number	>0
	Suction pressure — current performance test	Number	>0
System pressure — current performance test		Number	>0
Discharge pressure — current performance test		Number	>0
Net pressure		Number	>0
Water temperature in pump casing — current performance test		Number	>0
Room temperature — current performance test		Number	>0
Initial pump start date — current performance test		Date	Year/month/day
Initial pump start time — current performance test		Time	Hour(n)/min(n)/sec(n)
Final pump stop date — current performance test		Date	Year/month/day
Final pump stop time — current performance test		Time	Hour(n)/min(n)/sec(n)
Pump start dates — current performance test (record up to 10)		Date	Year/month/day

Pump start times — current performance test (record up to 10)	Time	Hour(n)/min(n)/sec(n)
Pump stop dates — current performance test (record up to 10)	Date	Year/month/day
Pump stop times — current performance test (record up to 10)	Time	Hour(n)/min(n)/sec(n)
Pressure at pump start — current performance test	Number	>0
Type of start — current performance test	Number	(1) Automatic demand
		(2) Automatic test
		(3) Manual
Minimum transducer pressure at startup — current performance test	Number	>0
Number of starts and stops during — current performance test	Number	>0
	Number	>0
System pressure at final pump shutdown	Number	>0
Type of shutdown	Number	(1) Automatic demand
		(2) Automatic test
		(3) Manual
		(4) Overspeed
		(5) Other trouble
Loss of power (for transfer) date	Date	Year/month/day
Loss of power (for transfer) time	Time	Hour(n)/min(n)/sec(n)
Transfer of power date	Date	Year/month/day
Transfer of power time	Time	Hour(n)/min(n)/sec(n)
Day power restored to normal	Date	Year/month/day
Time power restored to normal	Time	Hour(n)/min(n)/sec(n)

Date readings recorded	Date	Year/month/day
Time readings recorded	Time	Hour(n)/min(n)/sec(n)
RPM	Number	>0
Voltage Phase A–B current performance test	Analog signal converted to number	>0
Voltage Phase B–C current performance test	Analog signal converted to number	>0
Voltage Phase C–A current performance test	Analog signal converted to number	>0
Amperage Phase 1 current performance test	Analog signal converted to number	>0
Amperage Phase 2 current performance test	Analog signal converted to number	>0
Amperage Phase 3 current performance test	Analog signal converted to number	>0
Nozzle coefficient — current performance test, up to 20 per test	Number	>0
Nozzle size — current performance test, up to 20 per test [in. (mm)]	Number	>0
Nozzle pitot pressure — current performance test, up to 20 per test	Number	>0
Fuel tank level — current performance test (0-Above 2/3, 1-below 2/3)	Number	>0
Fuel tank level — current performance test (percentage full)	Number	>0
Flow through pump — current performance test	Number	>0
RPM adjusted net pressure — current performance test	Number	>0
RPM adjusted flow — current performance test [gpm (L/min)]	Number	>0
Percentage of factory-certified curve — current performance test	Number	>0
Hours on diesel engine or electric motor at start of current performance test	Number	>0
Hours on diesel engine or electric motor at conclusion of current performance test	Number	>0
Pump passed initial — current performance test	Character	Y/N

Pump could supply maximum system demand — current performance test		Number	(1) Yes
- - -			
			(2) No
- - -			
			(3) Demand not known
-			
Pump was significantly impaired — current performance test		Character	Y/N
-			
Pump was partially impaired — current performance test		Character	Y/N
-			
Pump passed after adjustments — current performance test		Character	Y/N
-			
Failure mode — current performance test		Number	See Standardized List.
-			
	Explanation of failure — current performance test	String (80)	Alphanumeric
Previous performance test data set (percentage) — static — 0, 25, 50, 75, 100, 125, and 150	Test date — previous performance test	Date	Year/month/day
	Test reference identifier — previous performance test	Time	Hour(n)/min(n)/sec(n)
	Data set reference identifier — previous performance test	Number	>0
	Suction pressure — previous performance test	Number	>0
-			
System pressure — previous performance test		Number	>0
-			
Discharge pressure — previous performance test		Number	>0
-			
Net pressure		Number	>0
-			
Water temperature in pump casing — previous performance test		Number	>0
-			
Room temperature — previous performance test		Number	>0
-			
Initial pump start date — previous performance test		Date	Year/month/day
-			
Initial pump start time — previous performance test		Time	Hour(n)/min(n)/sec(n)
-			
Final pump stop date — previous performance Test		Date	Year/month/day
-			
Final pump stop time — previous performance test		Time	Hour(n)/min(n)/sec(n)
-			

Pump start dates — previous performance test (record up to 10)	Date	Year/month/day
Pump start times — previous performance test (record up to 10)	Time	Hour(n)/min(n)/sec(n)
Pump stop dates — previous performance test (record up to 10)	Date	Year/month/day
Pump stop times — previous performance test (record up to 10)	Time	Hour(n)/min(n)/sec(n)
Pressure at pump start — previous performance test	Number	>0
Type of start — previous performance test (1-automatic demand, 2-automatic test, 3-manual)	Number	>0
Minimum transducer pressure at startup — previous performance test	Number	>0
Number of starts and stops —previous performance test	Number	>0
Final pump shutdown time — previous performance test	Number	>0
System pressure at final pump shutdown	Number	>0
Type of shutdown	Number	(1) Automatic demand
		(2) Automatic test
		(3) Manual
		(4) Overspeed
		(5) Other trouble
Loss of power (for transfer) date	Date	Year/month/day
Loss of power (for transfer) time	Time	Hour(n)/min(n)/sec(n)
Transfer of power date	Date	Year/month/day
Transfer of power time	Time	Hour(n)/min(n)/sec(n)
Day power restored to normal	Date	Year/month/day
Time power restored to normal	Time	Hour(n)/min(n)/sec(n)

Date readings recorded	Date	Year/month/day
_		
Time readings recorded	Time	Hour(n)/min(n)/sec(n)
_		
RPM		
_		
>0		
_		
Voltage Phase A–B previous performance test	Analog signal converted to number	>0
_		
Voltage Phase B–C previous performance test	Analog signal converted to number	>0
_		
Voltage Phase C–A previous performance test	Analog signal converted to number	>0
_		
Amperage Phase 1 previous performance test	Analog signal converted to number	>0
_		
Amperage Phase 2 previous performance test	Analog signal converted to number	>0
_		
Amperage Phase 3 previous performance test	Analog signal converted to number	>0
_		
Nozzle coefficient — previous performance test, up to 20 per test	Number	>0
_		
Nozzle size — previous performance test, up to 20 per test [in. (mm)]	Number	>0
_		
Nozzle pitot pressure — previous performance test, up to 20 per test	Number	>0
_		
Fuel tank level previous performance test (0-Above 2/3, 1-below 2/3)	Number	>0
_		
Fuel tank level — previous performance test (percentage full)	Number	>0
_		
Flow through pump — previous performance test	Number	>0
_		
RPM adjusted net pressure — previous performance test	Number	>0
_		
RPM adjusted flow — previous performance test [gpm (L/min)]	Number	>0
_		
Percentage of factory-certified curve — previous performance test	Number	>0
_		
Hours on diesel engine or electric motor at start of previous performance test	Number	>0
_		
Hours on diesel engine or electric motor at conclusion of previous performance	Number	>0

test			
Pump passed initial — previous performance test		Character	Y/N
Pump could supply maximum system demand — previous performance test		Number	(1) Yes
			(2) No
			(3) Demand not known
Pump was significantly impaired — previous performance test		Character	Y/N
Pump was partially impaired — previous performance test		Character	Y/N
Pump passed after adjustments — previous performance test		Character	Y/N
Failure mode — previous performance test		Number	See Standardized List.
	Explanation of failure — previous performance test	String (80)	Alphanumeric
Repair maintenance data (20 sets)	Date of maintenance/repair	Date	Year/month/day
Maintenance/repair identifier		Number	>0
Routine maintenance/repair		Character	Y/N
Pump out of service during maintenance/repair		Character	Y/N
Date pump out of service		Date	Year/month/day
Time pump out of service		Time	Hour(n)/min(n)/sec(n)
Date pump restored to service		Date	Year/month/day
Time pump restored to service		Time	Hour(n)/min(n)/sec(n)
Date pump maintenance/repair completed		Date	Year/month/day
Part replaced (1)		String (40)	Alphanumeric
Description of maintenance, repair, and/or Part 1 replacement		String (80)	Alphanumeric
Part replaced (2)		String (40)	Alphanumeric

Description of maintenance, repair, and/or Part 2 replacement	String (80)	Alphanumeric
Part replaced (3)	String (40)	Alphanumeric
Description of maintenance, repair, and/or Part 3 replacement	String (80)	Alphanumeric
Part replaced (4)	String (40)	Alphanumeric
Description of maintenance, repair, and/or Part 4 replacement	String (80)	Alphanumeric
Routine maintenance or repair	String (40)	Alphanumeric
Date repair completed	Date	Year/month/day
Fuel tank level — current performance test	Number	(0) Above 2/3
		(1) Below 2/3
Fuel tank level — current performance test (percentage full)	Number	>0
Fuel maintenance system status	Number	(1) In service
		(2) Out of service
		(3) Needs maintenance
19 additional repair maintenance data sets		

	S		
Jockey pump operation	Last jockey pump monitoring reset date	Date	Year/month/day
	Last jockey pump monitoring reset time	Time	Hour(n)/min(n)/sec(n)
	Total number of starts (since reset)	Number	>0
	Total jockey pump run time (minutes since last reset)	Number	>0
	Jockey Pump start pressure (most recent)	Number	>0
	Jockey pump stop pressure	Number	>0
	Most recent run time (seconds)	Number	>0

Fire pump operation	Last fire pump monitoring reset date	Date	Year/month/day
	Last fire pump monitoring reset time	Time	Hour(n)/min(n)/sec(n)
	Fire pump start date and time (last 10 times)	Date	Year/month/day
	Fire pump stop date and time (last 10 times)	Time	Hour(n)/min(n)/sec(n)
	Fire pump start pressure (most recent)	Number	>0
	Fire pump stop pressure (most recent)	Number	>0
	Stop automatic or manual (most recent)	Number	>0
	Total number of starts since reset	Number	>0
	Total run time since reset (minutes)	Number	>0
	Date loss of electrical power with switch in “on” position since last reset (50 sets)	Number	>0
	Time loss of electrical power with switch in “on” position since last reset (50 sets)	Number	>0
	Date power restored after loss of power with switch in “on” position since last reset (50 sets)	Date	Year/month/day
	Time power restored after loss of power with switch in “on” position since last reset (50 sets)	Time	Hour(n)/min(n) /sec(n)
	Date power switch turned off (50 sets)	Date	Year/month/day
	Time power switch turned off (50 sets)	Time	Hour(n)/min(n)/sec(n)
	Date power switch turned back on (50 sets)	Date	Year/month/day
	Time power switch turned back on (50 sets)	Time	Hour(n)/min(n)/sec(n)

F.5.2.1

The data formats shown in Table F.5.2.1 are used in Table F.5.2(a), Table F.5.2(b), Table F.5.2(c), and Table F.5.2(d).

Table F.5.2.1 Data Formats

Reference Name	Format	Possible Values
Bit		
-		
	0 or 1	
Byte	8 bits	0–256
Character	1 byte	0–256 (These can be interpreted as letters, numbers, or symbols using ASCII convention.)
Integer	2 bytes	0–65,534 (During interpretation, a decimal place may be assumed. When using an assumed decimal place for a number in which the first digit might exceed 5, the number is limited to four digits.)
Number	5 bytes	

Byte	Value	Number	Power of 10
1st byte	0	Positive	Positive
-			
1	Positive	Negative	
-			
2	Negative	Positive	
-			
	3	Negative	Negative
2nd–4th bytes	0–16,777,216		
- -			
5th byte	0–255 (10^n)		
- -			

Reference Name	Format	Possible Values
String	Multibytes as specified [e.g., String (80) is 80 bytes]	Any letters, numbers, or symbols represented in the ASCII convention
Date	8 characters	xxxx (year) xx (month) xx (day)
Time	3 bytes	n (hours, 0–24)
- -		
n (minutes, 0–60)		
- -		
n (seconds, 0–60)		

F.5.2.2

All inspection, test, and maintenance data should be recorded in the format provided in Table F.5.2(a). All repair data should be recorded in the format provided in Table F.5.2(b).

F.5.2.3

All recorded information should be protected in accordance with F.5.1 and/or other appropriate security to limit access to appropriate entities.

Statement of Problem and Substantiation for Public Input

Flowing water through an inspector's test connection can't verify that the system in unobstructed. You can verify full flow under pressure, but not flow without obstruction. Flowing water gives you a reasonable assurance the system has not been compromised (similar to Section A.13.2.5 and A.14.2.1). The word "obstructed" should not be contained within acceptance criteria.

Submitter Information Verification

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Submittal Date: Mon Dec 16 13:08:51 EST 2019
Committee: INM-AAA

Committee Statement

Resolution: Current annex language provides a recommendation to flow nozzles downstream of detector check valves or assemblies.

Public Input No. 237-NFPA 25-2020 [Section No. F.5.2 [Excluding any Sub-Sections]]

Table F.5.2(a) Inspection, Test, Maintenance, and Repair Record Layout

Category	Item Format	Format	Possible Values				
Basic information	Type of record	String (48)	Inspection, test, and maintenance				
	–	Facility name	String (96)	Alphanumeric			
	–	Location — GPS coordinates (longitude)	Number	−183333330° to +180°			
	–	Location — GPS coordinates (latitude)	Number	−90° to +90°			
	–	Location — GPS coordinates (elevation)	Number	Feet or meters			
	–	Location adjusted for privacy — GPS coordinates (longitude)	Number	−180° to +180°			
	–	Location adjusted for privacy — GPS coordinates (latitude)	Number	−90° to +90°			
	–	Location adjusted for privacy — GPS coordinates (elevation)	Number	Feet or meters			
	–	Reporting units pressure	Character	(1) psi			
			–	–	–	(2) bar	- -
			–	(3) Pascals			
			–	–	–	(4) other	
	–	Reporting units flow	Character	(1) gpm			
			–	–	–	(2) L/min	- -
			–	(3) L/sec			
			–	–	–	(4) m^3/min	- -
			–	(5) ft^3/min			
			–	–	–	(6) Other	

Category	Item Format	Format	Possible Values				
	–	Type of inspection or test	Character	(I) Inspection			
			–	–	–	(T) Test	- -
			–	(M) Maintenance			
			–	–	–	(R) Repair	
Item inspected, tested, maintained, or repaired — repeat for each item	Start of record marker for item	String (16)	Record start				
	–	Unit type identifier (develop list)	String (48)	Alphanumeric			
	–	Passed; failed; passed, but needs attention	Character	(P) Passed			
			–	–	–	(F) Failed	
			–	–	–	(A) Passed, but needs attention	
	–	See Table F.2.5(d).	–		See Table F.2.5(d).		
	–	Passed visual inspection	Character	(Y) Yes			
			–	–	–	(N) No	–
			–	–	(A) Not Applicable		
	–	Maintenance required	Number	≥ 0			
	–	Maintenance done	Character	(1) Not applicable			
			–	–	–	(2) Completed	
			–	–	–	(3) Ordered but not completed	
			–	–	–	(4) Not ordered	
	–	End of item record marker	String (16)	Record end			

Category	Item Format	Format	Possible Values
End of ITC record	End of ITC (all components reported)	String (48)	End of inspection, test, and maintenance report

Table F.5.2(b) Equipment Repair Data Record Layout

Equipment repair data	Type of record	String (48)	Repair			
	–	Facility name	String (96)	Alphanumeric		
	–	Location — GPS coordinates (longitude)	Number	−180° to +180°		
	–	Location — GPS coordinates (latitude)	Number	−90° to +90°		
	–	Location — GPS coordinates (elevation)	Number	Feet or meters		
	–	Location adjusted for privacy — GPS coordinates (longitude)	Number	−180° to +180°		
	–	Location adjusted for privacy — GPS coordinates (latitude)	Number	−90° to +90°		
	–	Location adjusted for privacy — GPS coordinates (elevation)	Number	Feet or meters		
	–	Repair date	Date	Year/month/day		
	–	Common data	–		See Table F.5.2(c).	
	–	Repair preventative or result of failure	Character	(P) Preventative		
			–	–	–	(F) Failure
	–	Failure mode (develop list)	5 Characters	Correspond to list		
	–	Failure impaired fire protection system	Character	(I) Impaired		
			–	–	–	(P) Partially functional	–
			–	–	(N) Not impaired	
	–	Repair code (develop list)	5 Characters	Correspond to list		
	–	Component replaced (develop list)	5 Characters	Correspond to list		

–	Repair description	String (96)	Alphanumeric
–	Component replacement date	Date	Year/month/day
–	End of repair record	String (48)	End of repair

Table F.5.2(c) Common Equipment Data

Category	Item	Format	Possible Values
–	Manufacturer (develop list)	String (48)	Alphanumeric
–	Model number	String (48)	Alphanumeric
–	Size	String (48)	Alphanumeric
–	Serial number	String (48)	Alphanumeric
–	Year manufactured	4 Characters	xxxx (year)
–	Device/component identifier tag	String (48)	Alphanumeric

Table F.5.2(d) Item Information

Item	Item Component	Format	Possible Values		
Air compressor	Common data	See Table F.5.2(c).			
	–	Type of system served	Character	(1) Dry	
		–	–	–	(2) Non-interlock preaction
		–	–	(3) Single interlock preaction	
		–	–	–	(4) Double interlock preaction
		–	–	(5) Other	
	–	Filled system in 30 minutes or less	Character	(Y) Yes	
		–	–	–	(N) No
		–	–	–	(3) N/A
Alarm check valve	Common data	See Table F.5.2(c).			
	–	Operated satisfactorily	Character	(Y) Yes	
		–	–	–	(N) No
		–	–	–	(3) N/A
Alarm device	Common data	See Table F.5.2(c).			
	–	Operated satisfactorily	Character	(Y) Yes	
		–	–	–	(N) No
		–	–	–	(3) N/A
Alarm valves	Common data	See Table F.5.2(c).			

Item	Item Component	Format	Possible Values			
	–	Operated satisfactorily	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
Antifreeze solution	Unit type identifier	String (48)	–			
	–	Type of antifreeze	Character	(1) ~~Glycerin~~	–	–
			(2) ~~Ethylene glycol~~	–	–	–
			(3) Other			
	–	Tested satisfactorily	Character	(Y) Yes	–	–
			(1) ~~Concentration too low/high~~	–	–	–
			(2) ~~Antifreeze dirty~~	–	–	–
			(3) Other			
Auxiliary drains	Operated satisfactorily	Character	(Y) Yes			
			–	–	–	(N) No
			–	–	–	(3) N/A
Backflow preventer	Common data	See Table F.5.2(c).				
	–	Type	–		(1) DC	–
			–	–	(2) DDC	
			–	–	–	(3) RPZ
			–	(4) RPZDC		
			–	–	–	(5) Air gap
			–	–	(6) Check valve	
			–	–	–	(7) Single-check DC
			–	–	(8) Other	
	–	Nonflow upstream pressure	Number	Two decimal places		
	–	Nonflow intermediate chamber pressure	Number	Two decimal places		
	–	Nonflow downstream pressure	Number	Two decimal places		

Item	Item Component	Format	Possible Values			
	–	ITC flow upstream pressure	Number	Two decimal places		
	–	ITC flow intermediate chamber pressure	Number	Two decimal places		
	–	ITC flow downstream pressure	Number	Two decimal places		
	–	Demand test flow rate	Number	Two decimal places		
	–	Demand flow upstream pressure	Number	Two decimal places		
	–	Demand flow intermediate chamber pressure	Number	Two decimal places		
	–	Demand flow downstream pressure	Number	Two decimal places		
Balancing valve diaphragm	Common data	See Table F.5.2(c).				
	–	Operated satisfactorily	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
Ball drip (automatic type) drain valves	Common data	See Table F.5.2(c).				
	–	Operated satisfactorily	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
Bladder tank	Common data	See Table F.5.2(c).				
	–	Fill level OK	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
	–	Operated satisfactorily	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
	–	Comment if needed	String (80)	Alphanumeric		
Spare head cabinet	Unit type identifier	String (48)	Alphanumeric			

Item	Item Component	Format	Possible Values			
	–	Adequate stock of spare sprinklers	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
	–	Comment if needed	String (80)	Alphanumeric		
Check valve(s)	Common data	See Table F.5.2(c).				
	–	Type	Character	(1) Flanged swing		
			–	–	–	(2) Grooved swing
			–	–	–	(3) Sprinkler-loaded flanged swing
			–	–	(4) Spring-loaded grooved swing	
			–	–	–	(5) Spring-loaded duo-wafer
			–	(6) Spring-loaded duo-grooved		
			–	–	–	(7) Spring-loaded duo-flanged
			–	–	–	(8) Other
	–	Prevents backflow	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
	–	Nonflow upstream pressure	Number	≥0	–	
	Nonflow downstream pressure	Number	≥0			
	–	Demand test flow rate	Number	≥0		
	–	Demand flow upstream pressure	Number	≥0	–	
	Demand flow downstream pressure	Number	≥0			

Item	**Item Component**	**Format**	**Possible Values**			
	–	Unit type identifier	String (48)	Alphanumeric		
	–	Where installed	Character	(1) On fire pump discharge		
			–	–	–	(2) Loop piped back to suction
	–	Operated satisfactorily	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
Control valve(s)	Common data	See Table F.5.2(c).				
	–	Type of valve	Character	(1) OS&Y		
			–	–	–	(2) Butterfly
			–	(3) Ball		
			–	–	–	(4) NRS gate
			–	–	(5) Post indicator gate	
			–	–	–	(6) Post indicator butterfly
			–	–	(7) Wall indicator gate	
			–	–	–	(8) Wall indicator butterfly
			–	–	(9) Other	
	–	Nominal valve size [in. (mm)]	Number	≥0		
	–	Original position of valve	Character	(1) Normally open valve, open		
			–	–	–	(N) Normally open valve, closed
			–	(3) Normally closed valve, closed		
			–	–	–	(4) Normally closed valve, open
			–	–	–	(5) Valve partially closed

Item	Item Component	Format	Possible Values			
	-	Stops flow of water when closed	Character	(Y) Yes		
			-	-	-	(2) Minor leakage
			-	(3) No		
			-	-	-	(4) Not tested for flow
	-	Obstructs flow of water when open	Character	(Y) Yes		
			-	-	-	(N) No
			-	-	-	(3) Not tested for flow
	-	Operated satisfactorily	Character	(Y) Yes		
			-	-	-	(N) No
			-	-	-	(3) N/A
Deluge/preaction valve	Common data	See Table F.5.2(c).				
	-	Type of system	Character	(1) Deluge		
			-	-	-	(2) Non-interlock preaction
			-	-	(3) Single interlock preaction	
			-	-	-	(4) Double interlock preaction
			-	-	(5) Other	
	-	Activation mechanism	Character	(1) Pilot line		
			-	-	-	(2) Heat detection
			-	(3) Smoke detection		
			-	-	-	(4) Manual
			-	(5) Other		
	-	Automatic actuation OK	Character	(Y) Yes		
			-	-	-	(N) No
			-	-	(3) Not tested	
			-	-	-	(4) N/A

Item	Item Component	Format	Possible Values			
	–	Manual actuation OK	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	(3) Not tested	
			–	–	–	(4) N/A
	–	Operated satisfactorily	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	–	(3) N/A
	–	See Backflow Prevention Devices.	–	–		
Detector check valve	Common data	See Table F.5.2(c).				
	–	Nozzle size [in. (mm)]	Number	≥0		
	–	Flowed without obstruction	Character	(Y) Yes		
			–	–	–	(2) Minor obstructed nozzles
			–	–	–	(3) Significant obstructions
	–	Flowed at or above system design	Character	(Y) Yes		
			–	–	–	(N) No
			–	–	(3) Not determined	
	–	Concentrate percentage correct	Character	(Y) Yes		
			–	–	–	(N) No
Drain riser	Operated satisfactorily	Character	(Y) Yes			
			–	–	–	(N) No
			–	–	–	(3) N/A
Dry pipe valve	Common data	See Table F.5.2(c).				
	–	Accelerator	Character	(Y) Yes		
			–	–	–	(N) No
	–	Time to trip with accelerator (sec)	Number	≥0		

Item	Item Component	Format	Possible Values			
	–	Water delivery time with accelerator (sec)	Number	≥0		
	–	Time to trip without accelerator (sec)	Number	≥0		
	–	Water delivery time without accelerator (sec)	Number	≥0		
	–	System passed	Character	(Y) Yes		
			–	–	–	(N) No
Accelerator	Common data	See Table F.5.2(c).				
	–	Time to trip with accelerator (sec)	Number	≥0		
	–	System passed	Character	(Y) Yes		
			–	–	–	(N) No
Enclosure (during cold weather)	Adequate heat	Character	(Y) Yes			
			–	–	–	(N) No
Fire department connection	Connection supplies	Character	(1) Sprinkler			
			–	–	–	(2) Standpipe
			–	(3) Standpipe and sprinkler		
			–	–	–	(4) Other
	–	Connection flushed	Character	(Y) Yes		
			–	–	–	(N) No
	–	Connection tested	Character	(Y) Yes		
			–	–	–	(N) No
	–	System passed	Character	(Y) Yes		
			–	–	–	(N) No
Fire hose	Hydrostatically tested within last 5 years	Character	(Y) Yes			
			–	–	–	(N) No

Item	Item Component	Format	Possible Values			
Fire pumps	See NFPA 20 and Table F.5.2(e).		-			
Fittings — except those with rubber gaskets	Indication of leakage present	Character	(1) No			
			-	-	(2) Minor	
			-	-	-	(3) Significant
Fittings — those with rubber gaskets	Indication of leakage present	Character	(1) No			
			-	-	(2) Minor	
			-	-	-	(3) Significant
Foam concentrate	Manufacturer	String (48)	Alphanumeric			
	-	Type	String (48)	Alphanumeric		
	-	Adequate quantity	Character	(Y) Yes		
			-	-	-	(N) No
	-	Samples submitted for testing	Character	(Y) Yes		
			-	-	-	(N) No
	-	Samples tested satisfactory	Character	(Y) Yes		
			-	-	-	(N) No
Foam concentrate strainer(s)	Strainer clear initial	Character	(Y) Yes			
			-	-	-	(N) No
Foam concentrate tank	Tank full	Character	(Y) Yes			
			-	-	-	(N) No
	-	Protective coating (mineral oil) on top of foam concentrate OK	Character	(Y) Yes		
			-	-	(N) No	
Foam-water solution	Foam percentage	Number	≥0			
	-	Solution passed	Character	(Y) Yes		
			-	-	-	(N) No

Item	Item Component	Format	Possible Values			
Gauges	Gauge on	Character	(1) System side, wet pipe system			
			–	–	–	(2) Supply side, wet pipe system
			–	–	(3) Air side, dry pipe system	
			–	–	–	(4) Supply side, dry pipe system
			–	–	–	(5) Air side, preaction system
			–	(6) Supply side, preaction system		
			–	–	–	(7) Fire pump suction
			–	(8) Fire pump discharge		
			–	–	–	(9) Water mist system
			–	–	–	(10) Pressure tank
			–	–	(11) Water storage tank	
			–	–	–	(12) Other
	–	Gauges reading correctly	Character	(Y) Yes		
			–	–	–	(N) No
General information sign	Required signs provided	Character	(Y) Yes			
			–	–	–	(N) No
	–	Signs readable and correct	Character	(Y) Yes		
			–	–	–	(N) No
Gravity tanks	Water level OK	Character	(Y) Yes			
			–	–	–	(N) No
	–	Adequate heat provided	Character	(Y) Yes		

Item	Item Component	Format	Possible Values
			(N) No
Hanger/pipe supports	Passed visual inspection	Character	(Y) Yes
			(N) No
High and low air pressure switch	Common data	See Table F.5.2(c).	
	Sends low air signal at the appropriate pressure setting	Character	(Y) Yes
			(N) No
	Sends high air signal at the appropriate pressure setting	Character	(Y) Yes
			(N) No
Hose houses	Properly equipped and maintained	Character	(Y) Yes
			(N) No
Hose nozzle	Type of nozzle	Character	(1) Straight stream
			(2) Fog
			(3) Other
	Properly maintained	Character	(Y) Yes
			(N) No
Hose racks	Properly maintained	Character	(Y) Yes
			(N) No
Hose storage device	Properly maintained	Character	(Y) Yes
			(N) No
Hose valve (non–pressure-regulating)	Properly maintained	Character	(Y) Yes
			(N) No
Hose valve pressure-regulating devices	Common data	See Table F.5.2(c).	
	Inlet pressure while flowing	Character	(Y) Yes
			(N) No
	Outlet pressure while flowing	Character	(Y) Yes
			(N) No

Item	Item Component	Format	Possible Values			
	–	Test flow rate	Number	≥0		
	–	Passed test	Character	(Y) Yes		
			–	–	–	(N) No
Hydrants (dry barrel and wall)	Common data	See Table F.5.2(c).				
	–	Hydrant opened and closed	Character	(Y) Yes		
			–	–	–	(N) No
	–	Hydrant barrel drained	Character	(Y) Yes		
			–	–	–	(N) No
	–	Hydrant shows need of maintenance	Character	(Y) Yes		
			–	–	–	(N) No
Hydrants (wet barrel)	Common data	See Table F.5.2(c).				
	–	Hydrant opened and closed	Character	(Y) Yes		
			–	–	–	(N) No
	–	Hydrant shows need of maintenance	Character	(Y) Yes		
			–	–	–	(N) No
Hydraulic design, information sign, and hydraulic placards	Required signs/placards provided	Character	(Y) Yes			
			–	–	(N) No	
	–	Signs readable and correct	Character	(Y) Yes		
			–	–	–	(N) No
Identification signs	Required signs/placards provided	Character	(Y) Yes			
			–	–	–	(N) No
	–	Signs readable and correct	Character	(Y) Yes		
			–	–	–	(N) No
Information sign	Required signs/placards provided	Character	(Y) Yes			

Item	Item Component	Format	Possible Values			
			-	-	-	(N) No
	-	Signs readable and correct	Character	(Y) Yes		
			-	-	-	(N) No
Inspector's test connection	Flowed without obstruction	Character	(Y) Yes			
			-	-	-	(N) No
	-	Activated alarm	Character	(Y) Yes		
			-	-	-	(N) No
Low-point drains (dry pipe system)	Drained without obstruction	Character	(Y) Yes			
			-	-	-	(N) No
	-	Passed visual inspection	Character	(Y) Yes		
			-	-	-	(N) No
	-	Excessive water at drain	Character	(Y) Yes		
			-	-	-	(N) No
Main drain	Static pressure	Number	≥0			
	-	Residual pressure	Number	≥0		
Main drain valves	Free of corrosion and damage	Character	(Y) Yes			
			-	-	-	(N) No
Mainline strainers	Strainer without excessive debris and damage	Character	(Y) Yes			
			-	-	-	(N) No
Manual actuation device(s)	Passed test	Character	(Y) Yes			
			-	-	-	(N) No
Mist system compressed gas cylinder	Cylinders full	Character	(Y) Yes			
			-	-	(N) No	
Mist system control equipment	Passed test	Character	(Y) Yes			
			-	-	-	(N) No

Item	Item Component	Format	Possible Values
Mist system plant air, compressors, and receivers	Operated satisfactorily	Character	(Y) Yes - - (N) No
Mist system pneumatic valves, cylinder valves, and master release valves	Passed test	Character	(Y) Yes - - (N) No
Mist system standby pump	Passed test	Character	(Y) Yes - - - (N) No
Mist system water storage cylinder (additive storage cylinder)	Passed test	Character	(Y) Yes - - (N) No
Mist system water storage cylinder (high pressure)	Passed test	Character	(Y) Yes - - (N) No
Mist system water storage cylinder (high pressure), filters on refill connection	Passed test	Character	(Y) Yes - - (N) No
Mist system water storage cylinder (high pressure), support frame/restraints	Passed visual inspection	Character	(Y) Yes - - (N) No
Mist system water storage cylinder (high pressure), vent plugs at refilling	Operated satisfactorily	Character	(Y) Yes - - (N) No
Mist system water storage cylinder (high pressure), water level (load cells)	Passed test	Character	(Y) Yes - - (N) No
Mist system water storage tank	Tank full without leaks	Character	(Y) Yes - - - (N) No
Mist system water storage tank, all valves and appurtenances	Passed test	Character	(Y) Yes - - (N) No

Item	Item Component	Format	Possible Values			
Mist system water storage tank, sight glass valves (confirm open)	Operated satisfactorily	Character	(Y) Yes			
			-	-	(N) No	
Mist system water storage tank, water level (supervised)	Passed test	Character	(Y) Yes			
			-	-	(N) No	
Monitor nozzles	Passed test	Character	(Y) Yes			
			-	-	-	(N) No
Pipes (above ground)	Type of system	Character	(1) Wet pipe sprinkler			
			-	-	-	(2) Dry pipe sprinkler
			-	-	(3) Preaction	
			-	-	-	(4) Deluge
			-	-	(5) Water mist	
			-	-	-	(6) Other
	-	Environment	Character	(1) Indoors, heated		
			-	-	-	(2) Indoors, unheated
			-	-	-	(3) Covered, exposed to exterior atmosphere
			-	-	-	(4) Covered, exposed to exterior, salt air
			-	-	-	(5) Exposed exterior
			-	-	(6) Exposed, exterior, salt air	
			-	-	-	(7) Hostile chemical
			-	(8) Other		
	-	Free of leads and excessive corrosion	Character	(Y) Yes		
			-	-	-	(N) No
Fittings (above ground)	Type of system	Character	(1) Wet pipe sprinkler			

Item	Item Component	Format	Possible Values			
			-	-	-	(2) Dry pipe sprinkler
			-	-	(3) Preaction	
			-	-	-	(4) Deluge
			-	-	(5) Water mist	
			-	-	-	(6) Other
	-	Environment	Character	(1) Indoors, heated		
			-	-	-	(2) Indoors, unheated
			-	-	-	(3) Covered, exposed to exterior atmosphere
			-	-	-	(4) Covered, exposed to exterior, salt air
			-	-	-	(5) Exposed exterior
			-	-	(6) Exposed, exterior, salt air	
			-	-	-	(7) Hostile chemical
			-	(8) Other		
	-	Free of leaks and excessive corrosion	Character	(Y) Yes		
			-	-	-	(N) No
Pipes and fittings (underground)	Environment	Character	(1) Sandy soil			
			-	-	-	(2) Clay soil
			-	(3) Corrosive soil		
			-	-	-	(4) Other
	-	Unit type identifier	String (48)	Alphanumeric		
	-	Type of pipe	Character	(1) Ductile iron		
			-	-	-	(2) Steel
			-	(3) CPVC		
			-	-	-	(4) Polyethylene

Item	Item Component	Format	Possible Values			
			-	(5) Other		
	-	Pipe encasement	Character	(1) Polyethylene wrap		
			-	-	-	(2) Culvert
			-	(3) None		
	-	Water supply source	Character	(1) From municipal system		
			-	-	-	(2) From water storage tank
			-	-	-	(3) From pond, lake, river, etc.
			-	-	-	(4) Other
	-	Free of excessive leakage	Character	(Y) Yes		
			-	-	-	(N) No
	-	Excessive friction loss	Character	(Y) Yes		
			-	-	-	(N) No
Pipe stands	Passed visual inspection	Character	(Y) Yes			
			-	-	-	(N) No
Post indicator and wall indicator valves	Opened and closed	Character	(Y) Yes			
			-	-	(N) No	
	-	Stopped flow of water when closed	Character	(Y) Yes		
			-	-	-	(N) No
			-	-	(3) Not verified	
Low flow pressure relief valves (e.g., sprinkler system)	Relief pressure	Number	≥0			
	-	Functioning properly	Character	(Y) Yes		
			-	-	-	(N) No
High flow pressure relief valves (e.g., fire pump)	Common data	See Table F.5.2(c).				
	-	Type	Character	(1) Pilot-operated		

Item	**Item Component**	**Format**	**Possible Values**			
			–	–	–	(2) Spring-loaded
			–	–	(3) Other	
	–	Discharge to…	Character	(1) Atmosphere		
			–	–	–	(2) Tank
			–	–	–	(3) Fire pump suction
			–	–	(4) Other	
	–	Relief pressure	Number	≥0	–	
	Shutoff pressure	Number	≥0			
	–	Functioning properly	Character	(Y) Yes		
			–	–	–	(N) No
Pressure reducing valves	Common data	See Table F.5.2(c).				
	–	Type	Character	(1) Pilot-operated		
			–	–	–	(2) Spring-loaded
			–	–	(3) Other	
	–	Installation with other pressure reducing valves	Character	(1) Standalone		
			–	–	–	(2) Series upstream
			–	(3) Series downstream		
			–	–	–	(4) Parallel, with smaller
			–	(5) Parallel, with larger		
			–	–	–	(6) Parallel, same size
			–	–	–	(7) Combination series and parallel
			–	–	(8) Other	
	–	Static inlet pressure	Number	≥0	–	
	Static outlet pressure	Number	≥0			

Item	Item Component	Format	Possible Values			
	–	Residual low flow inlet pressure	Number	≥0	–	
	Residual low flow outlet pressure	Number	≥0			
	–	Residual low flow inlet pressure	Number	≥0	–	
	Residual low flow outlet pressure	Number	≥0			
	–	Functioning properly	Character	(Y) Yes		
			–	–	–	(N) No
Pump suction control valves	Common data	See Table F.5.2(c).				
	–	Type	Character	(1) Pilot-operated		
			–	–	–	(2) Spring-loaded
			–	–	(3) Other	
	–	Set suction pressure	Number	≥0		
	–	Static inlet pressure	Number	≥0	–	
	Static outlet pressure	Number	≥0			
	–	Inlet pressure at 100 percent rated pump capacity	Number	≥0	–	
	Outlet pressure at 100 percent rated pump capacity	Number	≥0			
	–	Inlet pressure at 150 percent rated pump capacity	Number	≥0	–	
	Outlet pressure at 150 percent rated pump capacity	Number	≥0			
	–	Functioning properly	Character	(Y) Yes		
			–	–	–	(N) No

Item	Item Component	Format	Possible Values			
Pressure tanks	Air pressure (supervised)	Character	(Y) Yes			
			–	–	–	(N) No
	–	Air pressure	Number	≥0		
	–	Water level OK	Character	(Y) Yes		
			–	–	–	(N) No
	–	Air pressure water level normal	Character	(Y) Yes		
			–	–	–	(N) No
Pressure vacuum vents	Functioning correctly	Character	(Y) Yes			
			–	–	–	(N) No
			–	–	(3) Not verified	
Proportioning system(s)	Common data	See Table F.5.2(c).				
	–	Functioning properly	Character	(Y) Yes		
			–	–	–	(N) No
Reduced-pressure detectors	Common data	See Table F.5.2(c).				
	–	Functioning properly	Character	(Y) Yes		
			–	–	–	(N) No
Retainer glands	No visible leakage or damage	Character	(Y) Yes			
			–	–	–	(N) No
Sight glass	No visible leakage or damage	Character	(Y) Yes			
			–	–	–	(N) No
Spare sprinklers	Adequate number of each type	Character	(Y) Yes			
			–	–	–	(N) No
	–	Visible leakage or damage	Character	(Y) Yes		
			–	–	–	(N) No
Sprinkler systems	Visible leakage or significant corrosion or damage	Character	(Y) Yes			
			–	–	(N) No	

Item	Item Component	Format	Possible Values			
Sprinklers	Manufacturer	String (48)	Alphanumeric			
	-	SIN	String (48)	Alphanumeric		
	-	Quick response	Character	(Y) Yes		
			-	-	-	(N) No
	-	Year manufactured	4 Characters	xxxx (year)		
	-	Approximate number of sprinkler	Number	≥0		
	-	Visible leakage or significant corrosion or damage	Character	(Y) Yes		
			-	-	(N) No	
	-	Approximate percent substandard	Number	0–100		
Sprinklers (dry)	Manufacturer	String (48)	Alphanumeric			
	-	SIN	String (48)	Alphanumeric		
	-	Quick response	Character	(Y) Yes		
			-	-	-	(N) No
	-	Year manufactured	4 Characters	xxxx (year)		
	-	Approximate number of sprinkler	Number	≥0		
	-	Visible leakage or significant corrosion or damage	Character	(Y) Yes		
			-	-	(N) No	
	-	Approximate percent substandard	Number	0–100		
Sprinklers (extra-high or greater temperature solder type)	Manufacturer	String (48)	Alphanumeric			
	-	SIN	String (48)	Alphanumeric		
	-	Quick response	Character	(Y) Yes		
			-	-	-	(N) No
	-	Year manufactured	4 Characters	xxxx (year)		

Item	Item Component	Format	Possible Values			
	–	Approximate number of sprinkler	Number	≥0		
	–	Visible leakage or significant corrosion or damage	Character	(Y) Yes		
			–	–	(N) No	
	–	Approximate percent substandard	Number	0–100	–	
	Approximate percent substandard	Number	0–100			
Sprinklers (in harsh environments)	Manufacturer	String (48)	Alphanumeric			
	–	SIN	String (48)	Alphanumeric		
	–	Quick response	Character	(Y) Yes		
			–	–	–	(N) No
	–	Year manufactured	4 Characters	xxxx (year)		
	–	Approximate number of sprinkler	Number	≥0		
	–	Visible leakage or significant corrosion or damage	Character	(Y) Yes		
			–	–	(N) No	
	–	Approximate percent substandard	Number	0–100	–	
	Approximate percent substandard	Number	0–100			
Sprinklers and automatic spray nozzles protecting commercial cooking equipment and ventilation systems	Manufacturer	String (48)	Alphanumeric			
	–	SIN	String (48)	Alphanumeric		
	–	Quick response	Character	(Y) Yes		
			–	–	–	(N) No

Item	Item Component	Format	Possible Values			
	–	Year manufactured	4 characters	xxxx (year)		
	–	Approximate number of sprinkler	Number	≥0		
	–	Visible leakage or significant corrosion or damage	Character	(Y) Yes		
			–	–	(N) No	
	–	Approximate percent substandard	Number	0 –100	–	
	Approximate percent substandard	Number	0 –100			
Suction tanks	Tank full	Character	(Y) Yes			
			–	–	–	(N) No
Supervisory device	Functioned correctly	Character	(Y) Yes			
			–	–	–	(N) No
Supports	Correctly installed	Character	(Y) Yes			
			–	–	–	(N) No
System pressure-regulating devices	Functioned correctly	Character	(Y) Yes			
			–	–	–	(N) No
Tank alarm and supervisory component, enclosure temperature	Connected to constantly monitored location	Character	(Y) Yes			
			–	–	(N) No	
	–	Functioned correctly	Character	(Y) Yes		
			–	–	–	(N) No
Tank alarm and supervisory component, high and low water level	Connected to constantly monitored location	Character	(Y) Yes			
			–	–	(N) No	
	–	Functioned correctly	Character	(Y) Yes		
			–	–	–	(N) No
Tank alarm and supervisory component, low water	Connected to constantly monitored location	Character	(Y) Yes			

Item	Item Component	Format	Possible Values			
temperature alarms			–	–	(N) No	
	–	Functioned correctly	Character	(Y) Yes		
			–	–	–	(N) No
Tank alarm and supervisory component, temperature alarms	Connected to constantly monitored location	Character	(Y) Yes			
			–	–	(N) No	
	–	Functioned correctly	Character	(Y) Yes		
			–	–	–	(N) No
Tank alarm and supervisory component, valve supervision	Connected to constantly monitored location	Character	(Y) Yes			
			–	–	(N) No	
	–	Functioned correctly	Character	(Y) Yes		
			–	–	–	(N) No
Tank alarm and supervisory component, water level alarms	Connected to constantly monitored location	Character	(Y) Yes			
			–	–	(N) No	
	–	Functioned correctly	Character	(Y) Yes		
			–	–	–	(N) No
Tank alarm and supervisory component, water temperature	Connected to constantly monitored location	Character	(Y) Yes			
			–	–	(N) No	
	–	Functioned correctly	Character	(Y) Yes		
			–	–	–	(N) No
Tank catwalks and ladders	Passed visual inspection	Character	(Y) Yes			
			–	–	–	(N) No
Tank check valves	Functioned correctly	Character	(Y) Yes			
			–	–	–	(N) No
			–	–	(3) Not verified	

Table F.5.2(e) Fire Pump Information and Testing

Item	Item Component	Item	Item

Item	Item Component	Item	Item		
Basic information (should be supplied by the fire pump package integrator)	Common equipment data	See Table F.5.2(c).			
	Fire pump type	String (40)	P		
	Rated flow	Number	>0		
	Rated pressure	Number	>0		
	-	Rated speed	Number	>0	-
	Rated horsepower	Number	>0		
	-	Factory test pressure	Number	>0	
	-	Design net churn pressure	Number	>0	-
	Design net 150 percent pressure	Number	>0		
Basic information	Pump start pressure	Number	>0		
	-	Pump reset pressure	Number	>0	
	-	Design suction pressure	Number	>0	-
	Design discharge pressure	Number	>0		
	-	Electric motor manufacturer	String (40)	Alphanumeric	-
	Electric motor type	String (40)	Alphanumeric		
	-	Electric motor serial number	String (40)	Alphanumeric	-
	Electric motor model number	String (40)	Alphanumeric		
	-	Electric motor date in service	Date	Year/month/day	
	-	Nominal system voltage	Number	>0	
	-	Electric motor rated horsepower	Number	>0	-
	Electric motor rated speed	Number	>0		
	-	Motor rated FLA at the system nominal voltage	Number	>0	
	-	Motor service factor	Number	>0	
	-	Motor starting code	ASCII	A–H	
	-	Nameplate full load amps	Number	>0	
	-	Diesel engine manufacturer	String (40)	Alphanumeric	

Item	Item Component	Item	Item		
	-	Diesel engine serial number	String (40)	Alphanumeric	-
	Diesel engine model number	String (40)	Alphanumeric		
	-	Diesel engine date in service	Date	Year/month/day	
	-	Diesel engine rated horsepower	Number	>0	-
	Diesel engine rated speed	Number	>0		
	-	Controller manufacturer	String (40)	Alphanumeric	-
	Controller type	String (40)	Alphanumeric		
	-	Controller serial number	String (40)	Alphanumeric	-
	Controller model number	String (40)	Alphanumeric		
	-	Controller date in service	Date	Year/month/day	
	-	Jockey pump manufacturer	String (40)	Alphanumeric	-
	Jockey pump type	String (40)	Alphanumeric		
	-	Jockey pump serial number	String (40)	Alphanumeric	-
	Jockey pump model number	String (40)	Alphanumeric		
	-	Jockey pump date in service	Date	Year/month/day	
	-	Jockey pump horsepower	Number	>0	
	-	Jockey pump start pressure	Number	>0	-
	Jockey pump reset pressure	Number	>0		
	-	Jockey pump controller manufacturer	String (40)	Alphanumeric	-
	Jockey pump controller type	String (40)	Alphanumeric		
	-	Jockey pump controller serial number	String (40)	Alphanumeric	-
	Jockey pump controller model number	String (40)	Alphanumeric		
	-	Jockey pump controller date in service	Date	Year/month/day	

Item	Item Component	Item	Item		
	-	Maximum system flow demand (at pump discharge flange)	Number	>0	-
	Maximum system pressure demand (at pump discharge flange)	Number	>0		
Continuously monitored data	Fire pump power status	Number	(0) Off		
			-	-	-
	-	Fire pump running status	-		(0) Off
			-	-	-
	-	Fire pump test running	-		(0) No
			-	-	-
	-	Suction pressure [psi (bar)]	Number	>0	-
	System pressure [psi (bar)]	Number	>0		
	-	Pump discharge pressure [psi (bar)]	Number	>0	
	-	Water temperature in pump casing	Number	>0	
	-	Room temperature	Number	>0	
	-	Last pump start date	Date	Year/month/day	
	-	Last pump start time	Time	Hour(n)/min(n)/sec(n)	
	-	Pressure at pump start	Number	>0	
	-	Type of start	-		(1) Automatic demand
			-	-	-
			-	(3) Manual	
	-	Last pump shutdown date	Date	Year/month/day	
	-	Last pump shutdown time	Time	Hour(n)/min(n)/sec(n)	
	-	System pressure at pump shutdown	Number	>0	
	-	Type of shutdown	Number	(1) Automatic demand	
			-	-	-

Item	Item Component	Item	Item		
			–	(3) Manual	
			–	–	–
			–	–	(5) Other trouble
	–	Loss of power	Number	(1) Power on	
			–	–	–
	–	Transfer of power	Number	(1) Normal power	
			–	–	–
	–	Fuel tank level (0-Above 2/3, 1-below 2/3)	Number	>0	
	–	Fuel tank level (percentage full)	Number	>0	
	–	Fuel maintenance system status	Number	(1) On	
			–	–	–
			–	–	(3) Needs maintenance
Nonflow test data sets — 10 sets maintained in local equipment	Last nonflow monitoring reset date	Date	Year/month/day		
	Last nonflow monitoring reset time	Time	Hour(n)/min(n)/sec(n)		
	–	Total number of nonflow tests during monitored period	Number	>0	
	–	Total pump test run time during monitored period (minutes)	Number	>0	
	–	Nonflow test date start	Date	Year/month/day	
	–	Nonflow test time start	–		Hour(n)/min(n)/sec(n)
	–	Nonflow test date end	Date	Year/month/day	
	–	Nonflow test time end	–		Hour(n)/min(n)/sec(n)
	–	Nonflow test reference identifier	Number	>0	–
	Nonflow test data set reference identifier	Number	>0		

Item	Item Component	Item	Item		
	-	Nonflow test suction pressure [psi (bar)]	Number	>0	-
	Nonflow test system pressure [psi (bar)]	Number	>0		
	-	Nonflow test pump discharge pressure [psi (bar)]	Number	>0	
	-	Nonflow test net pressure [psi (bar)]	Number	>0	
	-	Nonflow test water temperature in pump casing	Number	>0	
	-	Nonflow test room temperature	Number	>0	
	-	Nonflow test pump start date	Date	Year/month/day	
	-	Nonflow test pump start time	Time	Hour(n)/min(n)/sec(n)	
	-	Nonflow test pressure at pump start	Number	>0	
	-	Nonflow test minimum transducer pressure	Number	>0	
	-	Nonflow test type of start (1-automatic demand, 2-automatic test, 3-manual)	Number	>0	
	-	Nonflow test pump shutdown time	Number	>0	
	-	Nonflow test system pressure at pump shutdown	Number	>0	
	-	Nonflow test type of shutdown	Number	(1) Automatic demand	
			-	-	-
			-	(3) Manual	
			-	-	-
			-	-	(5) Other trouble
	-	Nonflow test RPM	Number	>0	
	-	Nonflow test voltage, Phase A–B	Analog signal converted to number	>0	-

Item	Item Component	Item	Item		
	Nonflow test voltage, Phase B–C	Analog signal converted to number	>0		
	-	Nonflow test voltage, Phase C–A	Analog signal converted to number	>0	
	-	Nonflow test amperage, Phase 1	Analog signal converted to number	>0	-
	Nonflow test amperage, Phase 2	Analog signal converted to number	>0		
	-	Nonflow test amperage, Phase 3	Analog signal converted to number	>0	
Acceptance test data set (percentage) — permanent — 0, 25, 50, 75, 100, 125, and 150	Test date acceptance test	Date	Year/month/day		
	Test reference identifier acceptance test	Number	>0		
	Data set reference identifier acceptance test	Number	>0		
	Suction pressure acceptance test	Number	>0		
	-	System pressure acceptance test	Number	>0	-
	Discharge pressure acceptance test	Number	>0		
	-	Net pressure	Number	>0	
	-	Water temperature in pump casing acceptance test	Number	>0	
	-	Room temperature — acceptance test	Number	>0	
	-	Initial pump start date — acceptance test	Date	Year/month/day	
	-	Initial pump start time — acceptance test	Time	Hour(n)/min(n) /sec(n)	
	-	Final pump stop date — acceptance test	Date	Year/month/day	
	-	Final pump stop time — acceptance test	Time	Hour(n)/min(n) /sec(n)	
	-	Pump start dates — acceptance test (record up to 10)	Date	Year/month/day	-

Item	Item Component	Item	Item		
	Pump start times — acceptance test (record up to 10)	Date	Year/month/day		
	-	Pump stop dates — acceptance test (record up to 10)	Date	Year/month/day	
	-	Pump Stop Times — acceptance test (record up to 10)	Number	>0	
	-	Pressure at pump start acceptance test	Number	>0	
	-	Type of start acceptance test	Number	(1) Automatic demand	
			-	-	-
			-	(3) Manual	
	-	Minimum transducer pressure at startup acceptance test	Number	>0	
	-	Number of starts and stops during acceptance test	Number	>0	
	-	Final pump shutdown time acceptance test	Number	>0	
	-	System pressure at final pump shutdown	Number	>0	
	-	Type of shutdown	-		(1) Automatic demand
			-	-	-
			-	(3) Manual	
			-	-	-
			-	-	(5) Other trouble
	-	Loss of power (for transfer) date	Date	Year/month/day	
	-	Loss of power (for transfer) time	Time	Hour(n)/min(n) /sec(n)	
	-	Transfer of power date	Date	Year/month/day	
	-	Transfer of power time	Time	Hour(n)/min(n) /sec(n)	
	-	Day power restored to normal	Date	Year/month/day	

Item	Item Component	Item	Item		
	-	Time power restored to normal	Time	Hour(n)/min(n)/sec(n)	
	-	Date readings recorded	Date	Year/month/day	
	-	Time readings recorded	Time	Hour(n)/min(n)/sec(n)	
	-	RPM	Number	>0	
	-	Voltage Phase A–B acceptance test	Analog signal converted to number	>0	-
	Voltage Phase B–C acceptance test	Analog signal converted to number	>0		
	-	Voltage Phase C–A acceptance test	Analog signal converted to number	>0	
	-	Amperage Phase 1 acceptance test	Analog signal converted to number	>0	-
	Amperage Phase 2 acceptance test	Analog signal converted to number	>0		
	-	Amperage Phase 3 acceptance test	Analog signal converted to number	>0	
	-	Nozzle coefficient acceptance test, up to 20 per test	Number	>0	
	-	Nozzle size acceptance test, up to 20 per test [in. (mm)]	Number	>0	
	-	Nozzle pitot pressure acceptance test, up to 20 per test	Number	>0	
	-	Fuel tank level acceptance test (0-Above 2/3, 1-below 2/3)	Number	>0	
	-	Fuel tank level acceptance test (percentage full)	Number	>0	
	-	Flow through pump acceptance test	Number	>0	
	-	RPM adjusted net pressure acceptance test	Number	>0	
	-	RPM adjusted flow acceptance test [gpm (L/min)]	Number	>0	

Item	Item Component	Item	Item		
	-	Percentage of factory-certified curve acceptance test	Number	>0	
	-	Hours on diesel engine or electric motor at start of acceptance test	Number	>0	-
	Hours on diesel engine or electric motor at conclusion of acceptance test	Number	>0		
	-	Pump passed initial acceptance test	Character	(Y) Yes	
			-	-	-
	-	Pump could supply maximum system demand acceptance test	Number	(1) Yes	
			-	-	-
			-	-	-
	-	Pump was significantly impaired acceptance test	Character	(Y) Yes	
			-	-	-
	-	Pump was partially impaired acceptance test	Character	(Y) Yes	
			-	-	-
	-	Pump passed after adjustments acceptance test	Character	(Y) Yes	
			-	-	-
	-	Failure mode acceptance test (See Standardized List.)	Number	>0	
	-	Explanation of failure acceptance test	String (80)	Alphanumeric	
Current performance test data set (percentage) — permanent	Test date — current performance test	Date	Year/month/day		
	Test reference identifier — current performance test	Number	>0		

Item	Item Component	Item	Item		
— 0, 25, 50, 75, 100, 125, and 150	Data set reference identifier — current performance test	Number	>0		
	Suction pressure — current performance test	Number	>0		
	-	System pressure — current performance test	Number	>0	-
	Discharge pressure — current performance test	Number	>0		
	-	Net pressure	Number	>0	
	-	Water temperature in pump casing — current performance test	Number	>0	
	-	Room temperature — current performance test	Number	>0	
	-	Initial pump start date — current performance test	Date	Year/month/day	
	-	Initial pump start time — current performance test	Time	Hour(n)/min(n)/sec(n)	
	-	Final pump stop date — current performance test	Date	Year/month/day	
	-	Final pump stop time — current performance test	Time	Hour(n)/min(n)/sec(n)	
	-	Pump start dates — current performance test (record up to 10)	Date	Year/month/day	
	-	Pump start times — current performance test (record up to 10)	Time	Hour(n)/min(n)/sec(n)	
	-	Pump stop dates — current performance test (record up to 10)	Date	Year/month/day	
	-	Pump stop times — current performance test (record up to 10)	Time	Hour(n)/min(n)/sec(n)	
	-	Pressure at pump start — current performance test	Number	>0	

Item	Item Component	Item	Item		
	-	Type of start — current performance test	Number	(1) Automatic demand	
			-	-	-
			-	(3) Manual	
	-	Minimum transducer pressure at startup — current performance test	Number	>0	
	-	Number of starts and stops during — current performance test	Number	>0	
		-	-	Number	>0
	-	System pressure at final pump shutdown	Number	>0	
	-	Type of shutdown	Number	(1) Automatic demand	
			-	-	-
			-	(3) Manual	
			-	-	-
			-	-	(5) Other trouble
	-	Loss of power (for transfer) date	Date	Year/month/day	
	-	Loss of power (for transfer) time	Time	Hour(n)/min(n) /sec(n)	
	-	Transfer of power date	Date	Year/month/day	
	-	Transfer of power time	Time	Hour(n)/min(n) /sec(n)	
	-	Day power restored to normal	Date	Year/month/day	
	-	Time power restored to normal	Time	Hour(n)/min(n) /sec(n)	
	-	Date readings recorded	Date	Year/month/day	
	-	Time readings recorded	Time	Hour(n)/min(n) /sec(n)	
	-	RPM	Number	>0	
	-	Voltage Phase A–B current performance test	Analog signal converted to number	>0	-

Item	Item Component	Item	Item		
	Voltage Phase B–C current performance test	Analog signal converted to number	>0		
	-	Voltage Phase C–A current performance test	Analog signal converted to number	>0	
	-	Amperage Phase 1 current performance test	Analog signal converted to number	>0	-
	Amperage Phase 2 current performance test	Analog signal converted to number	>0		
	-	Amperage Phase 3 current performance test	Analog signal converted to number	>0	
	-	Nozzle coefficient — current performance test, up to 20 per test	Number	>0	
	-	Nozzle size — current performance test, up to 20 per test [in. (mm)]	Number	>0	
	-	Nozzle pitot pressure — current performance test, up to 20 per test	Number	>0	
	-	Fuel tank level — current performance test (0-Above 2/3, 1-below 2/3)	Number	>0	
	-	Fuel tank level — current performance test (percentage full)	Number	>0	
	-	Flow through pump — current performance test	Number	>0	
	-	RPM adjusted net pressure — current performance test	Number	>0	
	-	RPM adjusted flow — current performance test [gpm (L/min)]	Number	>0	
	-	Percentage of factory-certified curve — current performance test	Number	>0	

Item	Item Component	Item	Item		
	-	Hours on diesel engine or electric motor at start of current performance test	Number	>0	-
	Hours on diesel engine or electric motor at conclusion of current performance test	Number	>0		
	-	Pump passed initial — current performance test	Character	Y/N	
	-	Pump could supply maximum system demand — current performance test	Number	(1) Yes	
			-	-	-
			-	-	-
	-	Pump was significantly impaired — current performance test	Character	Y/N	-
	Pump was partially impaired — current performance test	Character	Y/N		
	-	Pump passed after adjustments — current performance test	Character	Y/N	
	-	Failure mode — current performance test	Number	See Standardized List.	
	-	Explanation of failure — current performance test	String (80)	Alphanumeric	
Previous performance test data set (percentage) — static — 0, 25, 50, 75, 100, 125, and 150	Test date — previous performance test	Date	Year/month/day		
	Test reference identifier — previous performance test	Time	Hour(n)/min(n) /sec(n)		
	Data set reference identifier — previous performance test	Number	>0		
	Suction pressure — previous performance test	Number	>0		

Item	Item Component	Item	Item		
	-	System pressure — previous performance test	Number	>0	-
	Discharge pressure — previous performance test	Number	>0		
	-	Net pressure	Number	>0	
	-	Water temperature in pump casing — previous performance test	Number	>0	
	-	Room temperature — previous performance test	Number	>0	
	-	Initial pump start date — previous performance test	Date	Year/month/day	
	-	Initial pump start time — previous performance test	Time	Hour(n)/min(n) /sec(n)	
	-	Final pump stop date — previous performance Test	Date	Year/month/day	
	-	Final pump stop time — previous performance test	Time	Hour(n)/min(n) /sec(n)	
	-	Pump start dates — previous performance test (record up to 10)	Date	Year/month/day	
	-	Pump start times — previous performance test (record up to 10)	Time	Hour(n)/min(n) /sec(n)	
	-	Pump stop dates — previous performance test (record up to 10)	Date	Year/month/day	
	-	Pump stop times — previous performance test (record up to 10)	Time	Hour(n)/min(n) /sec(n)	
	-	Pressure at pump start — previous performance test	Number	>0	
	-	Type of start — previous performance test (1-automatic demand, 2-automatic test, 3-manual)	Number	>0	

Item	Item Component	Item	Item	
-	Minimum transducer pressure at startup — previous performance test	Number	>0	
-	Number of starts and stops —previous performance test	Number	>0	
-	Final pump shutdown time — previous performance test	Number	>0	
-	System pressure at final pump shutdown	Number	>0	
-	Type of shutdown	Number	(1) Automatic demand	
		-	-	-
		-	(3) Manual	
		-	-	-
		-	-	(5) Other trouble
-	Loss of power (for transfer) date	Date	Year/month/day	
-	Loss of power (for transfer) time	Time	Hour(n)/min(n) /sec(n)	
-	Transfer of power date	Date	Year/month/day	
-	Transfer of power time	Time	Hour(n)/min(n) /sec(n)	
-	Day power restored to normal	Date	Year/month/day	
-	Time power restored to normal	Time	Hour(n)/min(n) /sec(n)	
-	Date readings recorded	Date	Year/month/day	
-	Time readings recorded	Time	Hour(n)/min(n) /sec(n)	
-	RPM	-		>0
-	Voltage Phase A–B previous performance test	Analog signal converted to number	>0	-
Voltage Phase B–C previous performance test	Analog signal converted to number	>0		

Item	Item Component	Item	Item		
	-	Voltage Phase C–A previous performance test	Analog signal converted to number	>0	
	-	Amperage Phase 1 previous performance test	Analog signal converted to number	>0	-
	Amperage Phase 2 previous performance test	Analog signal converted to number	>0		
	-	Amperage Phase 3 previous performance test	Analog signal converted to number	>0	
	-	Nozzle coefficient — previous performance test, up to 20 per test	Number	>0	
	-	Nozzle size — previous performance test, up to 20 per test [in. (mm)]	Number	>0	
	-	Nozzle pitot pressure — previous performance test, up to 20 per test	Number	>0	
	-	Fuel tank level previous performance test (0-Above 2/3, 1-below 2/3)	Number	>0	
	-	Fuel tank level — previous performance test (percentage full)	Number	>0	
	-	Flow through pump — previous performance test	Number	>0	
	-	RPM adjusted net pressure — previous performance test	Number	>0	
	-	RPM adjusted flow — previous performance test [gpm (L/min)]	Number	>0	
	-	Percentage of factory-certified curve — previous performance test	Number	>0	

Item	Item Component	Item	Item		
	-	Hours on diesel engine or electric motor at start of previous performance test	Number	>0	-
	Hours on diesel engine or electric motor at conclusion of previous performance test	Number	>0		
	-	Pump passed initial — previous performance test	Character	Y/N	
	-	Pump could supply maximum system demand — previous performance test	Number	(1) Yes	
			-	-	-
			-	-	-
	-	Pump was significantly impaired — previous performance test	Character	Y/N	-
	Pump was partially impaired — previous performance test	Character	Y/N		
	-	Pump passed after adjustments — previous performance test	Character	Y/N	
	-	Failure mode — previous performance test	Number	See Standardized List.	
	-	Explanation of failure — previous performance test	String (80)	Alphanumeric	
Repair maintenance data (20 sets)	Date of maintenance/repair	Date	Year/month/day		
	-	Maintenance/repair identifier	Number	>0	
	-	Routine maintenance/repair	Character	Y/N	
	-	Pump out of service during maintenance/repair	Character	Y/N	

Item	Item Component	Item	Item	
	-	Date pump out of service	Date	Year/month/day
	-	Time pump out of service	Time	Hour(n)/min(n) /sec(n)
	-	Date pump restored to service	Date	Year/month/day
	-	Time pump restored to service	Time	Hour(n)/min(n) /sec(n)
	-	Date pump maintenance/repair completed	Date	Year/month/day
	-	Part replaced (1)	String (40)	Alphanumeric
	-	Description of maintenance, repair, and/or Part 1 replacement	String (80)	Alphanumeric
	-	Part replaced (2)	String (40)	Alphanumeric
	-	Description of maintenance, repair, and/or Part 2 replacement	String (80)	Alphanumeric
	-	Part replaced (3)	String (40)	Alphanumeric
	-	Description of maintenance, repair, and/or Part 3 replacement	String (80)	Alphanumeric
	-	Part replaced (4)	String (40)	Alphanumeric
	-	Description of maintenance, repair, and/or Part 4 replacement	String (80)	Alphanumeric
	-	Routine maintenance or repair	String (40)	Alphanumeric
	-	Date repair completed	Date	Year/month/day
	-	Fuel tank level — current performance test	Number	(0) Above 2/3
			-	-
	-	Fuel tank level — current performance test (percentage full)	Number	>0
	-	Fuel maintenance system status	Number	(1) In service
			-	-
			-	-

Item	Item Component	Item	Item		
	-	19 additional repair maintenance data sets	-		S
Jockey pump operation	Last jockey pump monitoring reset date	Date	Year/month/day		
	-	Last jockey pump monitoring reset time	Time	Hour(n)/min(n)/sec(n)	
	-	Total number of starts (since reset)	Number	>0	
	-	Total jockey pump run time (minutes since last reset)	Number	>0	
	-	Jockey Pump start pressure (most recent)	Number	>0	
	-	Jockey pump stop pressure	Number	>0	
	-	Most recent run time (seconds)	Number	>0	
Fire pump operation	Last fire pump monitoring reset date	Date	Year/month/day		
	-	Last fire pump monitoring reset time	Time	Hour(n)/min(n)/sec(n)	
	-	Fire pump start date and time (last 10 times)	Date	Year/month/day	
	-	Fire pump stop date and time (last 10 times)	Time	Hour(n)/min(n)/sec(n)	
	-	Fire pump start pressure (most recent)	Number	>0	-
	Fire pump stop pressure (most recent)	Number	>0		
	-	Stop automatic or manual (most recent)	Number	>0	
	-	Total number of starts since reset	Number	>0	
	-	Total run time since reset (minutes)	Number	>0	
	-	Date loss of electrical power with switch in “on” position since last reset (50 sets)	Number	>0	-

Item	Item Component	Item	Item	
	Time loss of electrical power with switch in "on" position since last reset (50 sets)	Number	>0	
	-	Date power restored after loss of power with switch in "on" position since last reset (50 sets)	Date	Year/month/day
	-	Time power restored after loss of power with switch in "on" position since last reset (50 sets)	Time	Hour(n)/min(n) /sec(n)
	-	Date power switch turned off (50 sets)	Date	Year/month/day
	-	Time power switch turned off (50 sets)	Time	Hour(n)/min(n) /sec(n)
	-	Date power switch turned back on (50 sets)	Date	Year/month/day
	-	Time power switch turned back on (50 sets)	Time	Hour(n)/min(n) /sec(n)

Statement of Problem and Substantiation for Public Input

Antifreezes are required to be listed for fire sprinkler system use.

Submitter Information Verification

Submitter Full Name: Manuel Silva
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 30 10:38:22 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-87-NFPA 25-2020

Statement: The antifreeze section of the table has been adjusted based on new and revised requirements for testing and recording results of tests where antifreeze solutions are present.

Public Input No. 140-NFPA 25-2020 [Section No. H.1.2.7]

H.1.2.7 UL Publications.

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

UL 2167, ~~*Standard for Water*~~ *Water Mist Nozzles for Fire Protection Service*, 2017.

Statement of Problem and Substantiation for Public Input

Reason: The terms “Standard for” or “Subject” are redundant and unnecessary. All references to UL are standards.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
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Submittal Date: Tue Jun 16 11:47:46 EDT 2020
Committee: INM-AAA

Committee Statement

Resolution: FR-90-NFPA 25-2020
Statement: Updated references.