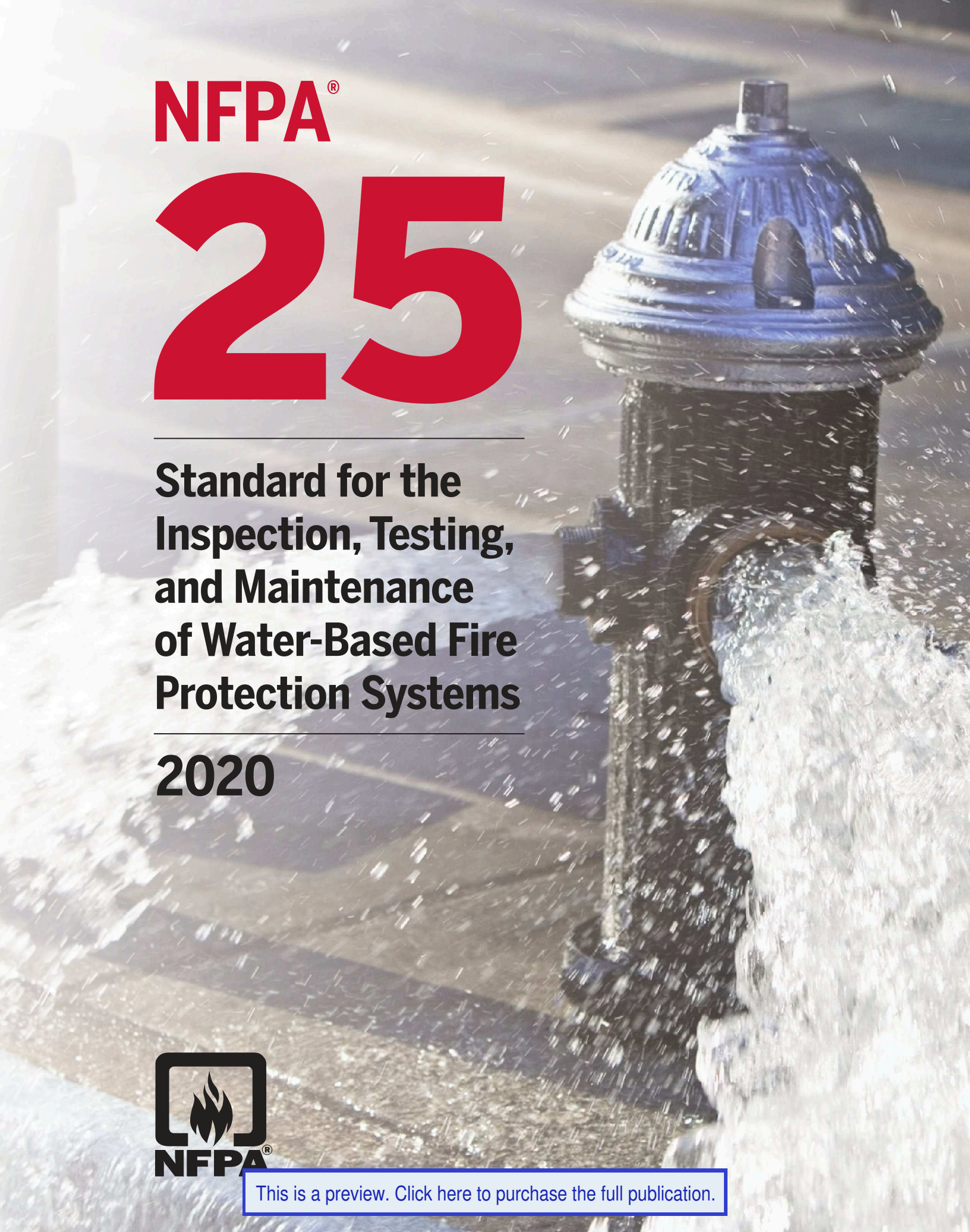

NFPA® 25

Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems

2020

NFPA®

IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA® STANDARDS

NFPA® codes, standards, recommended practices, and guides ("NFPA Standards"), of which the document contained herein is one, are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together volunteers representing varied viewpoints and interests to achieve consensus on fire and other safety issues. While the NFPA administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments contained in NFPA Standards.

The NFPA disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on NFPA Standards. The NFPA also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

In issuing and making NFPA Standards available, the NFPA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the NFPA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

The NFPA has no power, nor does it undertake, to police or enforce compliance with the contents of NFPA Standards. Nor does the NFPA list, certify, test, or inspect products, designs, or installations for compliance with this document. Any certification or other statement of compliance with the requirements of this document shall not be attributable to the NFPA and is solely the responsibility of the certifier or maker of the statement.

REVISION SYMBOLS IDENTIFYING CHANGES FROM THE PREVIOUS EDITION

Text revisions are shaded. A Δ before a section number indicates that words within that section were deleted and a Δ to the left of a table or figure number indicates a revision to an existing table or figure. When a chapter was heavily revised, the entire chapter is marked throughout with the Δ symbol. Where one or more sections were deleted, a • is placed between the remaining sections. Chapters, annexes, sections, figures, and tables that are new are indicated with an *N*.

Note that these indicators are a guide. Rearrangement of sections may not be captured in the markup, but users can view complete revision details in the First and Second Draft Reports located in the archived revision information section of each code at www.nfpa.org/docinfo. Any subsequent changes from the NFPA Technical Meeting, Tentative Interim Amendments, and Errata are also located there.

REMINDER: UPDATING OF NFPA STANDARDS

Users of NFPA codes, standards, recommended practices, and guides ("NFPA Standards") should be aware that these documents may be superseded at any time by the issuance of a new edition, may be amended with the issuance of Tentative Interim Amendments (TIAs), or be corrected by Errata. It is intended that through regular revisions and amendments, participants in the NFPA standards development process consider the then-current and available information on incidents, materials, technologies, innovations, and methods as these develop over time and that NFPA Standards reflect this consideration. Therefore, any previous edition of this document no longer represents the current NFPA Standard on the subject matter addressed. NFPA encourages the use of the most current edition of any NFPA Standard [as it may be amended by TIA(s) or Errata] to take advantage of current experience and understanding. An official NFPA Standard at any point in time consists of the current edition of the document, including any issued TIAs and Errata then in effect.

To determine whether an NFPA Standard has been amended through the issuance of TIAs or corrected by Errata, visit the "Codes & Standards" section at www.nfpa.org.

ISBN: 978-145592391-5 (PDF)

ADDITIONAL IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA® STANDARDS

Updating of NFPA Standards

Users of NFPA codes, standards, recommended practices, and guides ("NFPA Standards") should be aware that these documents may be superseded at any time by the issuance of a new edition, may be amended with the issuance of Tentative Interim Amendments (TIAs), or be corrected by Errata. It is intended that through regular revisions and amendments, participants in the NFPA standards development process consider the then-current and available information on incidents, materials, technologies, innovations, and methods as these develop over time and that NFPA Standards reflect this consideration. Therefore, any previous edition of this document no longer represents the current NFPA Standard on the subject matter addressed. NFPA encourages the use of the most current edition of any NFPA Standard [as it may be amended by TIA(s) or Errata] to take advantage of current experience and understanding. An official NFPA Standard at any point in time consists of the current edition of the document, including any issued TIAs and Errata then in effect.

To determine whether an NFPA Standard has been amended through the issuance of TIAs or corrected by Errata, visit the "Codes & Standards" section at www.nfpa.org.

Interpretations of NFPA Standards

A statement, written or oral, that is not processed in accordance with Section 6 of the Regulations Governing the Development of NFPA Standards shall not be considered the official position of NFPA or any of its Committees and shall not be considered to be, nor be relied upon as, a Formal Interpretation.

Patents

The NFPA does not take any position with respect to the validity of any patent rights referenced in, related to, or asserted in connection with an NFPA Standard. The users of NFPA Standards bear the sole responsibility for determining the validity of any such patent rights, as well as the risk of infringement of such rights, and the NFPA disclaims liability for the infringement of any patent resulting from the use of or reliance on NFPA Standards.

NFPA adheres to the policy of the American National Standards Institute (ANSI) regarding the inclusion of patents in American National Standards ("the ANSI Patent Policy"), and hereby gives the following notice pursuant to that policy:

NOTICE: The user's attention is called to the possibility that compliance with an NFPA Standard may require use of an invention covered by patent rights. NFPA takes no position as to the validity of any such patent rights or as to whether such patent rights constitute or include essential patent claims under the ANSI Patent Policy. If, in connection with the ANSI Patent Policy, a patent holder has filed a statement of willingness to grant licenses under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license, copies of such filed statements can be obtained, on request, from NFPA. For further information, contact the NFPA at the address listed below.

Law and Regulations

Users of NFPA Standards should consult applicable federal, state, and local laws and regulations. NFPA does not, by the publication of its codes, standards, recommended practices, and guides, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

NFPA Standards are copyrighted. They are made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of safe practices and methods. By making these documents available for use and adoption by public authorities and private users, the NFPA does not waive any rights in copyright to these documents.

Use of NFPA Standards for regulatory purposes should be accomplished through adoption by reference. The term "adoption by reference" means the citing of title, edition, and publishing information only. Any deletions, additions, and changes desired by the adopting authority should be noted separately in the adopting instrument. In order to assist NFPA in following the uses made of its documents, adopting authorities are requested to notify the NFPA (Attention: Secretary, Standards Council) in writing of such use. For technical assistance and questions concerning adoption of NFPA Standards, contact NFPA at the address below.

For Further Information

All questions or other communications relating to NFPA Standards and all requests for information on NFPA procedures governing its codes and standards development process, including information on the procedures for requesting Formal Interpretations, for proposing Tentative Interim Amendments, and for proposing revisions to NFPA standards during regular revision cycles, should be sent to NFPA headquarters, addressed to the attention of the Secretary, Standards Council, NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; email: stds_admin@nfpa.org.

For more information about NFPA, visit the NFPA website at www.nfpa.org. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/docinfo.

NFPA® 25

Standard for the

Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems

2020 Edition

This edition of NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, was prepared by the Technical Committee on Inspection, Testing, and Maintenance of Water-Based Systems and acted on by NFPA at its Association Technical Meeting held June 17–20, 2019, in San Antonio, TX. It was issued by the Standards Council on August 5, 2019, with an effective date of August 25, 2019, and supersedes all previous editions.

This edition of NFPA 25 was approved as an American National Standard on August 25, 2019.

Origin and Development of NFPA 25

The first edition of NFPA 25, published in 1992, was a collection of inspection, testing, and maintenance provisions that helped ensure the successful operation of water-based fire protection systems. NFPA 25 was developed as an extension of existing documents such as NFPA 13A, *Recommended Practice for the Inspection, Testing, and Maintenance of Sprinkler Systems*, and NFPA 14A, *Recommended Practice for the Inspection, Testing, and Maintenance of Standpipe and Hose Systems*, both of which successfully assisted authorities having jurisdiction and property owners with routine inspections of sprinkler systems and standpipes. These documents have since been withdrawn from the NFPA standards system. NFPA 25 became the main document governing sprinkler systems as well as related systems, including underground piping, fire pumps, storage tanks, water spray systems, and foam-water sprinkler systems.

This document provides instruction on how to conduct inspection, testing, and maintenance activities. It also stipulates how often such activities are required to be completed. Requirements are provided for impairment procedures, notification processes, and system restoration. This type of information, where incorporated into a building maintenance program, enhances the demonstrated favorable experience of all water-based fire protection systems.

The 1995 edition incorporated several improvements that reflected the initial experience with the standard. A new chapter was added that addressed obstructions in pipe as well as appropriate corrective actions.

The 1998 edition refined testing requirements and frequencies and provided additional guidance for preplanned impairment programs. The document scope was expanded to include marine systems.

The 2002 edition continued to refine testing frequencies for waterflow devices and evaluation of the annual fire pump test data. This edition also included additional information regarding evaluation and test methods for microbiologically influenced corrosion (MIC).

In the 2008 edition, a section permitting performance-based testing was added, providing guidance on alternative means for determining testing frequencies based on system/component failure rates. Component replacement testing tables were introduced in this edition to provide guidance for the appropriate tests to be performed following replacement of system components. Inspection, testing, and maintenance requirements for water mist systems were extracted from NFPA 750, *Standard on Water Mist Fire Protection Systems*, and were inserted into a new chapter. This action consolidated inspection, testing, and maintenance requirements for all water-based fire protection systems into one document.

The 2011 edition further updated testing frequencies based on a growing database of inspection, testing, and maintenance records. In two new annexes, information was provided for classification of

needed repairs and hazard evaluation. The 2011 edition also added new definitions differentiating the levels of deficiency for determining the priority of repair.

The 2014 edition of NFPA 25 had many significant changes with many specific to the chapter on fire pumps. The operating test requirements were rewritten to consider a baseline weekly test for all pumps, with a series of exceptions that would allow for a modified testing frequency. New language was added to address confirmation of pressure recordings and a new fuel quality test for diesel-driven pumps.

Definitions were added for the various frequencies of inspection, testing, and maintenance tasks to create a "window" for completion of the tasks. The concept of internal inspection was modified to an internal assessment concept, in which a performance-based assessment frequency is explicitly addressed. The scope of the Technical Committee on Inspection, Testing, and Water-Based Systems was updated to address water mist systems specifically. The water mist system was modified such that the extract tags from NFPA 750 were removed because the material in the relevant chapter is now in the jurisdiction of NFPA 25.

A new chapter was added to address NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, systems that are installed outside of one- and two-family homes. The requirements for inspecting antifreeze systems were updated to include the latest information from the Fire Protection Research Foundation testing on standard spray sprinklers. The table providing examples of classifications for deficiencies and impairments was relocated from Annex E to Annex A and attached to the definition of *deficiency*.

For the 2017 edition, new fire pump terms were defined to align with NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*. Criteria were added to Chapter 4 on automated inspections and testing. Residential sprinkler replacement requirements were added to address sprinklers that are no longer available. New requirements were added regarding missing escutcheons or, if listed, escutcheons that are no longer available. ITM tables were updated throughout the chapters, and new no-flow test requirements for fire pumps were added. Chapter 13 added new requirements for the inspection, testing, and maintenance of waterflow alarm devices; separated and added new requirements for the inspection, testing, and maintenance of preaction and deluge valves; and added criteria for air compressors. As of this edition, it contains all the general pressure gauge criteria. Additionally, two new annexes were added: one on connectivity and data collection and another on color-coded tagging programs.

In the 2020 edition, the term *electrically operated sprinklers*, which is a new technology, has been defined, and inspection, testing, and maintenance requirements have been added. Requirements addressing recalled sprinklers has been added to Chapter 4, and a section on dry hydrants has been added to Chapter 7. Dry sprinkler test requirements have been modified from 10 years to 15 years, and additional clarifications to the automated testing requirements for waterflow alarm devices have been made. Chapter 8 clarifies, for safety reasons, that energized pump controllers should not be opened and introduces the concept of an isolating switch in a separate compartment as part of the pump controller. Fire pump annual flow test and evaluation requirements of the test have been revised. Several new requirements have been added to Chapter 12 regarding water mist systems.

Technical Committee on Inspection, Testing, and Maintenance of Water-Based Systems

William E. Koffel, *Chair*
Koffel Associates, Inc., MD [SE]

Niels Henrik Abrahamsen, Vid Fire-Kill, Denmark [M]
Rep. International Water Mist Association

Gary S. Andress, Liberty Mutual Insurance Company, MA [I]

Kerry M. Bell, UL LLC, IL [RT]

Michael J. Bosma, The Viking Corporation, MI [M]
Rep. National Fire Sprinkler Association

Bruce H. Clarke, American International Group, Inc. (AIG), SC [I]

David A. Dagenais, Partners/Wentworth-Douglass Hospital, NH [U]
Rep. NFPA Health Care Section

Matthew G. Drysdale, The DuPont Company, Inc., DE [U]
Rep. NFPA Industrial Fire Protection Section

Timothy S. Fox, Viking Fire Protection, Canada [IM]
Rep. Canadian Automatic Sprinkler Association

David W. Frable, U.S. General Services Administration, IL [U]

Christina F. Francis, The Procter & Gamble Company, AL [M]

David B. Fuller, FM Approvals, RI [I]

Greg Garber, Pittsburg Tank & Tower Inc., VA [M]

Donald Hopkins, Jr., JENSEN HUGHES, MD [SE]

Mark Hopkins, National Fire Sprinkler Association, MD [IM]
Rep. National Fire Sprinkler Association

Larry Keeping, PLC Fire Safety Solutions, Canada [SE]

Charles W. Ketner, National Automatic Sprinkler Fitters LU 669, MD [L]
Rep. United Assn. of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry

John Lake, City of Gainesville, FL [E]

Peter A. Larrimer, U.S. Department of Veterans Affairs, PA [U]

Russell B. Leavitt, Telgian Corporation, AZ [U]
Rep. The Home Depot

Kenneth W. Linder, Swiss Re, CT [I]

Brock Mitchell, Extended Stay Hotels, NC [U]

John D. Munno, Arthur J. Gallagher Risk Management Services, Inc., OK [U]
Rep. Edison Electric Institute

Top Myers, Myers Risk Services, Inc., FL [SE]

Scott Newman, Walgreens, IL [U]

Clayton Norred, Jr., Norred Fire Systems, LLC, LA [IM]
Rep. National Association of Fire Equipment Distributors

Erik G. Olsen, Chubb Limited, NJ [I]

Richard M. Ray, Cybor Fire Protection Company, IL [IM]
Rep. Illinois Fire Prevention Association

John F. Saidi, USDOE Stanford Site Office, CA [U]

Gregory R. Stein, Tank Industry Consultants, IN [SE]

Darrell W. Underwood, Underwood Fire Equipment, Inc., MI [IM]

Terry L. Victor, Johnson Controls, MD [M]

John Whitney, Clarke Fire Protection Products, Inc., OH [M]

Jason R. Williams, American Fire Sprinkler Association (AFSA), TX [IM]
Rep. American Fire Sprinkler Association

Alternates

Erik H. Anderson, Koffel Associates, Inc., MD [SE]
(Alt. to William E. Koffel)

Gabriel Arroyo, American International Group, Inc (AIG), TX [I]
(Alt. to Bruce H. Clarke)

David R. Baron, Global Fire Protection Company, IL [IM]
(Alt. to Richard M. Ray)

Tracey D. Bellamy, Telgian Corporation, GA [U]
(Alt. to Russell B. Leavitt)

Patrick Jon Brown, Tank Industry Consultants, IN [SE]
(Alt. to Gregory R. Stein)

Howard G. Clay, VSC Fire & Security, Inc., VA [IM]
(Alt. to Jason R. Williams)

Aaron Terrance Dickens, Delta Fire Systems, UT [IM]
(Alt. to Clayton Norred, Jr.)

John DiGirolomo, St. Barnabas Hospital, NY [U]
(Alt. to David A. Dagenais)

John A. Donner, Dominion Energy, VA [U]
(Alt. to John D. Munno)

Russell P. Fleming, Northeast Fire Suppression Associates, LLC, NH [SE]
(Alt. to Larry Keeping)

Brandon W. Frakes, AXA XL/Global Asset Protection Services, LLC, NC [I]
(Alt. to Kenneth W. Linder)

Jeff Hebenstreit, UL LLC, IL [RT]
(Alt. to Kerry M. Bell)

Stephen M. Jaskolka, The DuPont Company, Inc., DE [U]
(Alt. to Matthew G. Drysdale)

Wilton Marburger, Risk Suppression Partners, PA [SE]
(Alt. to Top Myers)

Gayle Pennel, JENSEN HUGHES, IL [SE]
(Alt. to Donald Hopkins, Jr.)

Damon T. Pietraz, Underwood Fire Equipment, Inc., MI [IM]
(Alt. to Darrell W. Underwood)

Charles David Raborn, Cape Coral Fire Department, FL [E]
(Alt. to John Lake)

Todd M. Roeder, U.S. General Services Administration, IN [U]
(Alt. to David W. Frable)

Jason W. Ryckman, Canadian Automatic Sprinkler Association, Canada [IM]
(Alt. to Timothy S. Fox)

Timothy Dwain Schmidle, Liberty Mutual Group Prop, OH [I]
(Alt. to Gary S. Andress)

Michael J. Spaziani, FM Global, MA [I]
(Alt. to David B. Fuller)

George W. Stanley, Wiginton Fire Protection Engineering, Inc., FL [IM]
(Alt. to Mark Hopkins)

Jeffrey James Vanrhyn, Local 669 JATC, NV [L]
(Alt. to Charles W. Ketner)

Cary Webber, Reliable Automatic Sprinkler, SC [M]
(Alt. to Michael J. Bosma)

John T. Whitney, III, Clarke Fire Protection Products, Inc., OH [M]
(Alt. to John Whitney)

Roger S. Wilkins, Johnson Controls, RI [M]
(Alt. to Terry L. Victor)

Nonvoting

Cecil Bilbo, Jr., Academy of Fire Sprinkler Technology, Inc., IL [SE]
Robert G. Caputo, Fire & Life Safety America, AZ [IM]
Rep. TC on Sprinkler System Installation Criteria
Chad Duffy, NFPA Staff Liaison
Rohit Khanna, U.S. Consumer Product Safety Commission, MD [C]
Rep. U.S. Consumer Product Safety Commission
Thomas F. Norton, Norel Service Company, Inc., MA [IM]

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on inspection, testing, and maintenance of systems utilizing water as a method of extinguishment. These include sprinkler systems (excluding sprinkler systems installed in one-and two-family dwellings and manufactured homes), standpipe and hose systems, fire service piping and appurtenances, fire pumps, water storage tanks, fixed water spray systems, water mist systems, foam-water systems, valves, and allied equipment. This Committee shall also develop procedures for the conduct and reporting of routine system impairments.

Contents

NFPA 25

Standard for the

Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems

2020 Edition

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced and extracted publications can be found in Chapter 2 and Annex H.

Chapter 1 Administration

1.1 Scope. This document establishes the minimum requirements for the periodic inspection, testing, and maintenance of water-based fire protection systems and the actions to undertake when changes in occupancy, use, process, materials, hazard, or water supply that potentially impact the performance of the water-based system are planned or identified.

Δ 1.1.1 Coordination with *NFPA 72* Testing Requirements.

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.

***N* 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*.

1.1.2 Types of Systems.

1.1.2.1 The types of systems addressed by this standard include, but are not limited to, sprinkler, standpipe and hose, fixed water spray, private fire hydrants, water mist, and foam water.

1.1.2.2 Water supplies that are part of these systems, such as private fire service mains and appurtenances, fire pumps and water storage tanks, and valves that control system flow, are also included in this standard.

1.1.3* This standard addresses the operating condition of fire protection systems as well as impairment handling and reporting and applies to fire protection systems that have been properly installed in accordance with generally accepted practice.

1.1.3.1* This standard does not require the inspector to verify the adequacy of the design of the system.

1.1.4* Corrective action needed to ensure that a system operates in a satisfactory manner shall be in accordance with this standard unless this standard specifically refers to an appropriate installation standard.

1.1.5 Unless required by Chapter 16, this standard shall not apply to sprinkler systems designed, installed, and maintained in accordance with NFPA 13D.

1.2* Purpose.

1.2.1 The purpose of this document is to provide requirements that ensure a reasonable degree of protection for life and property from fire through minimum inspection, testing, and maintenance methods for water-based fire protection systems.

1.2.2 In those cases where it is determined that an existing situation involves a distinct hazard to life or property, the authority having jurisdiction shall be permitted to require inspection, testing, and maintenance methods in excess of those required by the standard.

1.3* Application.

1.3.1 It is not the intent of this standard to limit or restrict the use of other inspection, testing, or maintenance programs that provide an equivalent level of system integrity and performance to that detailed in this standard.

1.3.2 The authority having jurisdiction shall be consulted and approval obtained for such alternative programs.

1.4* Units. Metric units of measurement in this standard are in accordance with the modernized metric system known as the International System of Units (SI).

1.4.1 If a value for measurement as given in this standard is followed by an equivalent value in other units, the first stated shall be regarded as the requirement. A given equivalent value shall be considered to be approximate.

1.4.2 SI units have been converted by multiplying the quantity by the conversion factor and then rounding the result to the appropriate number of significant digits. Where nominal or trade sizes exist, the nominal dimension has been recognized in each unit.