

NFPA 2001, “Standard on Clean Agent Fire Extinguishing Systems, 2018” REVIEW SUMMARY

1) NFPA 2001 REVISION SUMMARY

For the 2018 edition, the chapter on inspection, testing, maintenance, and training was completely reorganized to improve usability of the standard and to comply with the *Manual of Style for NFPA Technical Committee Documents*. As part of this revision, the content was split into two distinct chapters: Chapter 7, Approval of Installations, and Chapter 8, Inspection, Servicing, Testing, Maintenance, and Training. Definitions of *inspection*, *maintenance*, and *service* were added, as well as a requirement for integrated fire protection and life safety systems to be tested in accordance with NFPA 4. In addition, the standard now requires an egress time study for all clean agent systems, not just those where the design concentration is greater than the NOAEL. A definition of *abort switch* was added, and the definition of *clean agent* was revised. A requirement to install dirt traps at the end of each pipe run was added. The requirements for pipe and fittings were reviewed and updated in accordance with the latest reference standards. A new section on pipe hangers and supports was added. New requirements regarding releasing panels were added.

2) NOTED CHANGES OF SIGNIFICANCE

NFPA 2001 2015 Edition	NFPA 2001 2018 Edition
Chapter 1 - Administration	
<p>1.4.2.2* Clean agents shall not be used on fires involving the following materials unless the agents have been tested to the satisfaction of the authority having jurisdiction:</p> <p>(1) Certain chemicals or mixtures of chemicals, such as cellulose nitrate and gunpowder, which are capable of rapid oxidation in the absence of air</p> <p>(2) Reactive metals such as lithium, sodium, potassium, magnesium, titanium, zirconium, uranium, and plutonium</p> <p>(3) Metal hydrides</p> <p>(4) Chemicals capable of undergoing autothermal decomposition, such as certain organic peroxides and hydrazine</p>	<p>1.4.2.2 Clean agents shall not be used on fires involving the following materials unless the agents have been tested to the satisfaction of the authority having jurisdiction:</p> <p>(1) Certain chemicals or mixtures of chemicals, such as cellulose nitrate and gunpowder, which are capable of rapid oxidation in the absence of air</p> <p>(2) Reactive metals such as lithium, sodium, potassium, magnesium, titanium, zirconium, uranium, and plutonium</p> <p>(3) Metal hydrides</p> <p>(4) Chemicals capable of undergoing autothermal decomposition, such as certain organic peroxides, pyrophoric materials, and hydrazine</p>
<p>1.5.2 Electrical Clearances.</p> <p>1.5.2.1 All system components shall be located to maintain no less than minimum clearances from energized electrical parts. The following references shall be considered as the minimum electrical clearance requirements for the installation of clean agent systems:</p> <p>(1) ANSI C2</p> <p>(2) <i>NFPA 70</i></p> <p>(3) 29 CFR 1910, Subpart S</p>	<p>1.5.2 Electrical Clearances.</p> <p>1.5.2.1 All system components shall be located to maintain no less than minimum clearances from energized electrical parts. The following references shall be considered as the minimum electrical clearance requirements for the installation of clean agent systems:</p> <p>(1) IEEE C2, <i>National Electrical Safety Code</i></p> <p>(2) <i>NFPA 70, National Electrical Code</i></p> <p>(3) 29 CFR 1910, Subpart S, “<i>Electrical Engineering</i>”</p>
Content Added	<p><u>1.5.1.4 An egress time study shall be performed to verify that the maximum exposure time limits in 1.5.1.2.1 and 1.5.1.3 are achieved.</u></p>
Chapter 2 – Referenced Publications	
No Substantial Changes	
Chapter 3 – Definitions	

<p style="text-align: center;">Content Added</p>	<p><u>3.3.1* Abort Switch.</u> A system control that, when operated during the releasing panel's release delay countdown, extends the delay in accordance with a predetermined effect.</p> <p><u>3.3.17 Inspection.</u> A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.</p> <p><u>3.3.22 Maintenance.</u> Work performed to ensure that the equipment operates as directed by the manufacturer.</p> <p><u>3.3.36 Service.</u> Performance of maintenance, recharge, or testing.</p>
<p style="text-align: center;">Chapter 4 – Components</p>	
<p style="text-align: center;">Content Added</p>	<p><u>4.2.1.6 Dirt Trap.</u> A dirt trap consisting of a tee with a capped nipple, at least 2 in. (50mm) long, shall be installed at the end of each pipe run.</p>
<p>4.2.2 Pipe Joints. Pipe joints other than threaded, welded, brazed, flared, compression, or flanged type shall be listed or approved.</p> <p>4.2.3 Fittings.</p> <p>4.2.3.1* Fittings shall have a minimum rated working pressure equal to or greater than the minimum design working pressure specified in 4.2.1.1, for the clean agent being used, or as otherwise listed or approved. For systems that employ the use of a pressure-reducing device in the distribution piping, the fittings downstream of the device shall have a minimum rated working pressure equal to or greater than the maximum anticipated pressure in the downstream piping.</p>	<p><u>4.2.2 Pipe Connections.</u></p> <p><u>4.2.2.1</u> Pipe joints other than threaded, welded, brazed, flared, compression, or flanged type shall be listed or approved.</p> <p><u>4.2.2.2*</u> Fittings shall have a minimum rated working pressure equal to or greater than the minimum design working pressure specified in 4.2.1.1, for the clean agent being used, or as otherwise listed or approved.</p> <p><u>4.2.2.3</u> For systems that employ the use of a pressure-reducing device in the distribution piping, the fittings downstream of the device shall have a minimum rated working pressure equal to or greater than the maximum anticipated pressure in the downstream piping.</p>
<p>4.2.3.4 All threads used in joints and fittings shall conform to ANSI B1.20.1 or ISO 7-1. Joint compound, tape, or thread lubricant shall be applied only to the male threads of the joint.</p>	<p><u>4.2.2.6</u> All threads used in joints and fittings shall conform to <u>ASME B1.20.1, Standard on Pipe Threads, General Purpose</u>, or ISO 7-1, <u>Pipe Threads Where Pressure-Tight Joints Are Made on the Threads — Part 1: Dimensions, Tolerances and Designation</u>. Joint compound, tape, or thread lubricant shall be applied only to the male threads of the joint.</p>
<p style="text-align: center;">Content Added</p>	<p><u>4.2.2.10</u> Where grooved fittings are used to join pipe, the manufacturer's pressure and temperature ratings of the fitting shall not be exceeded.</p>
<p style="text-align: center;">Content Added</p>	<p><u>4.2.3 Pipe Hangers and Supports.</u> Pipe hangers and supports shall be designed and installed in accordance with recognized industry practices and manufacturer's instructions.</p> <p><u>4.2.3.1</u> All pipe hangers and supports shall be attached directly to a rigid fixed structure.</p> <p><u>4.2.3.2</u> All hangers and components shall be steel</p> <p><u>4.2.3.3</u> Ordinary cast-iron hangers/supports, conduit clamps or "C" clamps shall not be used.</p> <p><u>4.2.3.4</u> All pipe supports shall be designed and installed to prevent lateral movement of supported pipe during system discharge while permitting longitudinal movement to accommodate expansion and contraction caused by temperature changes.</p> <p><u>4.2.3.4.1</u> Rigid hangers shall be installed wherever a change in elevation or direction occurs.</p> <p><u>4.2.3.4.2</u> Nozzles shall be supported so as to prevent movement of the nozzle during discharge</p>

	<u>4.2.3.5 Where seismic bracing is required, bracing shall be in accordance with local codes and the authority having jurisdiction.</u>
Content Added	<p><u>4.3 Detection, Actuation, Alarm and Control Systems.</u></p> <p><u>4.3.1.1.1</u> The clean agent suppression system or group of systems shall be controlled by a listed clean agent releasing control panel(s) that is listed for monitoring the associated initiating devices, meets the listed compatibility requirements per 4.3.4.1 for actuation of the associated suppression system releasing device(s), and controls the associated suppression system notification appliances.</p> <p><u>4.3.1.1.2</u> A protected premises building fire alarm system shall be permitted to serve as a clean agent suppression system releasing control panel only if it is listed for release with the specific clean agent suppression system's releasing device per 4.3.4.1.</p> <p><u>4.3.1.1.3</u>If the clean agent suppression system releasing control panel is located in a protected premises having a separate building fire alarm system, it shall be monitored by the building fire alarm system for alarm, supervisory, and trouble signals.</p> <p><u>4.3.1.1.4</u> The clean agent suppression system releasing control panel shall not be dependent upon or affected by the operation or failure of the protected premises building fire alarm.</p>
4.3.6.4 The disconnect switch shall be located inside a lockable fire alarm control panel, inside a lockable enclosure, or require a key for activation of the switch.	4.3.6.4 The disconnect switch shall be <u>secured against unauthorized use by one of the following methods:</u> (1) <u>Locate inside a lockable releasing control panel</u> (2) <u>Locate inside a lockable enclosure</u> (3) <u>Require a key for activation of the switch</u>
Chapter 5 – System Design	
5.5.3* Design Factors. In addition to the concentration requirements, additional quantities of agent are required through the use of design factors to compensate for any special conditions that would affect the extinguishing efficiency.	<u>5.5.3* Design Factors.</u> <u>Where special conditions could affect the extinguishing efficiency, the minimum quantity of agent shall be increased through the use of design factors.</u>
Chapter 6 – Local Application Systems	
No Substantial Changes	
Chapter 7 – Approval of Installations	
7.7.1 General. The completed system shall be reviewed and tested by qualified personnel to meet the approval of the authority having jurisdiction. Only listed equipment and devices shall be used in the systems. To determine that the system has been properly installed and will function as specified, the following tests shall be performed.	<p>7.2* General.</p> <p>7.2.1 The completed system shall be reviewed and tested <u>by personnel that have knowledge and experience of the requirements contained in this standard, of the installed equipment, and of the manufacturer's design, installation, and maintenance manual.</u></p> <p>7.2.2 Only listed equipment and devices shall be used in the systems.</p>
Content added	<p><u>7.2.3. System Acceptance Testing</u></p> <p><u>7.2.3.1</u> The system shall be tested in accordance with <u>the requirements of this standard and the manufacturer's design, installation, and maintenance manual.</u></p>

	<p><u>7.2.3.2</u> Equipment shall be inspected to verify that it is installed in accordance with the manufacturer's instructions and the system design documents.</p> <p><u>7.2.3.3</u> The actual hazard dimensions shall be checked against those indicated on the system drawings to verify the quantity of agent.</p> <p><u>7.2.3.7</u> When applicable for system operation, fan coastdown and damper closure time shall be verified that they are in accordance with the system design criteria</p> <p><u>7.2.4</u> When required by project specifications, integrated fire protection and life safety system testing shall be in accordance with NFPA 4.</p> <p>7.5 Review of Enclosure Integrity</p> <p><u>7.5.1</u> It shall be determined that the protected enclosure is in general conformance with the construction documents.</p> <p><u>7.6.11</u> The detectors shall be installed in accordance with the manufacturer's technical data and the requirements of NFPA 72.</p>
Content added	<p>7.6.12 Manual Pull Stations</p> <p><u>7.6.12.1</u> Manual pull stations shall be securely mounted.</p> <p><u>7.6.12.2</u> The operable part of a manual pull station shall be not less than 42 in. (1.07 m) and not more than 48 in. (1.22 m) from the finished floor.</p> <p><u>7.6.14.6</u> The operable part of an abort switch shall be not less than 42 in. (1.07 m) and not more than 48 in. (1.22 m) from the finished floor.</p>
Content added	<p><u>7.8 Owner's Documentation.</u></p> <p><u>7.8.1</u> Paper or electronic copies of all test reports and related documentation shall be provided to the system owner.</p> <p><u>7.8.2</u> The system owner shall maintain these reports for the life of the system.</p>
<p>Chapter 8 – Inspection, Servicing, Maintenance, and Training</p>	
Content Added	<p><u>8.2 Monthly Inspection.</u></p> <p><u>8.2.1</u> At least monthly, a visual inspection shall be conducted in accordance with the manufacturer's listed maintenance manual or owner's manual.</p> <p><u>8.2.2</u> At a minimum, the inspection shall include verification of the following, as applicable:</p> <ul style="list-style-type: none"> <u>(1) Releasing panel is powered and is free of supervisory, trouble, or alarm conditions.</u> <u>(2) Manual controls are unobstructed.</u> <u>(3) System shows no physical damage or condition that could prevent operation.</u> <u>(4) Pressure gauges are in the operable range.</u> <u>(5) Protected equipment and/or hazard has not been changed or modified.</u> <u>(6) Any previously noted deficiencies have been corrected.</u> <p><u>8.2.3</u> If any deficiencies are found, appropriate corrective action shall be taken immediately.</p> <p><u>8.2.4</u> Where the corrective action involves maintenance or repair, it shall be conducted by a fire protection service technician, in accordance with 8.1.2.</p>

	<p><u>8.2.5 When inspections are conducted, a record verifying that the inspection was completed shall be maintained by the owner.</u></p> <p><u>8.2.5.1 The record shall include the date the inspection was performed and the initials of the person performing the inspection.</u></p> <p><u>8.2.5.2 The record shall include any deficiencies that were found.</u></p> <p><u>8.2.5.3 The records shall be retained until the next semiannual service and inspection</u></p>
<p>Chapter 9 – Marine Systems</p>	
<p>No Substantial Changes</p>	

3) RESULTS IN A FUNDING ISSUE (Do Not Adopt Until Resolved)?

No, NFPA 2001 is not a retroactive code.

4) FIRE PROTECTION PROGRAM CHANGE REQUIRED (Changes Required During Implementation After Adoption)?

There is a new requirement for monthly visual inspection reflected in OSR 10-312. The one thing that is not listed on OSR 10-312 is 8.2.2(1), which is the requirement to inspect the releasing panel.

5) IMPORTANT INFORMATION FOR FIELD ENGINEERS?

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