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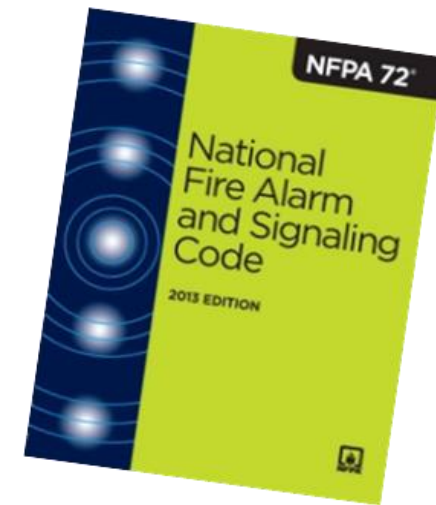
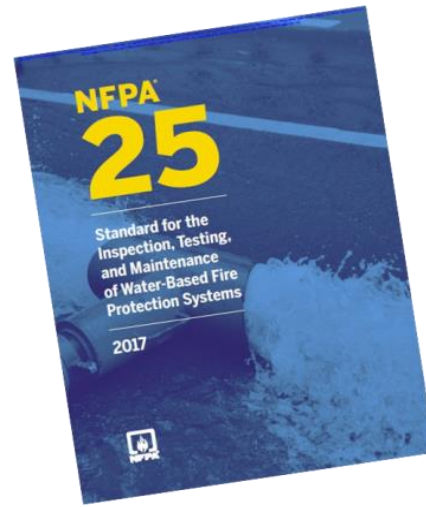
# Coordinating Fire Alarm and Fire Sprinkler Maintenance to Maximize Building Protection

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# Coordinating Fire Alarm and Fire Sprinkler Maintenance to Maximize Building Protection

The “why” behind  
NFPA 25 & NFPA 72  
ITM requirements



# Purpose of Inspection, Testing, & Maintenance

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# Purpose of ITM

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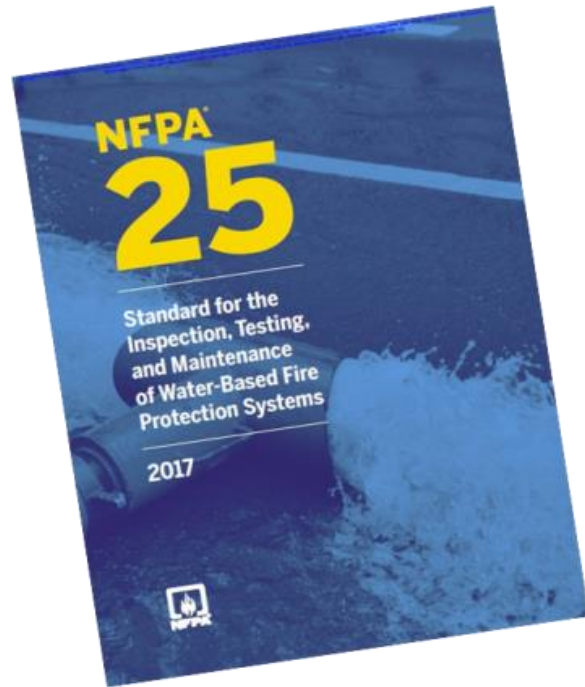
Purpose is similar between NFPA 25 & 72

Helps ensure reliability

Not designed to address every possible problem

# Purpose of NFPA 25

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“...ensure a reasonable degree of protection for life and property from fire through minimum inspection, testing, and maintenance...”

# Will the System Work?

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## Sprinkler System Success Rate

Public Assembly – 96%

Educational – 93%

Health Care – 96%

Residential – 98%

Store / Office – 96%

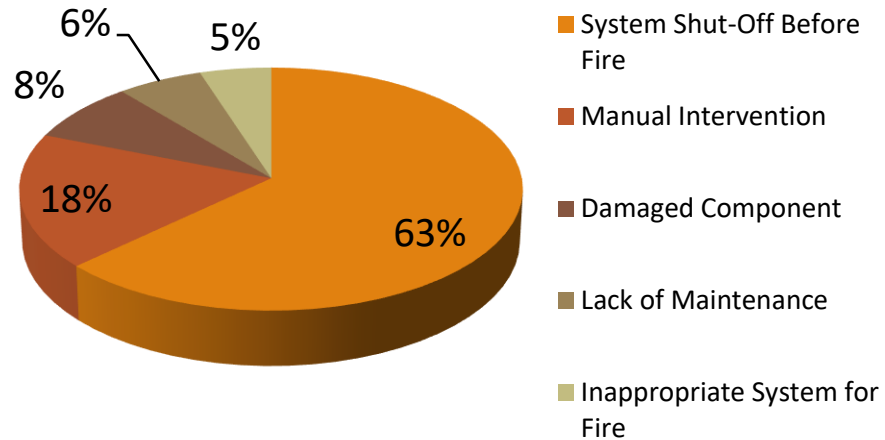
Manufacturing – 93%

**Storage – 79%**

All Structures – 95%

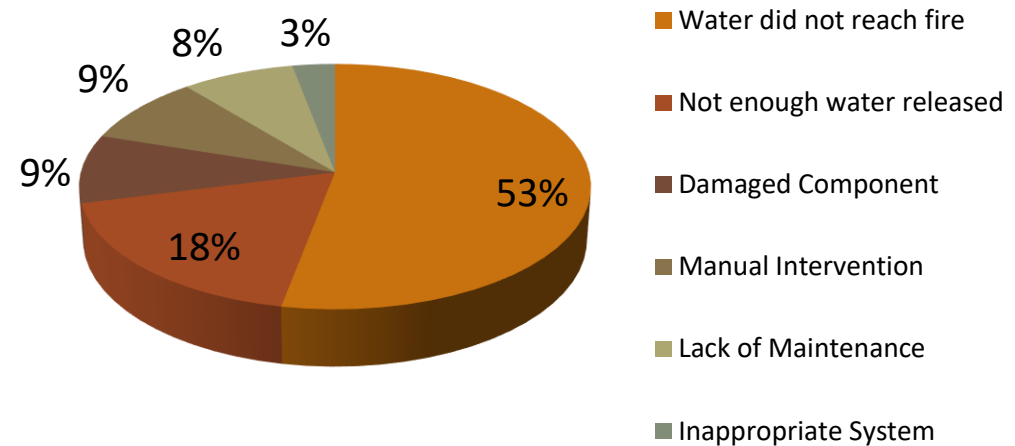


# Sprinkler Reliability



***When the system failed to operate.***

***When the system operated, but was ineffective.***



National Fire Protection Assoc.  
Sprinkler Experience in the U.S.

# Fire Alarm reliability

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Data isn't as available for alarm system

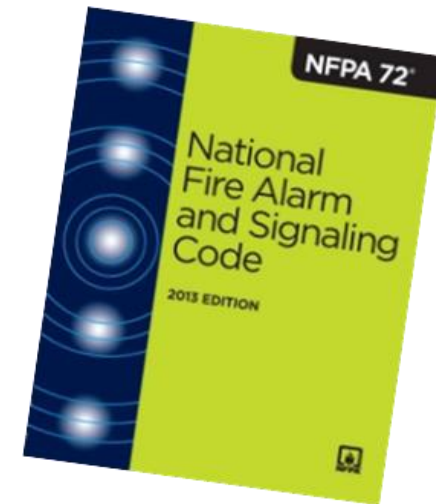
*The reliability of fire alarm systems in terms of response during emergency is very high. Based on the robustness of the components, the quality of manufacturing and the independent oversight of the listing process, it is not unreasonable to expect reliability greater than 99.9 percent. The number means that the system would fail to perform as intended for less than one fire in a thousand.* -**Kenneth W. Dungan, P.E., FSFPE | Fire Protection Engineering | 2007 Q1 Issue**



# Purpose of ITM NFPA 72<sup>®</sup>-2013

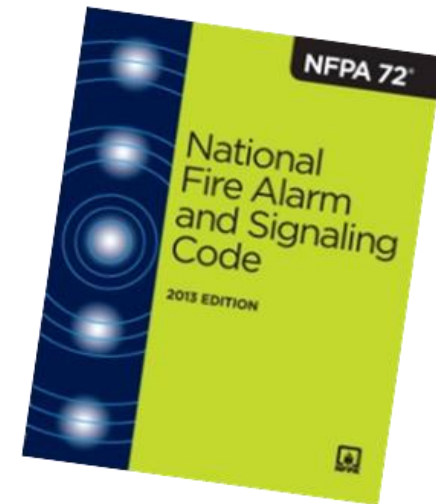
14.2.1.3\* The purpose for periodic inspections is to assure that obvious damages or changes that might affect the system operability are visually identified.

14.2.1.4\* The purpose for periodic testing is to statistically assure operational reliability.



PURPOSE OF ITM  
NFPA 72®-2013

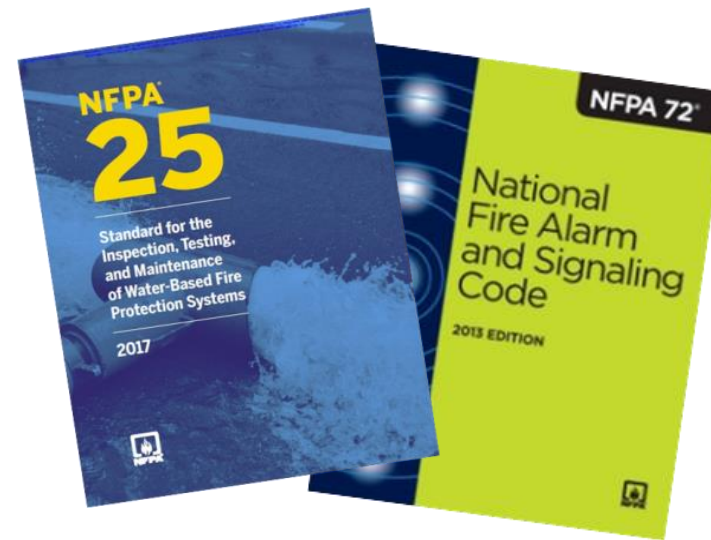
14.2.2.1.2 Inspection, testing, and maintenance programs shall verify the correct operation of the system.



# Scope MATTERS!

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The purpose of ITM may be similar, the *scope* of the documents is not



# Scope Differences

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## **NFPA 72 Table 14.3.1 – Visual inspection of all equipment:**

- *Ensure there are no changes that affect equipment performance. Inspect for building modifications, occupancy changes, changes in environmental conditions, device location, physical obstructions, device orientation, physical damage, and degree of cleanliness.*

# Scope Differences

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## **NFPA 25 section 1.1.3.1:**

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



# Qualifications

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Both standards require whoever is doing the work to be qualified.

NFPA 25 uses the standard definition in chapter 3.

NFPA 72 goes into qualifications of inspector, tester, and service personnel.

# Testing

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Sprinkler system testing typically involves comparison with previous data to look for changes.

Fire alarm testing is often pass/fail.

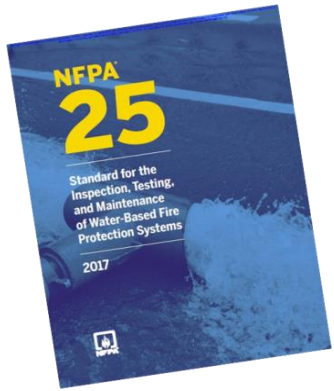


Why do the two standards  
vary so widely?

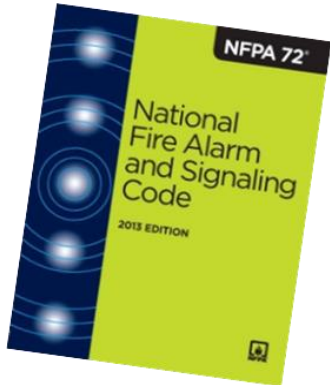
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# History lesson

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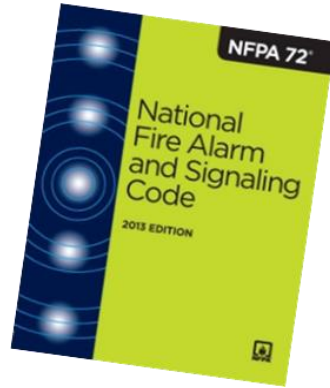
Consolidated in 1992  
(NFPA 13, 14, 15, 16, 20, 22, 24 & 750)



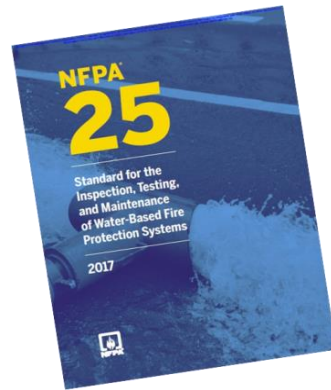
Consolidated in 1993  
(NFPA 71, 72, 72E, 72G, 72H and 74)

# Standard Application

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NFPA 72 is a design standard as well as ITM  
Chapter 14 – both initial *and* periodic  
inspection/testing



NFPA 25 is strictly wear and tear

# System response

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Sprinkler coverage has a direct effect on the systems ability to perform as designed (density/hazard/extinguishment)

Fire alarm components typically effect the speed at which notification happens

# Testing

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Each fire alarm device can be tested to ensure that it works

Can't do that with the sprinkler system

# System & environment

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Density is a product of several things

- Water supply, Pipe size, K-factor, Spacing

Difficult to verify during a routine inspection

Alarm system monitors itself, and 72 scope includes changes in environment

# Introduction of NFPA 4

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# NFPA standards Council

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NFPA Standards Council removed “end-to-end” testing from the scope of NFPA 72

A.14.4.3.2 (2016)



# NFPA 4 application

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NFPA 4 won't become effective until referenced in fire codes

2018 IFC

2018 NFPA 1/101/5000

# Key definitions

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**3.3.25.4\* *Integrated System.*** A combination of systems that are required to operate together as a whole to achieve overall fire protection and life safety objectives. [3, 2018]

**3.3.12.1.3\* *Integrated Systems Test.*** A test performed on fire protection and life safety systems to confirm that operation, interaction, and coordination of multiple individual systems perform their intended function. [3, 2018]

# Periodic integrated Systems Testing

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## **Integrated Systems Test Plan**

### **Existing Systems**

Integrated Systems Testing within 5 years of adoption of NFPA 4

### **Commissioned Systems**

Intervals specified in the commissioning plan

Where integrated systems have not been commissioned in accordance with NFPA 3, an integrated system test plan shall be developed.

# Bridging the gap

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Recognize that there are differences in scope and application

No singular approach will work

Good fire protection has to be the goal

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Thanks for your attention!!!!