ITM Made Easy -- NFPA 25 in a Nutshell

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The amount of data and the number of resources available to sprinkler system designers has never been greater. With the proper application of this information, along with the use of state-of-the-art equipment and system components, sprinkler system effectiveness and reliability continues to improve upon what is already considered to be a stellar track record. Even with this data and the latest products on the market however, a system is only as effective as the ITM (Inspection, Testing and Maintenance) program that is used to keep it running once a building is occupied.

When looking at statistical data of when sprinkler systems fail to function as intended during a fire event, some of the most common failure modes can be attributed to a lack of system inspections (closed valves) and insufficient maintenance. As indicated Table 1, many fire events that have unsatisfactory sprinkler performance can be linked to the water supply to the system being shut-off. Another common cause for unsatisfactory system performance is a lack of routine maintenance that leads to failure of the system or a system component. Many of these failures could be prevented with the proper implementation of an ITM program.

Table 1 - Reasons Sprinklers Failed to Operate or Were Ineffective in Reported Fires when Fire Was Large Enough to Activate Equipment and Equipment Was Present in Fire Area: 2006-2010

Reason	Failed to Operate	Were Ineffective
System shut off	63%	NA
Water did not reach fire	NA	53%
Not enough water released	NA	18%
Manual intervention defeated system	18%	9%
System component damaged	8%	9%
Lack of maintenance	6%	8%
Inappropriate system for type of fire	5%	3%

NA- Not applicable

Source: John. R. Hall, Jr. U.S. Experience with Sprinklers, Quincy, MA: National Fire Protection Association, 2012, pp. 22, 24. See source for methodology used

NFPA

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NFPA membership totals more than 70,000 individuals around the world.

Getting Started

Establishing an ITM program for a specific buildings or a series of buildings sounds more daunting than it really is. *NFPA 25, The Standard for the Inspection Testing and Maintenance of Water-Based Fire Protection Systems*, provides a series of ITM tasks and frequencies that should be followed to provide the property owner, insurance representatives and AHJ's with a level of comfort for the condition and functionality their water-based fire protection systems.

NFPA 25 is structured so that each system type, be it a sprinkler system, fire pump, standpipe system, or other water-based system, is each broken down into it's own individual chapter. The chapters are then further subdivided to separately address inspection, testing, and maintenance tasks. At the beginning of each chapter there is a table summarizing not only what ITM tasks need to be performed for that system, but also the frequency at which they must be conducted and the section in the standard where there is more detailed information about completing the task. This format provides all parties involved in the ITM process with a series of quick-reference guides to make sure they are staying up-to-date with their inspections and testing.

ITM Documentation

Using these quick-reference tables, a facility manager or inspector can create a customized ITM frequency tables and forms for each building in their care. These tables and forms can either be arranged by the type of task (inspection, test, or maintenance activity), frequency (weekly, monthly, annual… etc) or, as NFPA 25 is currently structured, by the type of system being considered.

The creation of custom forms is relatively easy, as there are many examples of forms available on the internet. NFPA 25 does not mandate that the documentation of ITM tasks happen on a specific "NFPA 25 Approved" form, which allows the owner and the inspector to create customized forms that contain only the information that is relevant to their building. The customizable forms also allow the owner or inspector to put their logo on the form or some other symbol to identify a specific property, building, or client.

It is the responsibility of the owner to retain a copy of the records for the most recent tests conducted so that they can be presented to the AHJ if requested.

Roles and Responsibilities

Conducting the ITM tasks and documenting the results is the responsibility of the property owner. The property owner can designate this responsibility to another entity such as an inspection firm or a property management firm. Many property owners will rely on their own staff to conduct building inspections and routine system/component maintenance, but may rely on an outside organization to handle the more rigorous testing tasks.

The role of the AHJ in the ITM process is often misunderstood. Many property owners and facility managers believe that if AHJ is not constantly asking for the latest ITM documentation and is not coming to witness ITM tasks being performed, then they do not need to be performing the tasks identified in NFPA 25. As a matter of practicality, NFPA 25 does not intend for AHJ to be present for system testing or inspections, as many jurisdictions simply do not have the man-power to support such an effort. Many jurisdictions have

thousands of commercial buildings, making it impractical for the AHJ to attend every weekly, monthly, or annual test being conducted for each of these facilities. The fact that the local AHJ may not actively participate in the ITM program for a given property does not alleviate the building owner from their responsibility to make sure their systems are in working order by following the requirements of NFPA 25.

NFPA 25 Scope

Another common misconception surrounding NFPA 25 is the scope of the standard. Contrary to the belief of many, NFPA 25 does not intend for inspectors to constantly be confirming the adequacy of a system design. The intent of NFPA 25 is to confirm that the systems and the system components that have been installed are in good working order. This is why NFPA 25 is often referred to as a "wear and tear" document. The standard presupposes that the systems being inspected complied with the applicable standards at the time of construction. Therefore, there is no need to be reviewing sprinkler spacing in accordance with *NFPA 13, The Standard for the Installation of Sprinkler Systems*, or confirming that the correct obstruction rule was applied during the design.

Reviewing or evaluating a system against the applicable design standards is often referred to as a design evaluation or a re- or retro-commissioning study (for more information, see NFPA 3, The Recommended Practice for Commissioning and Integrated System Testing), and is outside the scope of NFPA 25. These analyses of installed systems are incredibly valuable but are also more costly and can take a long time to complete.

Summary

The thought of starting up an ITM program can seem scary, but in actuality it can be quite simple. Once the scope of NFPA 25 is better understood, and everyone knows what their role is in the process, these water-based system ITM programs can easily be incorporated into a buildings normal operations and maintenance program.

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