



APPA Code Advocacy Task Force Wins Change In the Fire Alarm Code

By Carl Willms, Michael A. Anthony, Kevin Folsom

APPA's equity stake in the international safety standards landscape will yield dividends in the 2010 version of *NFPA 72 - National Fire Alarm and Signaling Code*®. A proposal described in the November/December 2008 Code Talkers column resulted in the change that APPA's Code Advocacy Task Force was seeking on behalf of the education facilities industry. The change does not present a new or costly technical requirement, but rather it is a clarification of an existing requirement that is overlooked when interconnecting multiple fire alarm control units (FACUs). The actual text of the fire alarm code technical committee's action is shown in the sidebar.

The interconnection of FACUs is a very frequent occurrence in educational facilities that evolve over time. If the interconnecting methods are not designed and configured properly, there will be significant negative impact on the ability to control and manage the fire alarm system.

BACKGROUND

NFPA-72 has clearly addressed the methods by which the separate panels can be interconnected. The problem is not in the interconnection methods but the performance of the system when it comes to the ease and ability to silence or reset separate fire alarm control panels.

The method of interconnecting a primary fire alarm panel to monitor a new and separate fire alarm panel utilizing

electrical contacts to monitor the alarm, trouble, and supervisory contacts of a sub panel in certain applications could be a straightforward one-way path design. This one-way configuration is similar to monitoring a manual pull station that needs to

be manually reset before the main panel can be returned to a normal condition.

When both panels control independent notification appliance circuits and other independent fire safety functions, such as AHU control and door release, the design of the interconnection becomes more critical. Depending on the manufacturer, model, flexibility and configuration of each panel the challenge to design a code compliant interconnection can be significant. Where each panel controls independent notification appliance circuits, significant issues arise where compliance with NFPA-72-2007 section 4.4.3.7.5 is considered which requires the subsequent reactivation of

Comment On Original APPA Proposal By Carl F. Willms:

"Add new text as follows:

4.4.3.7.7 Resetting alarm signals shall not require the simultaneous operation of multiple reset switches or the disconnection of any wiring or equipment to reset the alarm condition.

SUBSTANTIATION

I agree with the committee statement that it should not limit the capabilities of resetting signals to 1 location. There is, however, a situation that needs to be recognized and addressed. It is common that buildings with partial upgrades or fire alarm expansions may have separate fire alarm panels that are interconnected. If the interconnecting means is not properly designed and implemented, significant operational problems can occur. I have personally seen unacceptable conditions where 2 separate panels must be reset at the **SAME TIME** or the interconnecting wiring had to be physically disconnected to allow a reset. If the interconnection of the fire alarm panels is properly designed, the process of resetting a remote panel should be equivalent to resetting a manual pull station. Once the remote panel or (pull station) is reset, the main panel can be reset."

NFPA 72 COMMITTEE ACTION ACCEPTS THE PRINCIPLE:

"Revise proposed text as follows:

- 4.4.3.7.7* Resetting of alarm signals shall comply with the requirements of 6.8.2.1.
- A 4.4.3.7.7 Resetting of alarm signals should not require the simultaneous operation of multiple reset switches or the disconnection of any wiring or equipment to reset the alarm condition.

The committee agrees with the intent of the submitter and notes that a similar requirement exists in Chapter 6. The committee rephrased the proposed text to be positive language and placed the proposed text into the Annex."

the notification appliances if the system is silenced and additional alarms are initiated from addressable devices or other initiation device circuits.

This is where many systems fail to meet the operational needs of the building staff responsible for managing the fire alarm systems within their facilities. The fact is there are "Approved" fire alarm systems in service that require each panel to be individually silenced at each control panel. The silencing of only a portion of the alarm signals at one panel, followed by the delay of time it takes to travel to the second panel to activate the silence switch, creates a series of subsequent issues. Even worse, in many of these poorly designed interconnected systems, both panel reset buttons need to be pushed simultaneously.

POOR DESIGN

These poorly designed and interconnected "Approved" systems by NFPA-72 definition that are "acceptable to the Authority Having Jurisdiction" are *not* acceptable to the building staff that need to manage the fire and life safety systems within their facilities. An example of a code compliant — but poorly designed and possibly dangerous — reset configuration is shown in the photos of Figure 1. An order of magnitude labor cost estimate associated with public safety and fire alarm technicians having to deal with complicated reset procedures is \$100 to \$1000 — per event. Not included in this estimate is the cost of lost business continuity when occupants are confused about the fire safety status of a building when its fire alarm system rings and re-rings.

There are, however, numerous and varied simple cost effective ways to properly design the interconnection of separate fire alarm panels of different types and manufacturers with a relatively quick payback.

Depending on the specific application an example of a possible cost effective way to solve the audible and visual alarm notification issue is the utilization of notification circuit expander panels

connected to a notification circuit of the primary fire alarm panel. These expander panels are so cost effective, many times they are used instead of the panel's internal alarm notification circuits. In this configuration all of the notification appliances can be silenced from the designated fire panel or its remote annunciators and/or other operator interface locations.

A SIMPLE SOLUTION

Again, depending on the specific application the simultaneous resetting of two separate panels can also be easily corrected. In a high percentage of situations where the reset issue arises, Fire Security Technologies identifies one of the two panels that have the capability to control a programmable output relay to activate for a designated period of time then to restore to the original

state. In this configuration, the automatically restoring alarm relay contact at the primary control panel activates an alarm condition at the secondary panel and the secondary panel's latching alarm relay activates a separate alarm condition at the primary panel. Both panels activate an alarm condition simultaneously, but the resetting can be easily accomplished by resetting the secondary panel and then the primary panel in that order. In almost all cases there is a cost effective design and implementation solution. Unfortunately, poorly configured interconnected systems are still being approved. Improperly interconnected systems exist by falling through a loophole in the installation specifications and/or contract or just by an inappropriate system design creating operational difficulties that the facility staff is forced to deal with.

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A poorly designed interconnection of separate control panels may process an initiation device's alarm signal and subsequently activate an alarm condition at both panels, thus activating by all of the appropriate notification and control devices meeting the intent of NFPA-72-2007 section 6.8.2.1, but what section 6.8.2.1 does not specifically address is the process that may be required to silence or reset the system.

When the design and system function fails to meet the needs of the personnel responsible for managing their fire alarm systems, NFPA-72 needs to clearly identify that such systems do not meet the requirements and intent of the National Fire Alarm Code. (Schematics of a poorly and properly designed reset systems appear in the November/December 2008 Code Talkers article available at <http://www.appa.org/files/FMArticles/FM111208Code%20Talkers.pdf>.)

Procedure for Resetting the Fire Alarm Panels

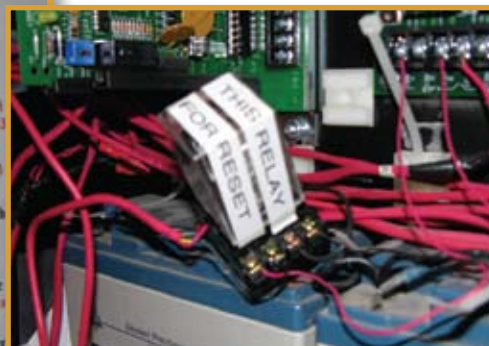
Upon alarm activation for either the existing **System #3 alarm panel** which is located in the mechanical room (Rink #1) or the new **MXL alarm panel** which is located in the electrical room (Rink #3.)

After all of the alarm conditions have been investigated and the fire department representative has given permission to reset the system, the following procedure may be followed:

1. If the alarm is in Rink #1 or #2, you must silence the alarm in the **System #3 panel (mechanical room)** by pressing the alarm silence button.
2. Next you go to the **MXL panel (Rink #3)** and continue the sequence.
3. Press the acknowledge alarm button.
4. Press the audible silence button.
5. Press the F4 button, which will prevent the **System #3 panel (mechanical room)** from re-arming the **MXL panel (Rink #3)**. The system trouble light will then go on.
6. Now you may go to the **System #3 panel (mechanical room)** and reset the alarm by pressing the alarm reset button.
7. Then you go back to the **MXL panel (Rink #3)** and press the acknowledge trouble button.
8. Press the reset button on the **MXL panel (Rink #3)**.
9. Press F1, the ARM button, to re-arm the link between the **MXL panel (Rink #3)** and the **System #3 panel (mechanical room)**.
10. Open the VoiceCom panel and press the EVAC button. This will ensure that the low level tone will not go out across the speakers.

An example of what education facility managers should NOT do with multiple fire alarm control units that are located in more than one location in a single building.

PHOTOS BY FIRE SECURITY TECHNOLOGIES, FARMINGDALE, NEW JERSEY



initiative, and to freely contribute his expertise to help us get the proposal through. If you are someone who has interest in participating in this important work, please contact Kevin Folsom. ☎

PROPOSALS SUBMITTED

Michael A. Anthony submitted two proposals to the nation's fire safety thought leaders for incorporation into the 2010 edition of NFPA-72. The committee initially rejected these proposals in the first phase of the code change process known as the ROP (Report of Proposals) phase. Carl Willms noted the 2009 NFPA-72 ROP rejection and the associated committee statements and provided further clarification in support of the proposals in the form of a comment that was submitted to the NFPA for reconsideration of the proposal at the ROC (Report on Comments) technical committee meetings last October. The comment by Carl Willms was Accepted in Principle by the committee. The code change will provide the clarification that is intended to prevent further unacceptable interconnections of multiple FACU's once the code is adopted. Assuming that no challenges will occur at the NFPA Standards Council meeting in July, many APPA stakeholders will benefit from this change.

The APPA Code Advocacy Task Force is a group of volunteers who are practicing educational facility managers. Each of them has expertise in various areas of code and standards development. We're grateful to have Carl Willms see our need in this

Carl Willms is CEO of Fire Security Technologies, Inc. in Farmingdale NJ. He is a member of the NFPA-72 Protected Premises Technical Committee, a NFPA Certified Fire Protection Specialist and a NICET Certified Senior Engineering Technician in Fire Alarm Systems as well as serving as a volunteer firefighter for 35 years. He may be reached at ceo@firesecuritytech.com. This is his first article for *Facilities Manager*.

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