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How Long Does It Take To Fix What's Broken?

by Dean K. Wilson, P.E.

Question: The engine company on which I serve as Captain had to respond at 2:10 a.m. last Thursday to yet another false alarm from a super grocery store in a strip mall. Following our standard operating procedures, we waited until an alarm company technician responded. The chief warned the technician that the next false alarm would result in a $500 fine for the alarm company.

On my way into work at the fire house the next afternoon, I noticed that one alarm company vehicle had been joined by two others from the same company. Later, on our way back from a car fire at about 9 o'clock that night, I saw all three vehicles still parked in the same places. Why did it take the alarm company so long to fix the system?

Answer: I suspect that the warning your chief gave the alarm company shocked them into realizing they could not allow the fire alarm system to continue to initiate false alarms. You might say that your chief gave the alarm company a reality check.

The alarm company responded to that reality check by assigning at least three technicians to troubleshoot and repair the root cause of the false alarms. Many hours later it appears they still had not solved the problem. The question you pose has definite validity. How long should it take to troubleshoot and repair a fire alarm system? Well, it depends.

It depends on the skill of the technicians. It depends on their knowledge of the particular system components. It depends on their knowledge of the installation details for the particular system. It depends on what documentation they had available to help them.

Just like fire fighters, fire alarm service technicians come in all shapes, sizes, and varieties. Some of them obtained electronics training in vocational school. Others learned electronic maintenance during military service. Some graduated from a technical college. Still others started fooling around with electronics as kids, and have evolved into the technician you see today.

Some of the technicians have had the opportunity to attend training sessions offered by the manufacturers of the fire alarm system components. Others have taken classes offered by the National Burglar and Fire Alarm Association or the Central Station Alarm Association. Some have participated in training sessions from the Automatic Fire Alarm Association. Some have attended National Fire Protection Association Fire Alarm Seminars. Some have attended training offered by various chapters of IMSA.

A few have obtained certification from the National Institute for Certification in Engineering Technologies. Others have taken the IMSA fire alarm system certification exams and obtained certification. Still others have received mostly on-the-job training from mentors who had developed considerable skill in fire alarm system troubleshooting and maintenance. These mentors then passed on their skills to the technician-in-training.

Two issues ago, in talking about assuring the competency of a fire alarm system, I pointed out that NFPA 72-1996, *National Fire Alarm Code*, states in Section 7-1.2.2 that technicians must be qualified and must be experienced in the inspection, testing, and maintenance of fire alarm systems. You may remember that the *Code* offers several examples of how a technician might become qualified, including: factory trained and certified; fire protection-fire alarm certified by the

National Institute for Certification in Engineering Technologies; certified by the International Municipal Signal Association; trained and qualified personnel employed by a company who has achieved central station fire alarm listing or fire alarm service-local company listing by Underwriters Laboratories Inc. or Factory Mutual Research Corporation..

These options provide technicians with a variety of opportunities to help assure that they possess an adequate understanding of fire alarm systems. Talk to any technician who has serviced fire alarm systems for a while, and he or she will tell you that in many cases experience will serve as the best teacher. Nothing hones a technician's troubleshooting skills as much as actually troubleshooting a system. The more unusual the problem, the more the technician can learn.

In fact, such challenging system problems often help the technician develop a set of procedures that he or she can apply to virtually every subsequent event where troubleshooting becomes necessary. And, by conscientiously applying those methodical procedures, the technician actually increases his or her effectiveness. This tends to shorten the time it takes to troubleshoot and repair a system.

But no matter how skilled the technician, the documentation available to help him or her understand the particular fire alarm installation will often determine how long it takes to troubleshoot and repair a malfunctioning system.

NFPA 72-1996, *National Fire Alarm Code*, specifies:

> 7-1.4 Prior to system maintenance or testing, the system certificate and the information regarding the system and system alterations, including specifications, wiring diagrams, and floor plans, shall be made available by the owner or a designated representative to the service personnel.

Does this mean that if a building owner hires an alarm service company to take care of a fire alarm system, the owner has a responsibility to supply complete documentation to the service company? Yes, it does. And this is really important.

Imagine the difficulty a heart surgeon would have in performing a quadruple heart bypass operation if the referring physician withheld the X-rays or CAT scan or MRI images. The last thing anyone wants is for even a skilled medical practitioner poking around inside his or her body without a map to show that surgeon the way.

Yet without hesitation, some will expect the fire alarm service technician to grope around inside a fire alarm system without the critical documentation to help show him or her the architecture of the system.

This documentation starts before the installation begins, proceeds throughout the actual installation, and continues when any renovations or repairs occur. The documentation includes: complete information regarding the system or system alterations, including specifications, wiring diagrams, battery calculation, and floor plans.

The documentation also includes: a written statement to the effect that the system has been installed in accordance with approved plans and tested in accordance with the manufacturer's specifications and the appropriate NFPA requirements. And, the installer must fill out a birth certificate, a Record of Completion for each system.

The documentation a technician will need to properly test and maintain the system will include: an owner's manual and installation instructions covering all system equipment and record drawings. As mentioned earlier, two issues ago in this column, I talked about how to achieve competency in a fire alarm system. In that article I quoted from Section A-1-7.2.2(a) to illustrate how thoroughly the installer must document the installation.

Perhaps it took so long for those technicians to troubleshoot and repair the fire alarm system at the super grocery store because no one provided the proper documentation to begin with. And just maybe, the next system that you review, you can do your part to make certain that the installation has documentation that will help ensure that technicians can promptly diagnose and repair any system malfunctions.

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