Highlights of the New NFPA 72-2002 - Part 2

by Dean K. Wilson, P.E.

The NFPA Standards Council has recently released NFPA 72-2002, *National Fire Alarm Code,* with an effective date of August 8, 2002. Starting with the last issue of *IMSA Journal,* I began to give you my summary of the most significant changes to the *Code.*

Chapter 4, Fundamentals of Fire Alarm Systems, contains the basic information regarding equipment, power supplies, signals, and documentation. This Chapter now contains most of the material from Chapter 1 of the 1999 edition, exclusive of the Scope, Purpose, and definitions.

The Committee now specifically requires that technicians install fire alarm system components in accordance with the manufacturers' installation instructions. (Please refer to Section 4.3.1)

The Committee has revised the entire power supply section. Auxiliary fire alarm systems and Remote Supervising Station fire alarm systems no longer need to provide 60 hours of secondary (standby) power. The Committee has also clarified the secondary power requirements for emergency voice/alarm communications systems (EVACS). In previous editions, the requirement called for 24 hours of secondary power under normal quiescent load followed by two hours of intermittent operation during an emergency. Since no one could easily calculate the likely load under such a two-hour period, the previous edition based the calculation on 15 minutes of operation with all connected load operating. In this latest edition, the Committee has removed the reference to the two-hour of intermittent operation and only requires the 15 minutes at maximum

connected load. This, of course, does not really change the requirement per se. (Please refer to Sections 4.4.1.5.3.1 and 4.4.1.5.3.1(A))

In addition, the Committee has made other more subtle changes to the power supply section. The specific option of using an emergency bus to supply primary power that complies with NFPA 70, *National Electrical Code*, Article 700, 701 or 702 in lieu of secondary power has disappeared. In its place, the Committee has added, as an option for primary power, the use of a generator arranged for cogeneration with commercial light and power where a person specifically trained in the operation of the generator remains on duty at all times. (Please refer to Section 4.4.1.4.1(3))

The Committee has included a reference to NFPA 70, Article 700 in the requirements for generators used to supply secondary power to a protected premises, and to Article 701 and 702 in the requirements for generators used to supply secondary power to supervising stations. The Committee has also added very specific references to appropriate sections in NFPA 110, *Standard for Emergency and Standby Power Systems.* (Please refer to Sections 4.4.1.9.3.1(A) and 4.4.1.9.3.2(A) and (B))

Under the section on generators, the Committee has added a requirement that where Chapter 6 requires survivability of circuits, equal protection shall be provided for power supply circuits. (Please refer to Section 4.4.1.9.3.1(B))

The Committee has somewhat expanded the section on continuity of power supplies. They now reference NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems,* for requirements relating to uninterruptible power supplies (UPS). (Please refer to Section 4.4.1.6.3(A))

The Committee has added a requirement that batteries must be permanently marked with the month and year of manufacture. (Please refer to Section 4.4.1.8.1)

To clarify an issue raised during the period between editions of the *Code*, the Committee has added specific requirements to address both self-restoring supervisory signals and latching supervisory signals. This language does not preferentially require either self-restoring, or latching supervisory signals. It does, however, clarify how the two different arrangements should function. (Please refer to Sections 4.4.3.2.2 and 4.4.3.2.3)

In the section on the monitoring of power supplies, the Committee has revised the requirement regarding the delay of the transmission of a trouble signal to a supervising station upon loss of primary power. Instead of basing this requirement on the timed usage of the source of secondary power, the requirement now uses the variable of 60 to 180 minutes. (Please refer to Section 4.4.7.3.3)

The Committee has modified and updated the Record of Completion. (Please refer to Section 4.5.2.1 and Figure 4.5.2.1)

The Committee has completed Chapter 4 by adding two new sections. The first one deals with the verification of a compliant installation. This section contains a process for verification of compliance to be “certified by a qualified and impartial third-party organization acceptable to the authority having jurisdiction” where required by such an authority having jurisdiction. (Please refer to Section 4.5.2.4)

The second new section deals with the handling of impairments to the fire alarm system. This section provides requirements to make certain the owner of a building receives notification when the fire alarm system serving that building suffers an impairment.

Specific deletions of text from the 1999 edition in new Chapter 4 include the following: 1999 Sections 1-5.4.1.2 and 1-5.4.2.2 have been relocated in the 2002 edition to Section 6.8.1.1 while retaining the essential requirements; 1999 Sections 1-5.4.10 covering Presignal Feature and

1-5.4.11 covering Positive Alarm Sequence have been relocated in the 2002 edition to Sections 6.8.1.2 and 6.8.1.3 respectively; though not marked with a bullet to indicate a deletion because it was replaced with Section 4.5.2.4 mentioned above, 1999 Section 1-6.3.2 covering Central Station Fire Alarm Systems has been deleted. The requirements in this deleted Section, covering Certificated or Placarded, essentially remain in Section 8.2.4.

Chapter 5, Initiating Devices, covers the material formerly included in Chapter 2 of the 1999 edition. The Committee has added a new Section on performance-based design that outlines the requirements for documenting such designs and submitting them to the Authority Having Jurisdiction. The requirements also describe how the AHJ should review and respond to such a submittal. (Please refer to Section 5.3)

The Committee has added a new requirement that initiating devices shall be installed in a manner that will provide accessibility for periodic maintenance. (Please refer to Section 5.4.4)

As a companion to the new requirements for performance-based design, the Committee has added requirements for heat detectors that require a designer to document the required performance objective of a system. The Committee further gives the designer only two options: a prescriptive design or a performance-based design. (Please refer to Sections 5.6.1.1, 5.6.1.2, and 5.6.1.3)

The Committee has deleted the requirement for marking heat detectors with their thermal response coefficient. Manufacturers and the testing/listing laboratories could not reach agreement on a test to determine this coefficient. Within recent months, the Fire Detection Institute (FDI) has issued a Request For Proposal (RFP) asking for research organizations to submit proposals for conducting research to develop such a test. Once FDI selects a vendor and solicits funding, research should begin on development of a suitable test for thermal response coefficient. (Please refer to Section 5.6.2.3)

As another companion to the new requirements for performance-based design, the Committee has added requirements for smoke detectors that require a designer to document the required performance objective of a system. The Committee further gives the designer only two options: a prescriptive design or a performance-based design. In addition, a new requirement specifically limits the application of the prescriptive requirements to smoke detectors installed in ordinary indoor locations. (Please refer to Sections 5.7.1.1, 5.7.1.2, 5.7.1.3, and 5.7.1.4)

The Committee has relocated 1999 Section 2-3.1.4 to Section 5.7.3.2.3(D) and retained the use of smoke detectors in detecting flaming fires by referencing the guidelines in Annex B. (Please refer to Section 5.7.3.2.3(D))

The Committee has expanded the requirements for the design of smoke detectors to include combustion characteristics and probable equivalence ratio of the anticipated fires involving fuel loads within the protected area. Further, the Committee has expanded the ambient conditions to include temperature, pressure, altitude, humidity, and atmosphere. (Please refer to Sections 5.7.3.1.2(4) and (6))

In dealing with linear projected beam-type smoke detectors, the Committee has deleted the phrase “and spaced” from the requirement that indicates a designer should locate a detector in accordance with the manufacturer’s requirements. (Please refer to Section 5.7.3.4.1)

The Committee has added a new requirement when mechanical rooms serve as a return air plenum. This requirement specifies that the designer need not reduce the spacing of smoke detectors within such a room based on the number of air changes. This requirement modifies the application of Figure 5.7.5.3.3 and Table 5.7.5.3.3. (Please refer to Section 5.7.5.3.4)

The Committee has moved the 1999 Section 2-6.3 covering the type of piping used to connect waterflow initiating devices to sprinkler systems to Annex A. (Please refer to Section A.5.10.1)

The Committee has modified the requirements for the location of manual fire alarm boxes, adding the word "conspicuous" to the existing words "unobstructed" and "accessible." An Annex statement indicates that manual fire alarm boxes should have a color that contrasts with the color of the background on which an installer will mount them. (Please refer to Sections 5.12.5 and A.5.12.5)

The other additions the Committee has made to this Chapter consist principally of words added to increase clarity. For example, in describing the signals initiated by a water level supervisory initiating device, the Committee has added the words "off normal" after the description of the signal initiated by lowering or raising the water level. Similarly, in describing smoke detector location for closing doors, the Committee has added the words "or more" to the descriptor "three" when describing the number of doorways that require separate treatment. (Please refer to Sections 5.13.3.1 and 5.14.6.5.3.2)

Next issue, I will continue to offer my summary of the important changes to NFPA 72-2002, *National Fire Alarm Code*, by presenting the changes to Chapter 6 and, possibly, beyond.

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