Highlights of the New NFPA 72-2002 - Part 6

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. In the last five issues of *IMSA Journal,* I have been giving you my summary of the most significant changes to the *Code*. That summary continues in this issue, as well.

Chapter 11, Single- and Multiple-Station Alarms and Household Fire Alarm Systems, contains the material formerly in Chapter 8 in the 1999 edition. The Committee has substantially revised this Chapter. You may recall that in the 1999 edition, this Committee had embarked on an experiment of putting all of the requirements into performance-based requirements. This met with such opposition, that the Committee has reverted to prescriptive requirements in this edition. As a result, this entire Chapter is considered revised. (Please refer to Chapter 11)

Some of the key Sections of the revised Chapter include the following:

11.5.1* One- and Two-Family Dwelling Units.

11.5.1.1 Smoke Detection. Where required by applicable laws, codes, or standards for the specified occupancy, approved single- and multiple-station smoke alarms shall be installed as follows:

(1) In all sleeping rooms
Exception: Smoke alarms shall not be required in sleeping rooms in existing one- and two-family dwelling units.

(2) Outside of each separate sleeping area, in the immediate vicinity of the sleeping rooms

(3) On each level of the dwelling unit, including basements

Exception: In existing one- and two-family dwelling units, approved smoke alarms powered by batteries shall be permitted.

11.5.1.2 Notification.

(A) Fire-warning equipment for dwelling units shall provide a sound that is audible in all occupiable dwelling areas.

(B) Where more than one smoke or heat alarm is installed for new construction, they shall be arranged so that the operation of any smoke or heat alarm causes the alarm in all smoke and heat alarms within the dwelling unit to sound.

Exception: Single-station smoke alarms without a secondary (standby) power source shall be permitted.

Similar Sections, with appropriately different requirements, exist for Lodging or Rooming Houses, New Apartment Buildings, Existing Apartment Buildings, New Hotels and Dormitories, Existing Hotels and Dormitories, New Day-Care Homes, Existing Day-Care Homes, New Residential Board and Care—Small Facility, New Residential Board and Care—Large Facility, Existing Residential Board and Care—Small Facility, and Existing Residential Board and Care—Large Facility.

Other noteworthy requirements include the following:

11.6 Power Supplies.

11.6.1 Smoke and Heat Alarms. Smoke and heat alarms shall be powered by one of the following means:

(1) A commercial light and power source along with a secondary battery source that is capable of operating the device for at least 24 hours in the normal condition followed by 4 minutes of alarm.

(2) If a commercial light and power source is not normally available, a noncommercial ac power source along with a secondary battery source that is capable of operating the device for at least 7 days in the normal condition followed by 4 minutes of alarm.

(3) A nonrechargeable, nonreplaceable primary battery that is capable of operating the device for at least 10 years in the normal condition followed by 4 minutes of alarm, followed by 7 days of trouble.

(4) If a battery primary power supply is specifically permitted, a battery meeting the requirements of 11.6.6 (nonrechargeable primary battery) or the requirements of 11.6.7 (rechargeable primary battery)shall be used.

11.6.2 Household Fire Alarm Systems. Power for household fire alarm systems shall comply with the following requirements:

(1) Household fire alarm systems shall have two independent power sources consisting of a primary source that uses commercial light and power and a secondary source that consists of a rechargeable battery.

(2) The secondary source shall be capable of operating the system for at least 24 hours in the normal condition followed by 4 minutes of alarm.

(3) Low-power wireless systems shall comply with the performance criteria of Section 6.16.

11.6.3 AC Primary Power Source. The ac power source shall comply with the following conditions:

(1) A visible “power on” indicator shall be provided.

(2) All electrical systems designed to be installed by other than a qualified electrician shall be powered from a source not in excess of 30 volts that meets the requirements for power-limited fire alarm circuits as defined in NFPA 70, National Electrical Code, Article 760.

(3) A restraining means shall be used at the plug-in of any cord connected installation.

(4) AC primary (main) power shall be supplied either from a dedicated branch circuit or the unswitched portion of a branch circuit also used for power and lighting.

(5) Operation of a switch (other than a circuit breaker) or a ground-fault circuit-interrupter shall not cause loss of primary (main) power.

Exception: Where a ground-fault circuit-interrupter serves all electrical circuits within the dwelling unit.

(6) Neither loss nor restoration of primary (main) power shall cause an alarm signal.

Exception: An alarm signal shall be permitted but shall not exceed 2 seconds.

(7) Where a secondary (standby) battery is provided, the primary (main) power supply shall be of sufficient capacity to operate the system under all conditions of loading with any secondary (standby) battery disconnected or fully discharged.

11.6.4 Secondary (Standby) Power Source. If the secondary power source is a battery, the following conditions shall be met:

(1) The secondary power source shall be supervised and shall cause a distinctive audible or visible trouble signal upon removal or disconnection of a battery or a low-battery condition.

(2) Acceptable replacement batteries shall be clearly identified by the manufacturer's name and model number on the unit near the battery compartment.

(3) A rechargeable battery used as a secondary power source shall meet the following criteria:

(a) Be automatically recharged by an ac circuit of the commercial light and power source

(b) Be recharged within 4 hours where power is provided from a circuit that can be switched on or off by means other than a circuit breaker or within 48 hours where power is provided from a circuit that cannot be switched on or off by means other than a circuit breaker

(c) Provide a distinctive audible trouble signal before the battery is incapable of operating the device(s) for alarm purposes

(d) At the battery condition at which a trouble signal is obtained, be capable of producing an alarm signal for at least 4 minutes followed by not less than 7 days of trouble signal operation

(e) Produce an audible trouble signal at least once every minute for 7 consecutive days

11.6.5 Notification Appliance (with Smoke or Heat Alarm). If a visible notification appliance is used in conjunction with a smoke or heat alarm application for compliance with 11.3.5, the notification appliance shall not be required to be supplied with a secondary power source.

11.6.6 Primary Power Source (Nonrechargeable Battery). If smoke alarms are powered by a primary battery, the battery shall be monitored to ensure the following conditions are met:

(1) All power requirements are met for at least 1 year of battery life, including weekly testing.

(2) A distinctive audible trouble signal before the battery is incapable of operating (from causes such as aging or terminal corrosion) the device(s) for alarm purposes.

(3) For a unit employing a lock-in alarm feature, automatic transfer is provided from alarm to a trouble condition.

(4) At the battery voltage at which a trouble signal is obtained, the unit is capable of producing an alarm signal for at least 4 minutes followed by not less than 7 days of trouble signal operation.

(5) The audible trouble signal is produced at least once every minute for 7 consecutive days.

(6) Acceptable replacement batteries are clearly identified by the manufacturer's name and model number on the unit near the battery compartment.

(7) A noticeable, visible indication is displayed when a primary battery is removed from the unit.

11.6.7 Primary Power Source (Rechargeable Battery). If smoke alarms are powered by a rechargeable battery, the following conditions shall be met:

(1) The battery shall, with proper charging, be able to power the alarm for a life of 1 year.

(2) The battery shall be automatically recharged by an ac circuit of the commercial light and power source.

(3) The battery shall be recharged within 4 hours where power is provided from a circuit that can be switched on or off by means other than a circuit breaker or within 48 hours where power is provided from a circuit that cannot be switched on or off by means other than a circuit breaker.

(4) A distinctive audible trouble signal shall sound before the battery is incapable of operating the device(s) for alarm purposes.

(5) For a unit employing a lock-in alarm feature, automatic transfer shall be provided from alarm to a trouble condition.

(6) At the battery condition at which a trouble signal is obtained, the unit shall be capable of producing an alarm signal for at least 4 minutes followed by not less than 7 days of trouble signal operation.

(7) The audible trouble signal shall be produced at least once every minute for 7 consecutive days.

With regard to the Annexes—formerly known in the 1999 edition as "Appendices"—the Committee has suitably revised Annex A, Explanatory Material, to reflect changes to the main body of the *Code*. They have also revised Annex B, Engineering Guide for Automatic Fire Detector Spacing, to correct some errors in formulae and also provide additional clarity. The Committee has also broken Annex C, Wiring Diagrams and Guide for Testing Fire Alarm Circuits, out of material that appeared in Appendix A in the 1999 edition. They have added Annex D, Sample Ordinance Adopting NFPA 72, to provide guidance for those Jurisdictions that wish to adopt the Code. Annex E, Informational References, contains material formerly found in Appendix C in the 1999 edition.

Annex F, Cross-Reference Tables, provides a cross reference between the 1999 and 2002 editions of the *Code*.

This completes our analysis of NFPA 72-2002, *National Fire Alarm Code*. Next issue, we will tackle some questions that have arisen out of the use of this new edition of the *Code*.

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