Questions/Comments for Richard Roux from Webinar on 7/11/13

Below are the questions and comments from the July 11, 2013 webinar “2013 NFPA 72: Design and Installation Requirements for Mass Notification Webinar.” All responses are derived from NFPA 72®-2013, National Fire Alarm and Signaling Code, except where noted in the specific response.

1. Would not also 1910.165 for ECS and to meet 1910.38?

This webinar presentation was based on the 2013 edition of NFPA 72.

1910.165 is titled “Employee alarm systems” and requires that “this section applies to all emergency employee alarms installed to meet a particular OSHA standard. This section does not apply to those discharge or supervisory alarms required on various fixed extinguishing systems or to supervisory alarms on fire suppression, alarm or detection systems unless they are intended to be employee alarm systems.”

1910.38 is titled “Emergency action plans” and requires that “an employer must have an emergency action plan whenever an OSHA standard in this part requires one. The requirements in this section apply to each such emergency action plan.”

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2. Can a Public Address - Voice Address (PAVA) system separate from the NFPA 72 fire alarm system be used for an ECS?

Chapter 24 of NFPA 72 covers the application, installation, and performance of emergency communications systems and their components. These cover one-way emergency communications systems (in-building fire emergency voice/alarm communications systems (EVACS), in-building mass notification systems, wide-area mass notification systems and distributed recipient mass notification systems (DRMNSs)) and two-way, in-building emergency communications systems.

Paragraph 24.4.3.24 would permit public address (PA) systems used for emergency communications when used as part of an in-building mass notification system(s). This paragraph permits the voice communications or public address system that is to be used for mass notification to be evaluated by the emergency communications system designer, as defined in Chapter 10, to determine applicability and compliance. Paragraph 24.4.3.24.2 provides that evaluation documentation in accordance with Paragraph 7.3.9 be provided by the emergency communications system designer attesting to the fact that the public address system has been evaluated and meets the performance requirements of Chapter 24 and the emergency response plan.

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3. UL pulled its listing for CI cable. What do we do?
Refer to NFPA 72, Paragraph 12.4 for the requirements for pathway survivability. Pathway survivability Level 2 and Level 3 provide four options for compliance. Fire-rated circuit integrity (CI) cable, rated for 2-hours, has been reviewed by UL and the manufacturers have been requested to review their product and permit UL to retest. Contact the specific manufacturer(s) and/or UL to determine the status of the review. In the interim, options (2), (3) and (4) remain as permitted by Paragraphs 12.4.3 and 12.4.4.

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4. Can MI cable be used instead of CI?

Refer to question and response to 3 above.

NFPA 72 specifically identifies 2-hour fire-rated circuit integrity (CI) cable as item (1) in Paragraphs 12.4.3 and 12.4.4. Paragraphs 12.4.3 and 12.4.4 do not specifically identify MI cable for pathway survivability.

Paragraph 24.3.6.4 provides that in-building fire emergency voice/alarm communications systems must comply with Paragraph 24.3.6.4.1 or 24.3.6.4.2. Paragraph 24.3.6.4.1 requires that for systems employing relocation or partial evacuation, that a Level 2 or Level 3 pathway survivability is required. Paragraph 24.3.6.4.2 requires that for systems that do not employ relocation or partial evacuation, a Level 0, Level 1, Level 2, or Level 3 pathway survivability is required. Pathway survivability levels for in-building mass notification systems and for wide-area mass notification systems must comply with the requirements of Paragraphs 24.3.6.5 and 24.3.6.5.

Pathway survivability requirements are defined in Section 12.4. Depending upon level, these could include: (1) 2-hour fire-rated circuit integrity (CI) cable, (2) 2-hour fire-rated cable system [electrical circuit protective system(s)], (3) 2-hour fire-rated enclosure or protected area or (4) 2-hour performance alternatives approved by the authority having jurisdiction. Mineral-insulated (MI) cable could be part of a 2-hour fire-rated cable system [electrical circuit protective system(s)]. Refer to the manufacturer’s installation instructions and listing criteria.

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5. Is risk analysis the same as site vulnerability assessment?

NFPA 72 does not use the term *site vulnerability assessment*. NFPA 72 defines risk analysis as a process to characterize the likelihood, vulnerability, and magnitude of incidents associated with natural, technological, and manmade disasters and other emergencies that address scenarios of concern, their probability, and their potential consequences.

Other organizations such as Homeland Security and FEMA distinguish risk analyses from vulnerability assessments.

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6. How does one become a certified MNS designer?

NFPA 72 provides the requirements for personnel qualifications in Section 10.5. Paragraph 10.5.1.1 requires fire alarm system and emergency communications system plans and specifications to be developed in accordance with this Code by persons who are experienced in the proper design, application, installation, and testing of the systems. In the determination of qualified personnel, state or local licensure regulations are required to be followed. Depending on state or local licensure regulations, qualified personnel could include: (1) personnel who are registered, licensed, or certified by a state or local authority, (2) personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction, (3) personnel who are factory trained and certified for fire alarm system design and/or emergency communication system design of the specific type and brand of system and who are acceptable to the authority having jurisdiction.

Further, as required by Paragraph 24.3.11.3 and Section 24.7, mass notification systems require the performance-based design and risk analysis to be prepared by a design professional certified or approved by the authority having jurisdiction.

Building Risk Analysis

7. When will the webinar on risk analysis be available?

At this time, a webinar on risk analysis is not scheduled. See the NFPA website periodically at http://www.nfpa.org/training/webinars.

Building Risk Analysis

8. Risk analysis would be a good target webinar for the future.

Refer to question and response to 7 above.

Building Risk Analysis

9. As a complementary of this webinar and better overall NFPA 72 coverage scheduling a risk assessment webinar would be very helpful.

Refer to question and response to 7 above.
10. The PA system was great; we found that we had areas in which the MNS was not heard in areas used for storage or in specific areas in the basements.

In-building fire emergency voice/alarm communications systems (EVACS) are required to satisfy the requirements of Paragraph 24.4.2.4.4. Audible signal tones for alert or evacuation are required to meet the audibility requirements of either Paragraph 18.4.3 (public mode audible requirements), Paragraph 18.4.4 (private mode audible requirements), Paragraphs 18.4.5.1 and 18.4.5.2 (sleeping area requirements), or Paragraph 18.4.6 (narrow band tone signaling for exceeding masked thresholds), as applicable.

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11. When a PA system is used that is not part of an MNS, is the only requirement of the PA system that it be a lower dB than the MNS?

Audio systems must be coordinated to ensure that audible notification appliances do not interfere with the intelligibility of the mass notification message or that they will not deliver conflicting information to the occupants.

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12. What does the acronym AHJ mean?

In Chapter 3, Paragraph 3.2.2 provides the definition for Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

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13. If there are speakers in a stair, do we need a strobe also? Does 23.8.6.2.1 apply?

Paragraph 23.8.6.1 provides the requirements for occupant notification. Fire alarm systems provided for evacuation or relocation of occupants are required to have one or more notification appliances listed for the purpose in each notification zone of the building and be so located that they have the characteristics described in Chapter 18 for public mode or private mode, as required.

Paragraph 23.8.6.2 provides for notification appliances in exit stair enclosures, exit passageways, and elevator cars. Notification appliances are not required in exit stair enclosures, exit passageways, and elevator cars. Visible signals are not required in exit stair enclosures and exit passageways; visible signals are not required in elevator cars. The general purpose of the fire alarm audible and visual notification appliances is to alert occupants that there is a fire condition and for occupants to exit from the building. Once the occupants are in the exit enclosures, high noise levels and light intensity from notification appliances could cause confusion and impede egress. There could be conditions that warrant the
installation of notification appliances in exit passageways, but careful analysis is necessary to avoid
impeding exiting from the building.

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14. Does any firm offer yellow/white led’s with a clear lens?

NFPA 72 does not recognize the use of LEDs as public mode notification appliances. The requirements
for public mode visible alarm signaling are provided in Section 18.5. This section provides the light, color
and pulse characteristic requirements. Flash rate, pulse duration, intensity, listing and photometric
criteria are also provided.

No research has been provided to the Technical Committee for consideration to show that LED
appliances are as effective as strobe appliances for fire alarm signaling.

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15. USACE insist for 72 hours back up. Any comments?

This webinar presentation was based on the 2013 edition of NFPA 72.
Paragraph 10.6.7.2 provides the requirements for secondary power supply capacity. Battery calculations
are required to include a 20 percent safety margin to the calculated amp-hour rating.
The secondary power supply is required to have sufficient capacity to operate the system under quiescent
load (system operating in a nonalarm condition) for a minimum of 24 hours and, at the end of that
period, be capable of operating all alarm notification appliances used for evacuation or to direct aid to the
location of an emergency for 5 minutes. In-building fire emergency voice/alarm communications service
must be capable of operating the system under quiescent load for a minimum of 24 hours and then be
capable of operating the system during a fire or other emergency condition for a period of 15 minutes at
maximum connected load. In a similar manner, in-building mass notification systems must be capable of
operating the system under quiescent load for a minimum of 24 hours and then be capable of operating
the system during emergency condition for a period of 15 minutes at maximum connected load.

The secondary power supply capacity for emergency command centers of a wide-area mass notification
system must be capable of supporting operations for a minimum of 24 hours. Secondary power for high-
power speaker arrays (HPSAs) used for wide-area mass notification systems are required to have
sufficient capacity to operate the unit for a minimum of 7 days in standby, followed by 60 minutes of
operation at full load.

The secondary power supply for textual visible appliances must be sufficient to operate these appliances
for a minimum of 2 hours of continuous display time during an emergency event.
Refer to the UFC 4-021-01, Paragraph 3-6.11, 4-4.5, etc.

NFPA 72 establishes minimum required levels of performance, extent of redundancy, and quality of
installation but does not establish the only methods by which these requirements are to be achieved. It is
possible that the U.S. Army Corps of Engineers (USACE) and other agencies such as the VA, GSA or BIA
or even an engineer or owner could have more stringent requirements.
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16. Can the emergency command center (ECC) be the same as the fire control room?

The emergency command center for emergency communications systems is described in Paragraph 24.6.1. The Code does not prohibit the emergency command center to be the same location as the fire control room. However, the fire control room would likely be a subset of the emergency command center. Note that Paragraph 24.6.1.2 requires many, if not all of the items normally included in the fire control room to be provided. These include the in-building fire emergency voice/alarm communications system, elevator emergency communications systems equipment, status indicators and controls for air-handling systems, fire fighter’s control panel for smoke control systems, etc. The location and accessibility as provided in Paragraph 24.6.1 also provides for the level of security at the emergency command center, 24.6.1.4 for staffing, 24.6.1.1 for location and accessibility, etc.

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17. What separates HPSA from other MNS equipment, dB output?

Chapter 24 addresses three types of mass notification systems: in-building mass notification systems, wide-area mass notification systems and distributed recipient mass notification systems (DRMNSs). High power speaker arrays (HPSAs) are only utilized for wide-area mass notification systems. Paragraphs 24.4.4.4.2, through 24.4.4.4.6 provide the requirements for HPSAs.

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18. I agree with the others previously in that a webinar on risk analysis would be a very welcome offering!

Refer to question and response to 7 above.

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19. Can multiple MNS be implemented in the same area or project or does Chapter 24 stipulate area limitations per MNS?

Chapter 24 addresses three types of mass notification systems: in-building mass notification systems, wide-area mass notification systems and distributed recipient mass notification systems (DRMNSs). In-
building mass notification systems are limited to the building(s). Wide-area mass notification systems could have the capability to communicate with other notification systems provided for a campus, military base, municipality, or similar single or multiple contiguous areas. A distributed recipient mass notification system (DRMNS) is a system meant to communicate directly to targeted individuals and groups that might not be in a contiguous area. All three types could be utilized on the same project; note that Paragraph 24.4.4.4.5 does not permit HFSA notification zones to be used to provide mass notification inside any structures. Paragraph 24.4.4.10 requires a predefined control hierarchy between the wide-area mass notification system and the in-building mass notification system. Audio systems must be coordinated to ensure that audible notification appliances do not interfere with the intelligibility of the mass notification message or that they will not deliver conflicting information to the occupants.

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20. You mentioned that ECS is required by the AHJ or other codes such as the Building Code. How many occupants are needed until ECS is required according to the Building Code?

Paragraph 24.3.3 provides that an emergency communications system is required be installed in occupancies where required by the authority having jurisdiction or by other applicable governing laws, codes, or standards.

The requirement for an in-building fire emergency voice/alarm communications system (EVACS) varies by specific building code or NFPA® 101 Life Safety Code®. It varies by occupancy and building characteristics; it varies by state or jurisdiction as the basic code requirement could be modified or amended; it varies whether the building is new or existing. Further, most codes dictate one be provided if the building is a high-rise building.

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21. Does the text sign need battery backup for just two hours or 24 hours standby and two hours activation?

The secondary power supply for textual visible appliances is required to be in accordance with Paragraph 24.4.4.7.1. This paragraph requires that after loss of primary power, textual visible appliances are to have sufficient secondary power to operate for a minimum of 2 hours of continuous display time during an emergency event.

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22. Which are the current manufacturers of ECS/MNS systems?

Refer to the NFPA’s Buyers’ Guide at http://www.nfpa.org/newsandpublications/nfpa-buyers-guide. This can provide an invaluable source of information to products and services.
Chapter 24 provides requirements for listing of the MNS equipment.

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23. Do voluntary systems have to meet NFPA 72 MNS requirements?

Paragraph 24.3.3 provides the requirements for required emergency communications systems.

Paragraph 24.3.4 provides the requirements for nonrequired (voluntary) emergency communications systems. Nonrequired emergency communications systems and components are required to meet the requirements of Chapter 24 and nonrequired emergency communications systems and components must be identified on the record drawings.

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24. There are some that feel no risk analysis is required for DoD projects because it is believed that UFC 4-021-01 already includes a risk analysis. Do you agree? Although I have seen the requirements for providing a risk analysis in NFPA 72, the current contents of UFC 4-021-01 do not appear to reflect a proper risk analysis, such as selection of minimum pathway survivability.

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Refer to the UFC 4-021-01, Paragraph 4-3.1, 4-3.2.2, 4-4.2, 4-6.1, 4-6.2, 5-4.1, 5-5.2, 5-7.1, 5-7.2, etc.

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25. If a building has an existing fire alarm system and they are looking to add a separate signal for say a weather condition, does this now constitute it becoming a MNS or can there just be a separate tone?

Chapter 24 of NFPA 72 covers the application, installation, and performance of emergency communications systems and their components. These cover one-way emergency communications systems (in-building fire emergency voice/alarm communications systems (EVACS), in-building mass notification systems. wide-area mass notification systems and distributed recipient mass notification systems (DRMNSs)) and two-way, in-building emergency communications systems. Chapter 24 would apply should the fire alarm system in question have voice capability (Chapter 23 applies if the fire alarm system does not have voice capability.)

An in-building fire emergency voice/alarm communications systems (EVACS) installed in accordance with Chapter 24 does not require a risk analysis. The general purpose of the fire alarm audible and visual
notification appliances is to alert occupants that there is a fire condition and for occupants to exit from the building.

As the weather alert is a defined risk, there may not need to be an elaborate risk analysis for the addition of a weather alert message. Flood warning, tornado alert, etc. will require greater consideration. Specific messages must be developed; refer to Paragraph 24.4.1.1. Also refer to Paragraphs 18.3.3.2 and 24.4.3.17 for notification appliances used for signaling other than fire.

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26. Why do HPSAs under NFPA 72 require seven days in standby, plus 60 minutes on full load but the UFC 4-021-01 requires only 72 hours in standby, plus 60 minutes in full load?

Refer to question and response to 15 above.

Chapter 24 was added to the 2010 edition of NFPA 72; Proposal 72-568 provided the work of the Technical Committee. At that time, Chapter 24 was proposed to be Chapter 12. Proposed Paragraph 12.2.3.4.4 provided the recommendation for HPSA secondary power capacity and read as follows:

> 12.2.3.4.4 Secondary power for high power speaker arrays used for wide-area mass notification systems shall have sufficient capacity to operate the unit for a minimum of seven days being in standby followed by sixty minutes operation at full load.

Only with slight editorial changes to the text, Paragraph 12.2.3.4.4 was issued as Paragraph 24.4.4.2.2. The Technical Committee proposed the seven day standby requirement to ensure continued operation in remote areas in the event of a sustained power outage during an emergency. There were no comments indicating that the seven days was excessive or that it did not correlate with the UFC 4-021-01 requirements.

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27. Engineering design firms in our industry continue to side-step use of NFPA 170 mandated requirements for symbols use. How can we bring them around?

NFPA 72, Chapter 7 is new to the 2013 edition of the Code. Paragraph 7.2.3 is new and requires all fire alarm drawings to use symbols described in NFPA 170, *Standard for Fire Safety and Emergency Symbols*, or other symbols acceptable to the authority having jurisdiction. It was issued by the Standards Council on August 9, 2012, with an effective date of August 29, 2012. As jurisdictions adopt the 2013 edition, compliance with Paragraph 7.2.3 will be enforced and NFPA 170 will be used or special permission will be provided by the AHJ that other symbols will be acceptable.

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28. Page 65, can manufactures make cover plates to cover existing visible devices?

I presume that the question pertains to slide 65 of the presentation that summarizes the requirements of Paragraph 24.4.3.17.7 which provides that strobes used solely for mass notification must have the word “ALERT” stamped or imprinted on the appliance and be visible to the public. The Code is specific that the word “ALERT” must be located on the appliance. Paragraph 24.4.3.17.4 provides for existing notification appliances.

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