

Unlocking the Code -

The key to meeting Joint Commission requirements is
in properly interpreting and understanding NFPA codes



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Today's Moderator



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Today's Presenter

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Esteban Cota is a National Business Manager for Fire Safety and Security Services with Siemens Industry, Inc. With more than 20 years of experience working in the healthcare industry, Cota has worked in roles from the field technical level and project engineering to program management, and service and sales operations. His experience spans hands-on testing and installing systems to selling systems, along with engineering to business development roles creating programs targeted at the healthcare industry. He is a member of the NFPA 72 Chapter 14 Test and Inspection Technical Committee, as well as a member of the American Society for Healthcare Engineering (ASHE), the International Association for Healthcare Security & Safety (IAHSS), the National Fire Protection Association (NFPA), and the Texas Association of Healthcare Facilities Management (TAHFM).

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Today's presenter is currently employed by Siemens, which manufactures the technology referenced in this presentation.

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EC.02.03.05
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Warning Signals



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Agenda



- Overview / Objectives
- Background
- Understanding the Standard Requirements
 - EP1
 - EP3
 - EP4
 - EP5
- Fire Safety Service Agreements
- After Testing is Complete
- Conclusion

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Overview

- The healthcare industry has been experiencing an unprecedented amount of attention from The Joint Commission (TJC) concerning fire and life safety issues.
- It is critical for hospital facility directors to be familiar with the code requirements themselves and knowledgeable about their interpretation.
- Hospitals face potential cost due to inappropriate code interpretation.



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Objectives

- Review some of the most challenging requirements outlined in EC.02.03.05.
- Review corresponding NFPA codes and standards.
- Discuss best practices for demonstrating compliance with the code.



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Background

- ❑ EC.02.03.05 addresses requirements for maintenance, testing, and inspection of fire safety equipment and building features.
- ❑ Standard EC.02.03.05 repeatedly makes The Joint Commission's top ten list of most frequently-cited standards.
 - ❑ 6th most frequently-cited standard in hospital surveys in 2013.
 - ❑ 44% of hospitals non-compliant in 2013 (up from 2012).



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Background

- ❑ NFPA 72, National Fire Alarm Code®[®], in it's entirety, is a mandatory requirement as referenced in Chapter 2 of NFPA 101 Life Safety Code, 2000 Edition.

2.1 The following documents or portions thereof are referenced within this Code as mandatory requirements and shall be considered part of the requirements of this Code.

The numbers in parentheses represent the paragraph numbers from chapters of this Code that reference the given publication in a mandatory way.

NFPA 72, National Fire Alarm Code®[®], 1999 edition.

[7.2.1.8.2(3), 7.2.1.9.2(4), 8.2.4.4.3, 8.3.5.2, 8.3.5.2 Exc. No.

*2,8.3.5.3, 9.6.1.4, **9.6.1.7,***

9.6.3.4, 9.6.3.5, 9.6.3.6, 9.6.3.7 Exc. No. 2, 9.6.3.10, 9.6.4,9.6.5.4,

9.7.2.1, 11.8.3.2, 14.3.4.2.3(1), 15.3.4.2.3(1), 22.3.4.1.2, 22.3.7.9,

23.3.4.1.2, 23.3.7.9, 32.3.3.4.8]



9.6.1.7 To ensure operational integrity, the fire alarm system shall have an approved maintenance and testing program complying with the applicable requirements of NFPA 70, National Electrical Code, and NFPA 72, National Fire Alarm Code.*

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Background

- ❑ Most challenges related to staying in compliance can be mitigated through:
 1. Better understanding of standard requirements (knowing the code).
 2. Entering into fair and equitable service agreements with industry vendors.
 3. Ability to demonstrate an understanding of the vendor's testing and inspection documentation.



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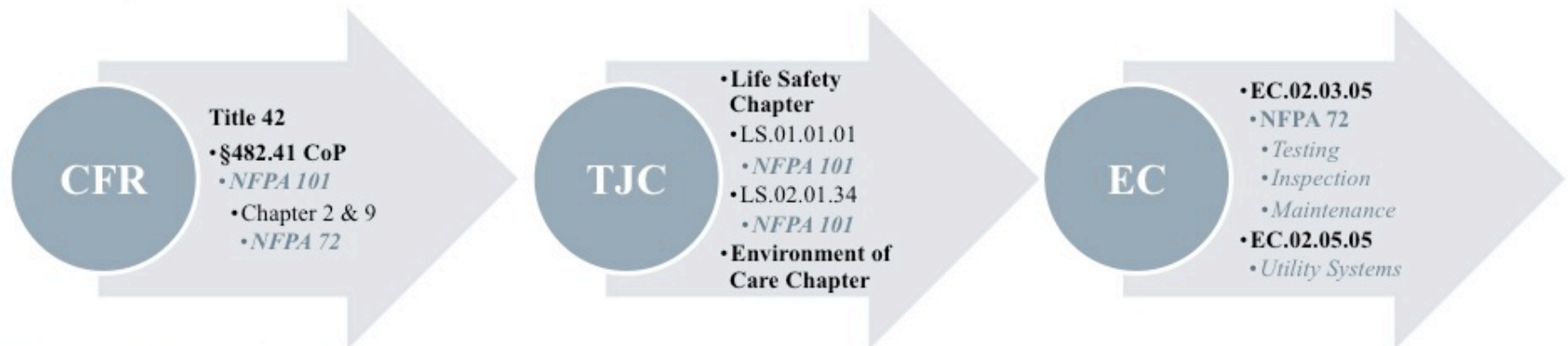


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1 Understanding Standard Requirements A Closer Look at Standard EC.02.03.05

- ❑ EC.02.03.05 consists of Elements of Performance tasks, or Eps.
- ❑ EPs cover the maintenance, testing, and inspection of fire safety systems.
- ❑ A thorough understanding of NFPA code requirements is key to understanding TJC requirements and ensure full compliance.



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1 Understanding Standard Requirements Standard EC.02.03.05 – EP1

- ❑ **EC.02.03.05-EP1:** “At least quarterly, the hospital tests supervisory signal devices (except valve tamper switches). The completion date of the tests is documented.”
- ❑ Areas for Discussion:
 - Definition of Supervisory Signal Devices
 - Types of Supervisory Signal Devices
 - Duct smoke detectors programmed to initiate as supervisory signal



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1 Standard EC.02.03.05 – EP1 Definition of Supervisory Signal Devices

- A “Supervisory Signal Device:”
 - Is “an initiating device, such as a valve supervisory switch, water level indicator, or low air pressure switch on a dry-pipe sprinkler system in which the change of state signals an off-normal condition and its restoration to normal of a fire protection or life safety system; or a need for action in connection with guard tours, fire suppression systems or equipment, or maintenance features of related systems.”
- Shall be tested on a **quarterly** basis, except for control valve switches.



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1 Standard EC.02.03.05 – EP1 Types of Supervisory Signal Devices

- There are five types of initiating supervisory signals:
 - Control valve switch
 - High- or low-air pressure switch
 - Room temperature switch
 - Water level switch
 - Water temperature switch

- This list of supervisory signals is not comprehensive - does not preclude the hospital from testing any other Supervisory Signals.



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1 **Standard EC.02.03.05 – EP1** **Duct Smoke Detectors Initiating as Supervisory Signal**

- Duct smoke detectors can be programmed to initiate to the fire alarm panel as a Supervisory Signal – quarterly test (per EP1) or annual test (per EP3).
- NFPA 72, 2010 edition: duct detectors that are programmed as supervisory initiating devices are not “supervisory devices” but they initiate a supervisory signal at the FACU.
- Duct detectors should be listed under EP3, not EP1, and tested on an annual basis.



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1 Understanding Standard Requirements Standard EC.02.03.05 – EP3

EC.02.03.05-EP3: “Every 12 months, the hospital tests duct detectors, electro-mechanical releasing devices, heat detectors, manual fire alarm boxes, and smoke detectors. The completion date of the tests is documented.”

Areas for Discussion:

- Electromechanical releasing devices
- Classification and testing requirements for magnetic door holders



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1 Standard EC.02.03.05 – EP3 Electro-Mechanical Releasing Devices

- ❑ NFPA 72 1999 edition: electro-mechanical releasing devices are classified as initiating devices similar to smoke detectors, heat detectors, and manual pull stations.
- ❑ Electro-mechanical releasing devices shall be tested on an annual basis.
- ❑ There are two types of electro-mechanical releasing devices: non-restorable link type and restorable link type.
- ❑ Appendix A Explanatory Material: for the restorable link type, it is a fusible thermal link detector used to close fire dampers, and fire dampers are actuated by the presence of external heat.



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1 Standard EC.02.03.05 – EP3 Magnetic Door Holders

- Magnetic door holders are often wrongly classified as electro-mechanical releasing devices.
- TJC is looking for documentation as part of EP3 – however, there is no specific EP for magnetic door holders.
- Testing of magnetic door holders should fall under the classification of auxiliary functions or building safety features of the fire alarm system.
- TJC considers magnetic door holders and security magnetic locked doors to be included as part of EP3.*



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1 Understanding Standard Requirements Standard EC.02.03.05 – EP4

- EC.02.03.05-EP4:** “Every 12 months, the hospital tests visual and audible fire alarms, including speakers. The completion date of the tests is documented.”
- Areas for Discussion:
 - Definition
 - Documentation of test results
 - Labeling and inventories
 - Finding the right time for testing activities



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1 Standard EC.02.03.05 – EP4 Definition

- NFPA 72 classifies a visual and audible fire alarm, including a speaker, as a notification appliance.
- NFPA definition of notification appliance: a fire alarm system component, such as a bell, horn, speaker, light, or text display that provides audible, tactile, or visible outputs, or any combination thereof.
- Testing frequency of a notification appliance: **Annually.**



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1 Standard EC.02.03.05 – EP4 Documentation of Test Results

- General statements, such as “all notification appliances tested,” are not sufficient.
- Each device has to be listed separately, indicating whether it passed or failed the test.
- Complete inventory of notification devices serves as baseline for testing.



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1 Standard EC.02.03.05 – EP4 Labeling and Inventories

- Labeling each field notification device is a recommended best practice.
 - Faster and more accurate recording of test results
 - “Closes the loop”
- Inventory requirements are not specifically stated in EC.02.03.05 but are expected by The Joint Commission.



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1 Standard EC.02.03.05 – EP4 Finding the Right Time for Testing Activities

- Finding the right time to perform test and ensure duration of test complies with code requirements is challenging in a hospital environment.
- Advanced planning, as well as a documented and well-coordinated effort by the hospital, its staff, and the vendor, is required.



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1 Understanding Standard Requirements Standard EC.02.03.05 – EP5

- EC.02.03.05, EP5:** “Every quarter, the hospital tests fire alarm equipment for notifying off-site fire responders. The completion date of the tests is documented.”
- Areas for Discussion:
 - NFPA code requirements and test methods



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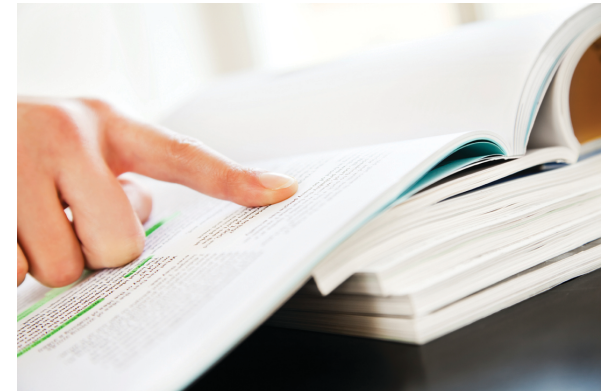
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1 Standard EC.02.03.05 – EP5 NFPA Code Requirements and Test Methods

- Required testing frequency: Quarterly
- Properly testing “off premise notification” equipment

NFPA 72 Table 7-2.2(9) Test Methods: Initiating device shall be actuated and receipt of alarm signal at the off-premises location shall be verified. A trouble condition shall be created and receipt of a trouble signal at the off-premises location shall be verified. A supervisory device shall be actuated and receipt of a supervisory signal at the off-premises location shall be verified. If a transmission carrier is capable of operation under a single or multiple fault condition, an initiating device shall be activated during such fault condition and receipt of a trouble signal at the off-premises location shall be verified, in addition to the alarm signal.



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1 Standard EC.02.03.05 – EP5 NFPA Code Requirements and Test Methods

Documenting the elapsed time to central station

Table 7-2.2(16) applies for Digital Alarm Communication Transmitters (DACT): *The maximum elapsed time from sensing a fire alarm at an initiating device or initiating device circuit until it is recorded or displayed at the proprietary supervising station shall not exceed 90 seconds and trouble signals shall be within 200 seconds.*

Testing the phone lines

5-5.3.2.1.4: *A DACT shall have the means to satisfactorily obtain a dial tone; dial the number(s) of the Digital Alarm Communication Receiver (DACR); and obtain verification that the DACR is able to receive signals, transmit the signal, and receive acknowledgment that the DACR has accepted that signal. In no event shall the time from going off-hook to on-hook exceed 90 seconds per attempt.*



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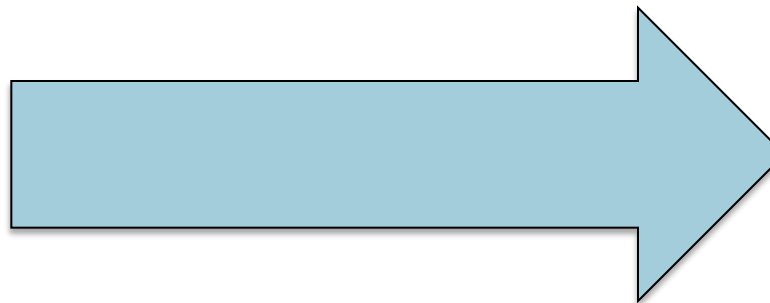


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2 Fire Safety Service Agreements NFPA Code Requirements and Responsibilities

- ❑ NFPA 72 Scope is the MINIMUM.

7-1.1.1 Inspection, testing, and maintenance programs shall satisfy the requirements of this code, shall conform to the equipment manufacturer's recommendations, and shall verify correct operation of the fire alarm system.

- ❑ Task may be performed by owner if they meet the requirements of the code (if qualified).
- ❑ If tasks are to be performed by a vendor, a written service contract must be in place.

7-1.2.1 Inspection, testing, or maintenance shall be permitted to be done by a person or organization other than the owner if conducted under a written contract. Testing and maintenance of central station service systems shall be performed under the contractual arrangements specified in 5-2.2.2.

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2 Fire Safety Service Agreements NFPA Code Requirements and Responsibilities

- ❑ NFPA 72 states the owner is responsible for ensuring all testing, visual inspections, and maintenance.

7-1.2 The owner or the owner's designated representative shall be responsible for inspection, testing, and maintenance of the system and alterations or additions to this system. The delegation of responsibility shall be in writing, with a copy of such delegation provided to the authority having jurisdiction upon request.

- ❑ Visual inspections and maintenance have different frequencies requirements than testing.

7-3.1 Visual Inspection. Visual inspection shall be performed in accordance with the schedules in Section 7-3 or more often if required by the authority having jurisdiction. The visual inspection shall be made to ensure that there are no changes that affect equipment performance.*



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2 Fire Safety Service Agreements NFPA Code Requirements and Responsibilities

- Maintenance per Manufacturer's Instructions.
- Frequency NOT defined in NFPA 72.

7-4 Maintenance.

7-4.1 Fire alarm system equipment shall be maintained in accordance with the manufacturer's instructions. The frequency of maintenance shall depend on the type of equipment and the local ambient conditions.

7-4.2 The frequency of cleaning shall depend on the type of equipment and the local ambient conditions.

- CMS Waiver for alternate maintenance does not apply §482.41(c)(2).

"Hospitals are expected to maintain equipment inventories and documentation of their maintenance activities. Federal or State laws and regulations (including Life Safety Code requirements adopted as part of Federal regulations) may require that equipment maintenance activities (i.e., maintenance, inspection, and testing) be performed in accordance with the manufacturer's recommendations or may establish other maintenance requirements. In these instances, the hospital must be in compliance with the most stringent maintenance requirements mandated."



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2 Fire Safety Service Agreements NFPA Code Requirements and Responsibilities

Service Personnel Qualifications

- Includes testing, visual inspections, maintenance, and repairs

7-1.2.2 Service personnel shall be qualified and experienced in the inspection, testing, and maintenance of fire alarm systems.

Examples of qualified personnel shall be permitted to include, but shall not be limited to, individuals with the following qualifications:

- 1. Factory trained and certified*
- 2. National Institute for Certification in Engineering Technologies fire alarm certified*
- 3. International Municipal Signal Association fire alarm certified*
- 4. Certified by a state or local authority*
- 5. Trained and qualified personnel employed by an organization listed by a national testing laboratory for the servicing of fire alarm systems*



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2 Fire Safety Service Agreements Recommendations and Best Practices

- Performing work on “time and material” basis may put hospital at risk.
- Thoroughly read and understand your service agreement - address any questions or concerns with the vendor upfront.
- Take ownership of the service agreement; provide oversight for the actual work performed by the vendor.



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2 Fire Safety Service Agreements Recommendations and Best Practices

Responsibility begins early in the process

- During the completion of new system, the Record of Completion document requires for a written service agreement to be in place prior to the AHJ giving TCO of the building to the owner.

Excerpt from NFPA 72 Record of Completion Form

Figure 1-6.2.1 (Continued)

	Organization name/phone	Representative name/phone
Installer	_____	_____
Supplier	_____	_____
Service organization	_____	_____
Location of record (as-built) drawings: _____		
Location of owners manuals: _____		
Location of test reports: _____		
A contract, dated _____, for test and inspection in accordance with NFPA standard(s) No(s). _____, dated _____, is in effect.		

1-6.2.1 A record of completion (Figure 1-6.2.1) shall be prepared for each system. Parts 1, 2, and 4-10 shall be completed after the system is installed and the installation wiring has been checked. Part 3 shall be completed after the operational acceptance tests have been completed. A preliminary copy of the record of completion shall be given to the system owner and, if requested, to other authorities having jurisdiction after completion of the installation wiring tests. A final copy shall be provided after completion of the operational acceptance tests.*

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3 After Testing is Complete – Understanding Testing and Inspection Documentation

- Review the documentation for accuracy and completeness.
- Address any errors or omissions (verification or retest).
- Ensure facility staff has a good understanding of test performed and is familiar with documentation.
 - Use vendor's sample test reports to run a mock survey with hospital's facility staff.
 - Schedule regular quality review meetings with vendor to walk through paperwork.



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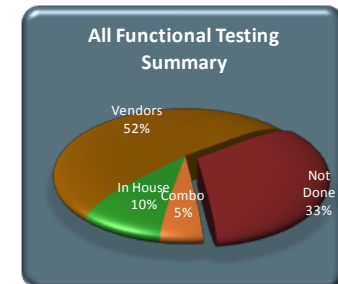
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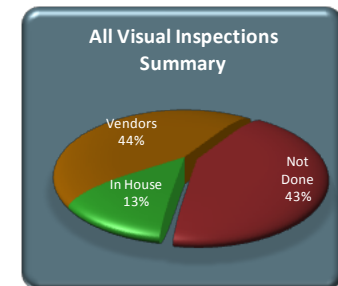
Conclusion

- Take a comprehensive approach - perform a gap analysis to identify strengths and potential weaknesses.
- Create a complete inventory of all fire safety equipment systems in the facility:
 - Understand how these systems interface with each other.
 - Understand specific maintenance, inspection, and testing requirements for each system.

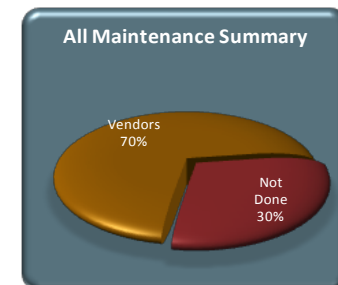
Sample Gap Analysis Report



33 % of functional testing not being performed



43 % of visual inspections not being performed



30 % of maintenance not being performed

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Conclusion (cont'd)

- Perform a gap analysis of all your fire safety systems to determine which tasks a hospital's maintenance staff might perform in-house vs. outsource.
 - Does the staff have the proper technical knowledge and training as prescribed by each relevant NFPA standard?
 - If not, evaluate the on-going training cost to keep staff abreast of any changes to the systems and codes.
- Find a vendor who will partner with your organization and understands the organization's goals and objectives related to maintaining compliance with The Joint Commission's accreditation standards.



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Conclusion (cont'd)

- ❑ Topics to cover during the interviewing process with the vendor:
 - ❑ Ask about the vendor's knowledge of fire safety equipment.
 - ❑ Ask about the vendor's knowledge of The Joint Commission's standards.
 - ❑ Ask about vendor's knowledge on not just local requirements, but all state and federal requirements.
 - ❑ Evaluate the vendor's final deliverables—the documentation.
 - ❑ Ask potential vendors how they plan to help manage the hospital's fire protection program and stay in regulatory compliance with The Joint Commission and any other AHJ.



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Conclusion (cont'd)

- ❑ Organizing and maintaining the hospital's report documentation is essential.
- ❑ How the reports are organized—whether by buildings, systems, or each individual Element of Performance—is critical.
- ❑ During a survey, hospital facility directors and their staff should be able to provide and explain requested information with confidence and assurance.
- ❑ A better understanding of NFPA codes and requirements enables hospital facility directors to more effectively evaluate and work with industry vendors, as well as ensure accurate, complete, and properly-maintained documentation.



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