Presentation Learning Objectives

- Why would an owner wish to delay or prevent fire alarm notification activation?
- What are the three Code-allowed options for delaying the activation of notification?
- What are the specific Code requirements and critical considerations when considering delaying notification activation?
- When should fire alarm activation never be delayed?
WHY DELAY OR PREVENT NOTIFICATION ACTIVATION?

Why Delay or Prevent?

What is the real question:
- Why should I delay or prevent fire alarm notification?
- How can I never hear from my fire alarm system again?
So, Is Every Fire Alarm Activation a False Alarm?

- In 2009: 2,177,000 False Alarm calls vs. 1,348,500 Actual Fire calls

Why Delay or Prevent?

Ratio of False Alarm to Real Fires

Since 2009...
So, Is Every Fire Alarm Activation a False Alarm?

- March 2014 Report covering Sweden, England, Germany and Switzerland reported:

95% False Alarms Vs. 5% Real Alarms

The Owner’s Perspective...Why No Nuisance Alarms?

- Loss of Production Cost
- Loss of Revenue / Profit
- Danger/Consequence of Evacuation
- Reputation

So, What Occupancies Can Benefit from Delayed Notification?
Majority of all Fire Alarm Systems

- Automatic Occupant Notification / General Alarm
  - 10.11.1: Actuation of alarm "shall occur within 10 seconds after the activation of an initiating device."
  - 10.11.2: All types of notification appliances "shall be activated and deactivated as a group unless otherwise required by an ECS emergency response plan."

- Subsequent Actuation
  - 10.12.5: Subsequent actuation of another device "shall cause the notification appliances to reactivate."

Purposefully Delayed Notification

PRESIGNAL NOTIFICATION

What is Presignal?

- Immediate Transmission to Central Location
- No Automatic Fire Alarm Notification
- Dispatch of First Responders
- Potential for Additional Verification of Alarm (Video?)
- On-site Investigation of Alarm
- Local Command Center/FACU Response
- Investigation of Alarm Condition
- Determine Required Response
- System Reset?
Presignal Feature Requirements – Section 23.8.1.1
- Must be approved by the AHJ (23.8.1.1.1)
- Must be detailed in the shop drawing submittal (7.4)
- Additional documentation, like a memorandum of understanding or code variance, may need to be executed.

Requirements

Presignal Notification

“Central Location”
- Fire alarm signal must be immediately initiated at:
  - Department Office
  - Control Room
  - Fire Brigade Station
  - Other ‘constantly attended’ location
- Central location could be local or remote
- AHJ must take into account the time involved from alarm initiation to receipt by the central location
- What is the additional time for actual fire service response?

Presignal Notification

Notification Activation
- “Human action that activates the general fire alarm”
  - Special Signage
  - Manual Protection
  - Special/Specific Programming
- “A feature that allows the control equipment to delay the general alarm more than 1 minute after the start of the alarm processing.”

Presignal Notification
Approval Considerations
- AHJ takes on significant responsibility with the potential delay in notification and evacuation!
- Code demands NO time limit on delay prior to “human action”
- Approval usually limited to:
  - Occupancies that have localized and rapid fire service response
  - Specific and defined emergency response procedures
  - Large occupancies where occupants would be significantly affected, often adversely
- Use of Presignal is extremely limited and subject to much scrutiny

Cautions
- Presignal applies to an ENTIRE fire alarm system (control unit)
- All initiating devices are either automatic alarm or presignal
- Sub-divided areas of a building are not permitted to be presignal while remaining areas are automatic alarm
  - Confusing to occupants
  - Confusing to responding fire service
  - Detrimental to emergency response

Confusion with Alarm Verification
- Alarm Verification (23.8.5.4.1)
  - Only delays the alarm signal for 60 seconds or less
  - Specific to individual smoke sensors / locations subject to nuisance alarms
  - Requires no human intervention
- When presignal is approved, NO other Code-approved delays are normally allowed, including:
  - Alarm verification
  - Cross-zoning
  - Positive Alarm Sequence
What is Positive Alarm Sequence?

- No Immediate Transmission to Central Location (Supervising Station)
- No Automatic Fire Alarm Notification

Activation of Positive Alarm Sequence:

- Acknowledge Alarm in 15 Sec.
- Must, Activate Notification and Alarm Transmission.

On Site Investigation of Alarm:

- 180 Seconds to Investigate
- Reset Required or Activation Determined Required Response:

- No Response = Activation
- Real Alarm? How activates?
- System Malfunction?
Positive Alarm Sequence

Could be called semi-delayed notification

- Notification appliances will be activated if the proper response is not provided

Approval Considerations

- AHJ needs to understand the exact sequence to be used.
- Where is the alarm annunciated, and thus acknowledged?
- Facility Emergency Response Plan includes PAS?
- What risks are involved with the potential delay of notification?

Occupancies that may benefit from PAS

- Large factory production / assembly lines
- Stadiums / Arenas
- Professional Theaters
- Medical Operating Rooms (not including Private Mode)
Positive Alarm Sequence

Customized Options Available

- Code allows only certain devices
- Sub-divided sections of a building
- Programmed options to activate and deactivate at specific times

Trained Personnel

- Investigation must be done by trained personnel (23.8.1.2.1.1(3))
- This term is undefined by NFPA 72
- As such, trained personnel should:
  - Be thoroughly familiar with the facility
  - Understand the programmed sequence
  - Ability to distinguish specific fire alarm devices and what activates them
  - Be able to make an accurate, thorough decision regarding the situation
- Staffing must be fully explained to the AHJ

DETECTOR CROSS-ZONING

Purposefully Delayed Notification
Detector Cross-Zoning

What is Detector Cross-Zoning?

Initial Fire Alarm
Immediate Transmission to Central Location
- No Automatic Fire Alarm Notification

Dispatch of First Responders
Activation of Second Alarm in the Same Space
Immediate Activation of Fire Alarm Notification
Activation of Other Emergency Controls (Suppression, Smoke Control, etc.)?

Determine Required Response
What if second activation is in a different space?
Programming of Sprinkler Waterflow with Automatic Alarm?
Manual Activation of Alarm?

Detector Cross-Zoning Requirements – Section 23.8.5.4.3

- Must be approved (not prohibited) by the AHJ (23.8.5.4.3(1))
- Should be detailed in the shop drawing submittal (not specifically required)
- Alarm verification feature is prohibited

Most commonly used for suppression releasing systems
- Two automatic detectors can be a pre-requisite for:
  - Alarm response
  - Suppression release
- Requires a very specific set of circumstances
Detector Cross-Zoning

Very specific circumstances:
- Must be at least two automatic detectors in EACH protected space!
- Detector spacing must be reduced.

Detector Cross-Zoning

Issues
- Cost prohibitive to install
- Very difficult to program
- Extremely difficult to perform acceptance and periodic testing

Purposefully Delayed Notification

PURPOSEFULLY DELAYED FIRE ALARM NOTIFICATION
Purposefully Delayed Notification

- Weigh the Risks:
  - Pre-signal
  - Positive Alarm Sequence
  - Cross-zoning

- Delayed Notification
- Occupant Risk

- Quality of Alarm System
- Time of Manual Activation
- Building Fire
- On-Site Fire Attackers
- Responsible Decision Maker

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Purposefully Delayed Notification

- Not an option for a fire alarm system that has shown itself to be prone to nuisance alarms!
  - Systems using delayed notification must be MORE reliable!
  - Nuisance alarms should be corrected/eliminated prior to implementation of delayed notification.
  - Never in sleeping occupancies!

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Purposefully Delayed Notification

- The AHJ and Emergency Response Plan
  - Risk Analysis
  - Clear Understanding of Fire Response
  - Add Up the Delays
  - Emergency Response Plan
    - Address Who Is Responsible?
    - Clear Decision Points?
    - Primary and Secondary "Central Location"
    - What Ifs...
Delayed Notification is a Strategy

Use it Wisely!

QUESTIONS?

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