Existing Assembly Occupancy Inspections

Fall 2011

Introduction

• Course Overview
  – Part 1 Background / Concepts
    – Part 2 Life Safety Inspection Issues
    – Part 3 Case Study

Concepts

• Public assembly occupancies are characterized;
  – Gathering of a large number of people in one place
  – Higher density of occupants
  – More people more risks
  – ICC uses A1 - A5 to distinguish this occupancy
Concepts

– People who do not often use the building will not be familiar with:
  • Exiting locations
  • Egress paths
  • Other safeguards present

– High occupant densities, low level lighting & loud sounds impact physical movement and behavior of people

Concepts

– Suspension of reality & distractions

– A scheduled & planned assembly event
  • Concert in a public assembly venue
  • Over attendance

– A spontaneous occurring event / party
  • Rave party inside an old factory / warehouse

Concepts

– Herd Behavior
  • Validation

– Escape the way you came
  • Known path
  • Unknown path

– Relationship & Interaction of Concepts
Concepts

Problems:

- Large numbers of people
- Lack of familiarity with surroundings
- Light conditions
- Walking conditions
- Distractions
- Conditions for Panic and Crushing
- Simultaneous Occupancies

Concepts

• Fire Deaths - History (NFPA)
  - Iroquois Theater – 602 dead
  - Rhythm Club – 207 dead
  - Hartford Circus – 168 dead
  - Happy Land Social Club – 87 dead
  - Cocoanut Grove Nightclub – 492 dead
  - Beverly Hills Supper Club – 168 dead
  - Station Night Club – 100 dead

Concepts

• Non – Fire Incidents
  - Overcrowding
  - The “WHO” concert Cincinnati, Ohio
  - Charity basketball game, NYC
  - Chemical release E2 Night Club Chicago
Concepts

• Crowd Categories – NFPA
  – Besides the threat of fire, crowd types have been identified as contributing to injury and death in public assembly occupancies

Concepts

• Crowd Categories – NFPA
  – Three general categories of possible dangerous crowd situations have been identified:
    • Critical Occupancy
    • Flight Response
    • Craze

Concepts

• Crowd Categories – NFPA
  – Critical Occupancy
    • Gradual accumulation & overcrowding of a pedestrian space
    • Begins at below 3 sq. ft./person to 1.5 sq. ft/person
    • Events where ingress & assembly are not controlled
    • Escalators where discharge end space restricted
    • Festive seating
Concepts

• Space and Movement
  – 2.2 sq. ft. personal space
  – 3 sq. ft. movement stops
  – 5 sq. ft. shuffling
  – 7 sq. ft. free gait
• Personal Space Bubble

Concepts

• Crowd Categories – NFPA
  – Flight Response
    • When people are fleeing a real or perceived threat
    • May be called panics, stampedes
    • Closer examination shows that rapid crowd movements were a reasonable reaction

Concepts

• Crowd Categories – NFPA
  – Flight Response
    • Fatalities may occur when egress facilities are overwhelmed by the sudden rush and are restricted or blocked
    • People in back do not see people in front
Concepts

- Crowd Categories – NFPA
  - Craze
    - A competitive rush to get something valuable
    - When spectators attempt to gain entry to a popular event
    - Can happen when ingress facilities such as doors, ticket collection or other people's movements in the path between the crowd and its objective are overwhelmed
    - WHO Concert
    - WAL-MART on Black Friday Long Island, N.Y.

Concepts

- Overcrowding Deaths – NFPA (Stadia)
  - Hillsborough Stadium, England 1989
    - Large unexpected crowd
    - Overwhelmed turnstile capacity causing a back-up of crowd outside stadium
    - Gates opened to terrace to avoid crowd rush
    - Overcrowding on terrace and railing failure resulted in 96 deaths and more than 400 injuries

Concepts

- Overcrowding Deaths – NFPA (Stadia)
  - Structural Issues
  - Porch & Terrace Collapses
  - Hyatt Regency Sky Bridges, Kansas City
Concepts

• Overcrowding Deaths – NFPA
  – Stairs
    • Stairs of any kind are dangerous places to accumulate crowds
    • Stairs are narrow platforms for standing, any pressure from rear can cause a chain reaction falls & lethal pile-ups

Concepts

• Stairs cont.
  – Stairs often the weak link in pedestrian movement
  – Aisle stairs vs. Regular stairs
  – Slow movement for all but more acute for:
    • Elderly
    • Children
    • Handicapped

Concepts

• Overcrowding Deaths – NFPA (Stairs)
  – City College of NY Gymnasium 1991
    • Large crowd for celebrity basketball game
    • Gym quickly filled
    • Code compliant doors closed to prevent additional entries
    • Inside people lined up on the stairs were driven into the lower level landing & jamming into closed doors
    • 9 deaths 28 injuries
Concepts

• Overcrowding Deaths – NFPA (Flight)
  – Incidents triggered by fires, explosions, unusual weather or events that are perceived as a threat to personal safety i.e. gunfire
  – Includes misinformation when there is no real threat

Concepts

• Overcrowding Deaths – NFPA (Flight)
  – E2 Nightclub, Chicago 2003
    • Large crowd on 2nd floor dance floor
    • Altercation prompted use of mace pepper spray choking some occupants
    • Chemical irritant entered building’s HVAC

Concepts

• Overcrowding Deaths – NFPA (Flight)
  – E2 Nightclub, Chicago 2003
    • Rumors spread it was a terrorist act with poison gas
    • Caused hundreds of occupants to rush towards the exit
    • Stampede ensued
    • 11 Code violations cited in past inspection
Concepts

- Overcrowding Deaths – NFPA (Flight)
  - E2 Nightclub, Chicago 2003
    - Glass entrance doors at bottom of stairwell opened inward
    - Crowd rushed a 54 inch stair to leave
    - A pile-up resulted in the entrance lobby 11 x 12
    - 21 dead 85 injured

Concepts

- Factors affecting life safety (NFPA)
  - Capacity & maintenance of the means of egress
  - Fire resistance of the building
  - Interior finish
  - Fire suppression systems
  - Crowd management
  - Method of altering occupants
  - Lighting

Concepts

- Factors affecting life safety
  - Crowd Management – Leadership
    - Eddie Foy – Iroquois Theater
    - Stage hands / bus boys – Beverly Hills Supper Club
    - Titanic Band
    - Indiana State Fair
Concepts

• Staff Crowd Managers
  – Part V CSFSC / CSFPC 20.1.4.5
    • OL > 1000; ratio 1/250; exceptions
  – Part of Life Safety System
  – Training
  – Duties

Concepts

• Staff Crowd Managers cont.
  – What’s the plan to get everyone’s attention?
    • Can they turn the lights on?
    • Can they turn the music/sound off?
    • How quickly can this happen?
      – It only takes seconds for fire to spread
    • Is there a spot where you can see the entire room?
    • Who’s designated to take action?

Concepts

• Intelligence Gathering for Events
  – Media
  – Posters
  – Web
  – Twitter
  – Face Book
  – Your kids / first responders
Concepts- Statutes

• CGS 29-305
  - (a) allows inspection by each LFM and the SFM in the interest of public safety on anything the Fire Safety or Fire Prevention Codes regulate
  - (b) requires LFM to conduct inspection once per year or as often as prescribed by the SFM a set in subsection (e)

Concepts- Statutes

• CGS 29-305 cont.
  - (c) requires the SFM to inspect a building or facility within the SFM’s jurisdiction, reported by an authentic source to have a hazard to life safety from fire

Concepts- Statutes

• CGS 29-305 cont.
  - (d) requires the LFM to inspect a building or facility within the LFM’s jurisdiction, reported by an authentic source to have a hazard to life safety from fire
Concepts - Statutes

• CGS 29-305 cont.
  – (d) further requires on each case where the LFM conducts an inspection, the LFM shall be satisfied that all pertinent statutes and regulations are complied with
  – The LFM must keep a record of such investigations

Concepts - Statutes

• CGS 29-305 cont.
  – (d) allows a right of entry for the LFM or a designee at all reasonable hours into or upon any premises under the LFM’s jurisdiction

Concepts - Statutes

• CGS 29-305 cont.
  • (d) Special limits
    – 9 a.m. – 5 p.m. inspections allowed on occupied dwellings and habitations unless its an emergency
    – NOTE – No limit on inspections in common use passageways, rooms in tenement houses, hotels and rooming houses
Concepts - Statutes

- CGS 29-305 cont.
  - (e) allows the SFM to adopt amendments to the State Fire Safety and Fire Prevention Codes regarding frequency of inspection requirements on all but three or more family occupancies if the interest of public safety can be met by less frequent inspections.

Concepts - Statutes

- CGS 29-305 Inspection by LFM
  - Upon receipt by the LFM from an authentic source (CO) that any building within their jurisdiction is hazardous to life from fire, the LFM shall inspect such building.
  - RT of entry at all reasonable hours.

Concepts - Statutes

- CGS 29-306 Abatement of fire hazards
  - (a) requires the LFM to order the remedy of enumerated fire hazards found in any building or premises.
  - Further allows a penalty of $100, three months incarceration or both against any person who violates the order.
Concepts - Statutes

• CGS 29-306 cont. – Notification
  – (b) requires the LFM to notify the prosecuting attorney if the owner or occupant fail to abate a hazard as reasonably ordered by the LFM
  – (b) further requires the SFM to be notified of the referral to the prosecutor
  – (c) allows civil injunction to close or restrict use

Concepts - Statutes

• CGS 29-306 cont. – Order to vacate
  – (c) allows LFM or PO to order any building vacated, where one or more of the enumerated violations exist, and the LFM or PO determine that there exists in the building a risk of death or injury
  – They are known as the “five deadly sins” and include;

Concepts - Statutes

• CGS 29-306 (c) cont.
  – Blocked, insufficient or impeded egress
  – Required fire protection or warning system shut-off or maintenance failure
  – Un-permitted flammable or explosive materials or in excess of permitted quantities
  – Use of any fireworks/pyrotechnic device w/o a permit
  – Exceeding occupancy limit established by FM
Concepts

• Immediate Jeopardy
  – Policy Directive # 10 - CGS 29-306 (c)
  – Restricting the Use of a Building
  – Immediate Hazard

Concepts

• Immediate Jeopardy cont.
  – People already dying
  – Death / injury imminent
  – Consequences of inaction exacerbates the problems

Concepts –Directive 10

• Policy Directive 10 – Case Study
  – Effective May 1, 2009
  – Restricting use of a building
    • Immediate hazard
    • 5 Deadly sins
    • Correction > 4 hours
    • SFM to:
      – Uphold
      – Modify
      – Reverse
Concepts – Statutes

• CGS 29-306 (c) cont.
  – Requires notification to the SFM if (any of the 5) conditions ordered abated cannot be abated in 4 hours or less

Concepts – Statutes

• CGS 7-313b Fire Emergency
  – Authorizes the officer of a fire company or department in charge of a fire or other emergency to order any person to leave a building for purpose of protecting such person from injury
  – allows a penalty of $50, seven days incarceration or both for willful refusal

Concepts – Statutes

• CGS 7-313e – Fire Officer Authority
  – authorizes the FO in charge broad authority to control a fire or emergency scene
Concepts – Statutes

- Police Officer Authority
  - Statutes allow PO to enforce reckless endangerment

Concepts

- Discretion
  - Given to a FM by law as needed to protect public safety
  - Must be used in reason
  - Does not permit arbitrary or illegal action
  - Should be based on all reasonably available information at the time of enforcement
  - Must be used on a case by case basis
  - Document your enforcement

Concepts – Code Req.

- Parts IV & V
  - Flame retardant requirements (20.1.4.3)
    - Furnishings/decorations/scenery
  - Open flame / Pyrotechnics (20.1.4.2)
  - Securing of seats (20.1.4.8)
    - NLT 3; no max
  - Simultaneous occupancy (PT IV 13.1.2.2)
  - Main E/E (PT IV 13.2.3.6)
Concepts – Code Req.

- Parts IV & V
  - Aisles (PT IV 13.2.5)
  - W/Tables (PT IV 13.2.5.7)
  - W/O Tables (PT IV 13.2.5.5)
  - Diagrams (20.1.4.8.2.2.2.3)
    - Manned standpipes on stages where extraordinary hazard (20.1.4.3.8)
  - Staff Drills (20.1.4.6)

Part 2

Life Safety Inspection Issues

Inspection Issues

- Construction & Access
- Occupancy Load & M.O.E.
- Fire Protection Systems & Operation
- Fire Loading, Activity & Special Conditions
- External Influences
- (Life Safety Evaluation Approach)
Inspection Issues

• Construction & Access
  – Exterior of building
  – Construction Type
  – Alterations / Additions
  – Construction of barriers
  – Temporary features

Inspection Issues

• Parking Vehicles
  – Exit / exit discharge
  – Approaches
  – Driveways
  – Roads

Inspection Issues

• Occupancy Load & M.O.E.
  – Occupancy characteristics
  – Occupant load
  – Posting vs. Layout
Inspection Issues

- Occupant Load Posting
  - Not having fixed seating
  - Conspicuous place
  - Near the main exit from the room
  - Maintained in a legible manner

Inspection Issues

- Occupant Load Posting cont.
  - Indicate the # of occupants permitted for each room use
  - Multiple signs for each arrangement
  - Part V CSFSC / CSFPC 20.1.4.8.3

Inspection Issues

- Occupancy Load & M.O.E.
  - Means of Egress
    - Blocked paths
    - Obstructed paths
    - Pad locks
    - Disabled exit hardware
  - Main Entry / Exit Criteria
Inspection Issues

- Fire Protection Systems & Operation
  - Fire Detection & Alarm Systems
  - Fire Suppression Systems
  - Building services
  - Electrical
    - Temporary lighting
    - Temporary electrical

- Fire Loading, Activity & Special Conditions
  - Hazard of Contents
  - Interior Finish
  - Decorations
  - Portable Sliding / Folding Partitions
  - Stages & Projection Rooms

- Exhibits & Trade Shows
- Open flame & Pyrotechnics
- Propane inside
- Vehicles inside / outside
- Tables & Chairs
- Cooking
Inspection Issues

• Fire Loading, Activity & Special Conditions
  – Metal detectors
  – Bag check lines
  – Velvet rope & stanchions
  – Bike racks - outside / inside
  – Saw horses – outside / inside
  – Cables on floor
    • Power
    • Media (TV)

Inspection Issues

• People and Assembly
  – Fights
  – Drugs & alcohol
  – Prizes & objectives
  – Returning for belongings
  – Finding children, companions

Inspection Issues

• External Influences
  – Life Safety Evaluations
  – Crowd Management
  – Employee Training
Inspection Issues

• Dangerous Assemblies
  – Hostile owners / clientele
  – Crowd under the influence
  – Emotional crowd
  – Reputational issues

PART 3

Case Study

Inspecting Existing Assembly

A five deadly sins scenario
Scenario

- Saturday August 13th
- 2110 hours
- Address 1313 North Main Ave.
- Hank E. Panky’s Place – a drinking, dancing & dining establishment
- Engine Co. 10 dispatched for a water problem

Scenario

- While in building Co. Officer notices
  – Blocked/Impeded egress – Beer Kegs
  – 1 Fire Alarm System zone in TROUBLE mode
  – A large number of people having difficulty moving inside building while waiting to see a musical group
  – A pyrotechnic devices near the stage

Scenario

- The Group – Incredible Techno Iggy & the Cracovian Homeboys
- The hottest Polish Techno Band this side of the Warsaw
Scenario

- 2120 hrs - Co. Officer requests the Fire Marshal to respond
- Co. Officer also requests a Ladder Company to assist with salvage
- 2130 hrs – Ladder Company on scene
- 2140 hrs – FM on scene
- FM investigates

Additional Crowds Outside

Fan Clubs

Scenario

- FM determines that an immediate hazard does exist
  - CGS 29-305 Inspection by LFM
    - Upon receipt by the LFM from an authentic source (CO) that any building within their jurisdiction is hazardous to life from fire, the LFM shall inspect such building
    - RT of entry at all reasonable hours
Scenario
– CGS 29-306

Scenario
• FM references OSFM Policy Directive #10 for further guidance

• CGS 7-313b as an alternate
  – The CO can order any person in the event of a fire or other emergency to leave a building for purpose of protecting such person from injury

Directive # 10
Purpose
• To establish a uniform enforcement of CGS 29-306 (c)

• For the issuance of a verbal/written order to
  – Immediately vacate a building
  – For certain specified conditions
  – That place occupants at risk for injury or death from these conditions
Directive # 10

Purpose cont.

• Establish a UNIFORM method of notifying the SFM that such an order has been issued

Directive # 10

Discussion

• PA 08-65 made changes to CGS 29-306

• Gives FM and PO broader powers to restrict use of a building when certain conditions exist

• These powers are designed to be of an immediate nature

Directive # 10

Discussion cont.

• Check & Balance – requires notification be made to the SFM of such action if the condition cannot be remedied in 4 hours or less
Directive # 10

Discussion cont.
• Notification allows SFM to review the order and circumstances and provides the SFM a mechanism to
  – Uphold
  – Modify or
  – Reverse
• The order to assure uniform application

Directive # 10

Discussion cont.
• Per CGS 29-306 if a LFM or PO determine that there exists in a building a risk of death/injury from 5 conditions

• The LFM or PO may issue a verbal or written order to immediately vacate the building

Directive # 10

• The 5 deadly sins
  – Blocked, insufficient or impeded egress
  – Failure to maintain or shutting off fire protection systems required by the SFSC or SFPC
  – Storage of any flammable/explosive material without a permit or in quantities exceeding permitted limits
Directive # 10

• The 5 deadly sins cont.
  – Use of any fireworks or pyrotechnic device without a permit
  – Exceeding the occupancy limit established by the SFM or LFM

Directive # 10

Discussion cont.
• The FM or PO SHALL notify/submit a copy of the order to the SFM
  – If the FM or PO anticipates that any of the conditions that caused the order can not be corrected
  – In 4 hours or less from the time the order was issued

Directive # 10

• Per section 4 of PA 09-177 effective 10/01/09
  – If hazard cannot be abated in 4 hours or less
  – SFM shall be notified & shall review the order after consultation with LFM / PO to determine whether:
    • Uphold
    • Modify or
    • Reverse the order
  – With any further conditions the SFM deems appropriate
 Directive # 10

Policy
• When a LFM or PO uses the power of 29-306 (c)
• And if conditions cannot be remedied in 4 hours or less
• They shall immediately notify the SFM of their actions

Directive # 10

• Notification
  – Normal business hours (M-F 8:00 am to 4:00 pm)
    • Bureau of Investigations & Enforcement
    • 860-685-8460
  – After hours
    • Dept. of ES & PP Message Center
    • 1-800-842-0200

Directive # 10

• Notification cont.
  – Minimum information required:
    • The name of the establishment
    • The address of the establishment
    • The name of the LFM or PO issuing order
    • Circumstances leading up to order
    • If an incident occurred to summon local FD or PD
    • If any injuries / fatalities have occurred
Directive # 10

• Notification cont.
  – Message Center or SFM notifies
  – Duty Sergeant of Bureau of Inv. & Enf.
  – Sergeant immediately contacts notifying agency to determine the nature of action taken

• Notification cont.
  – If Sergeant deems either appropriate / necessary a staff representative from SFM shall be dispatched to location
  – SFM representative will conduct a further investigation to determine if the order should be:
    • Upheld
    • Modified
    • Reversed

Scenario

• FM confers with Hank E. Panky and orders corrections

• Owner agrees to clear exits and remove pyrotechnics - 2155 hrs
Scenario

• Owner states that an alarm company is scheduled to service the system on Monday

• Owner agrees not to admit any more patrons but balks at reducing the current occupant load

• He notes Incredible Iggy takes the stage at 2300 hrs

Scenario

• LFM contacts Message Center and provides the following:
  – Hank E. Panky’s Place
  – 1313 North Main St, Anytown, CT
  – LFM John Doe
  – Circumstances owner’s refusal to comply with order
  – Water problem call initiated FD response
  – No injuries / fatalities

Scenario

• Duty Sergeant contacts LFM to determine actions taken

• Sergeant dispatches a SFM representative to assist LFM

• SFM representative arrives at 2245 hrs

• Upholds order of LFM
Scenario

• SFM representative & LFM convince owner to abide by the order

• Owner agrees to postpone the show until the occupancy load is within the established limits