



Incident Management of High Rise Fires

Course Plan

Course Details

Description: This course provides knowledge, skills, and abilities required for those managing incidents occurring in large, multistory buildings. These incidents may present significant management, logistical, and safety challenges to emergency personnel. The size and complexity of the interior spaces; limited, sometimes arduous access; extended travel and response times; and the concentrated occupant load with egress challenges all contribute to the problems faced by emergency responders. Additionally, most high-rise structures are equipped with various environmental, fire protection, and life-safety systems that require support and control. Successful emergency operations in these types of buildings also require preplanning and technical competence on the part of the emergency responders.

Designed For: Aspiring and incumbent company officers and chief officers

Authority: State Fire Training Company Officer 2D: All-Risk Command Operations for Company Officers
State Fire Training Incident Management of Major Fires
FIRESCOPE ICS 420-1 Field Operations Guide
FIRESCOPE ICS 500 Structure Fire Operations
FIRESCOPE ICS 910 Fire Fighter Incident Safety and Accountability Guidelines
NWCG PMS 461 Incident Response Pocket Guide
NFPA 1021, Standard for Fire Officer Professional Qualifications (2014)
NFPA 1407, Standard for Training Fire Service Rapid Intervention Crews (2015)
NFPA 1521, Standard for Fire Department Safety Officer Professional Qualifications (2015)
NFPA 1561, Standard on Emergency Services Incident Management System and Command Safety (2014)

Prerequisites: 1. Fire Command 2A or Incident Management of Major Fires (FSTEP); and

Incident Management of High Rise Fires

2. Fire Command 1A or Command 1A or Company Officer 2D: All-Risk
Command Operations for Company Officers

Standard: Attend all classes and participate in all activities

Hours: Lecture: 17:30
Activities: 19:30
Testing: 3:00

Hours (Total): 40:00

Maximum Class Size: 30

Instructor Level: Primary instructor

Instructor/Student Ratio: 1:30 Lecture

Skills Evaluator/Student Ratio: 1:10 Simulations/Activities

Restrictions: None

SFT Designation: FSTEP

Required Resources

Instructor Resources

To teach this course, instructors need:

- State Fire Training Company Officer 2D: All-Risk Command Operations for Company Officers Course Plan
- State Fire Training Incident Management of Major Fires Course Plan
- FIRESCOPE ICS 420-1 Field Operations Guide (current edition)
- FIRESCOPE ICS 500 Structure Fire Operations (current edition)
- FIRESCOPE ICS 910 Fire Fighter Incident Safety and Accountability Guidelines (current edition)
- NWCG PMS 461 Incident Response Pocket Guide (current edition)

Instructors may choose to use:

- Firefighting Operations in High-Rise and Standpipe-Equipped Buildings, 2007, by David M. McGrail, Fire Engineering ISBN: 978-1-59370-054-6

Online Instructor Resources

The following instructor resources are available online:

- 750 Adams, Memphis, Tennessee: <https://www.youtube.com/watch?v=CAHCO-1SAfc&app=desktop>
- Orié Palmer, FDNY: <https://www.youtube.com/watch?v=VGzMnmWYec0>
- [State Fire Training Company Officer 2D: All-Risk Command Operations for Company Officers Course Plan](#)
- [State Fire Training Incident Management of Major Fires Course Plan](#)
- NWCG PMS 461 Incident Response Pocket Guide (current edition)
- FIRESCOPE: <http://firescope.org/>
- FIRESCOPE ICS 420-1 Field Operations Guide (current edition)
- FIRESCOPE ICS 500 Structure Fire Operations (current edition)
- FIRESCOPE ICS 910 Fire Fighter Incident Safety and Accountability Guidelines (current edition)
- ICS-HR-120-1 High-Rise Structure Fire Operational System Description
- ICS-1001 Lobby Control Unit Leader—High-Rise Incident
- ICS-1002 Systems Control Unit Leader—High-Rise Incident
- ICS-1003 Staging Area Manager—High-Rise Incident
- ICS-1004 Base Manager—High-Rise Incident
- ICS-1005 Rapid-Ascent Team Leader—High-Rise Incident
- ICS-1006 Rapid Intervention Group Supervisor—High-Rise Incident
- ICS-1007 Evacuation Group Supervisor—High-Rise Incident
- ICS-1008 Ground Support Unit Leader—High-Rise Incident

Student Resources

To participate in this course, students need (if assigned by instructors):

- Firefighting Operations in High-Rise and Standpipe-Equipped Buildings, 2007, by David M. McGrail, Fire Engineering ISBN: 978-1-59370-054-6
- NWCG PMS 461 Incident Response Pocket Guide (current edition)
- FIRESCOPE: <http://firescope.org/>
- FIRESCOPE ICS 420-1 Field Operations Guide (current edition)
- FIRESCOPE ICS 500 Structure Fire Operations (current edition)
- FIRESCOPE ICS 910 Fire Fighter Incident Safety and Accountability Guidelines (current edition)
- ICS-HR-120-1 High-Rise Structure Fire Operational System Description
- ICS-1001 Lobby Control Unit Leader—High-Rise Incident
- ICS-1002 Systems Control Unit Leader—High-Rise Incident
- ICS-1003 Staging Area Manager—High-Rise Incident
- ICS-1004 Base Manager—High-Rise Incident
- ICS-1005 Rapid-Ascent Team Leader—High-Rise Incident
- ICS-1006 Rapid Intervention Group Supervisor—High-Rise Incident
- ICS-1007 Evacuation Group Supervisor—High-Rise Incident
- ICS-1008 Ground Support Unit Leader—High-Rise Incident

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

Facilities

- Class room
- It is necessary that the instructor secure and utilize an actual high rise building to meet the objectives and conduct the activities of this course. It is highly recommended to utilize this building to conduct the incident command system high rise command and general staff position simulation activities. Additionally, a facilitated walk through of a high rise building should occur with a fire protection engineer, and/or the building engineer.

Equipment

- Any equipment needed to conduct presentations; and create/present simulations, communications equipment (handi-talkies), and a mobile/stationary command post
- High rise incident command tactical worksheets and other job aids for position descriptions

Personnel

- Skills Evaluators: in order to maintain a 10:1 Student to Skills Evaluator ratio for simulations/activities
- Guest lecturer(s): fire protection engineer; building engineer; elevator contractor

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
 - Restroom locations
 - Food locations
 - Smoking locations
 - Emergency procedures
2. Identify classroom requirements
 - Start and end times
 - Breaks
 - Electronic device policies
 - Special needs and accommodations
 - Other requirements as applicable
3. Review course syllabus
 - Course objectives
 - Calendar of events
 - Course requirements
 - Student evaluation process
 - Assignments
 - Activities
 - Required student resources
 - Class participation requirements

Discussion Questions

1. To be determined by the instructor

Activities

1. To be determined by the instructor

Unit 2: Preincident Considerations

Topic 2-1: Identifying Critical Factors and Hazards

Terminal Learning Objective

At the end of this topic, a student, given a high-rise scenario, will be able to identify the critical factors and hazards associated with incidents in high-rise buildings.

Enabling Learning Objectives

1. Describe the benefits of a prefire plan
2. Describe the complexities associated with a high-rise incident
3. List the benefits of frequent high-rise training
4. Describe the logistical and safety challenges to emergency personnel
5. Describe the impact of multiple “false alarm” incidents creating the normalization of deviance

Discussion Questions

1. Discuss the lessons learned from historic high-rise fires.
2. Describe your organization’s history of responding to past high-rise incidents.
3. Discuss the barriers to situational awareness in high-rise events and how they impact the emergency responder’s technical competence.

Activities

1. It is recommended that the instructor create an activity directing students to identify the dangers of complacency and the improper PPE in a high-rise incident.

Instructor Notes

1. Instructor may choose to base the activity on 750 Adams, Memphis, Tennessee:
<https://www.youtube.com/watch?v=CAHCO-1SAfc&app=desktop>
2. Instructor may choose to base the activity on Orié Palmer, FDNY:
<https://www.youtube.com/watch?v=VGzMnmWYec0>
3. The instructor can refer to NWCG Incident Response Pocket Guide PMS 461 (2014 edition), p. x–xi.

Topic 2-2: Identifying Construction and Fire-Protection Features

Terminal Learning Objective

At the end of this topic, a student, given a high-rise scenario, will be able to identify the construction and fire-protection features based upon the age and occupancy type of a building.

Enabling Learning Objectives

1. Define a high-rise building
2. Describe the different generations/eras of building construction
3. Describe the various design features of high-rise construction
4. Discuss the hazards associated with each generation/era of high-rise construction
5. List common types of fire-protection systems
6. Describe the water systems within the different building construction generations/eras

Incident Management of High Rise Fires

Discussion Questions

1. How do the Pressure-Reducing Valve (PRV) and restricting orifice plates limit water flow?
2. What are some distinguishing building characteristics based on building age?

Activities

1. It is recommended that the instructor create an activity bringing students to visit high-rise buildings, emphasizing various construction features.

Instructor Notes

1. The last topic of the course plan is an extensive fire and life-safety systems lesson.

Unit 3: Emergency Operations

Topic 3-1: Describing the ICS's Modular Development and Initial Response Roles and Responsibilities

Terminal Learning Objective

At the end of this topic, a student, given a high-rise assignment, will be able to describe the elements of the incident command system's modular development and the roles and responsibilities for initial response.

Enabling Learning Objectives

1. Describe the roles and responsibilities of the initial incident commander
 - The standards/functions of command
2. Describe the deployment of initial responders based on incident priorities
3. Describe initial investigation/attack priorities
4. Describe your agency's policy for establishing:
 - water supply on the initial response
 - personnel accountability
 - lobby
 - staging
 - base

Discussion Questions

1. What are the critical factors in high-rise building fires, including life hazards, building characteristics and stability, fire behavior, flow path, smoke conditions, and environmental factors?
2. What are the advantages and disadvantages of the different command options (modes of operation)?
 - Investigation
 - Fast attack
 - Command
3. What is your agency's policy on passing command on high-rise incidents?
4. When do you employ two in, two out?
5. How does ALS-BASE serve as a foundation for initial incident management?

Incident Management of High Rise Fires

6. Discuss the importance of supplying the proper fire department connection.
7. What are the initial functions of lobby prior to the arrival of reinforcements?
8. How does your agency address the effects of wind for the initial attack team?
9. What is your agency policy for taking equipment aloft in the initial response?

Activities

1. It is recommended that the instructor obtain a building and conduct scenario-based assignments.
2. It is recommended that the instructor create audio-visual scenario-based evolutions.
3. It is recommended that the instructor create an activity highlighting wind-driven effects on high-rise fires.

Instructor Notes

1. Refer to the Incident Management of Major Fires course plan and FIRESCOPE ICS 500 Structure Fire Operations for the standards/functions of command.
2. The instructor should consider scenarios that occur in locations other than above ground, such as subdivision(s) and in the lobby.
3. The instructor should consider scenarios that involve different types of high-rise occupancies, including institutional, residential, commercial, office, and different eras/generations.

Topic 3-2: Describing the ICS's Modular Development and Multidivision/Group (reinforced) Response Roles and Responsibilities

Terminal Learning Objective

At the end of this topic, a student, given a high-rise assignment, will be able to describe the elements of the incident command system's modular development and the roles and responsibilities for multidivision/group (reinforced) response.

Enabling Learning Objectives

1. Describe the challenges of maintaining unity of command and span of control in an escalating incident
2. Describe the roles and responsibilities of the incident commander during an escalating incident
 - The standards/functions of command
3. Describe the roles and responsibilities of the incident safety officer
4. Describe the implementation of divisions/groups on an escalating incident
5. Describe the implementation, roles, and responsibilities of:
 - Plans
 - Logistics section chief
 - Ground support
 - Systems control
 - Medical unit
 - Base manager
 - Evacuation group

Incident Management of High Rise Fires

- RAT: Rapid Ascent Team (established under search or evacuation)
- Search
- Rescue
- Ventilation
- RIC: Rapid Intervention Company/Crew
- Medical group
- Designated facilities
 - ICP
 - Base
 - Staging
- Air operations
- Salvage

Discussion Questions

1. What should a fully functioning staging area look like as reinforcements arrive?
2. How does your agency fulfill safety-officer roles and responsibilities?
3. When would your agency implement an operations section chief during an escalating incident?
4. Discuss the expanding responsibilities of lobby during an escalating incident.
5. Describe lessons learned from case studies about appropriate staffing of your medical group.
6. What are your agency's policies with regards to shelter in place versus evacuation?
7. When would you consider establishing RAT on the initial response?
8. What is your agency's policy on establishing RIC?

Activities

1. It is recommended that the instructor obtain a building and conduct scenario-based assignments for an escalating incident.
2. It is recommended that the instructor create audio-visual scenario-based evolutions for an escalating incident.

Instructor Notes

None

Topic 3-3: Describing the ICS's Modular Development and Multibranch Response Roles and Responsibilities

Terminal Learning Objective

At the end of this topic, a student, given a high-rise assignment, will be able to describe the elements of the incident command system's modular development and the roles and responsibilities for multibranch (extended) response.

Enabling Learning Objectives

1. Describe the implementation, roles, and responsibilities of the liaison officer
2. Describe the implementation, roles, and responsibilities of the public information officer
3. Describe the implementation, roles, and responsibilities of the medical branch director

Incident Management of High Rise Fires

4. Describe the roles and responsibilities of the assistant safety officers
5. Describe the implementation of branches on an escalating incident
6. Describe the implementation, roles, and responsibilities of:
 - Air operations branch
 - Helicopter coordinator
 - Helispot manager
 - Planning section chief
 - Restat
 - Sitstat
 - Demobilization
 - Documentation
 - Technical specialist
 - Structural engineer
 - Building engineer
 - Logistics
 - Support branch
 - Supply
 - Service branch
 - Communications
 - Responder rehabilitation

Discussion Questions

1. What are the components of the medical branch?
2. What are your staffing contingencies to ensure the appropriate number of resources? (For example, mutual aid and incident management teams.)
3. How has your agency performed mutual aid training to evaluate interagency compatibility?
4. How can technical specialists assist you in mitigation of emergencies? How do you request these resources?
5. How does the AHJ's emergency operations plan address recovery operations?

Activities

1. It is recommended that the instructor obtain a building and conduct scenario-based assignments for an escalating incident.
2. It is recommended that the instructor create audio-visual scenario-based evolutions for an escalating incident.

Instructor Notes

None

Unit 4: Fire and Life-Safety Systems

Topic 4-1: Assessing and Using Fire and Life-Safety Systems

Incident Management of High Rise Fires

Terminal Learning Objective

At the end of this topic, a student, given a high-rise scenario, will be able to assess and use the fire and life-safety systems based upon the age and occupancy type of the building.

Enabling Learning Objectives

1. Describe the different components that comprise fire and life-safety systems based on the building era/generation, including but not limited to:
 - Standpipe
 - Sprinklers
 - Air handling and smoke removal
 - Doors
 - HVAC
 - Building control station
 - Electrical systems
 - Fire pumps
 - Annunciator panel
 - Lockbox and keys
 - Alarm system
 - Public address system
 - Fire department communication systems
 - Video monitoring
 - Emergency procedures manual
 - Emergency generator
 - Elevators
 - Disability, accessibility, and functional needs for vulnerable populations
 - Refuge area
 - Stairways

Discussion Questions

1. How many personnel does it take to manage systems control?
2. How can you use fire and life-safety systems to assist with evacuation?
3. What is your agency's policy for addressing the different fire and life-safety systems?
4. How integrated is your fire prevention bureau with your fire suppression resources?
5. What is your agency's policy for water supply?
6. How does your agency address disability and special-needs populations and language barriers?
7. What is your agency's policy on the use of elevators?

Activities

1. It is recommended that the instructor create an activity bringing students to visit high-rise buildings, emphasizing fire life-safety systems.

Instructor Notes

1. The instructor should strongly consider having a fire-protection engineer and/or building engineer as a guest lecturer.
2. The instructor should strongly consider having an elevator contractor as a guest lecturer.

Incident Management of High Rise Fires

Time Table

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	1:00		
Activity 1-1: To be determined by instructor		0:00	
Unit 1 Totals	1:00	0:00	1:00
Unit 2: Preincident Considerations			
Topic 2-1: Identifying Critical Factors and Hazards			
Lecture	2:00		
Activity 2-1: To be determined by instructor		0:00	
Topic 2-2: Identifying Construction and Fire-Protection Features			
Lecture	4:00		
Activity 2-2: To be determined by instructor		0:00	
Unit 2 Totals	6:00	0:00	6:00
Unit 3: Emergency Operations			
Topic 3-1: Describing the ICS's Modular Development and Initial Response Roles and Responsibilities			
Lecture	1:30		
Activity 3-1: To be determined by instructor		6:30	
Topic 3-2: Describing the ICS's Modular Development and Multidivision/Group Response Roles and Responsibilities			
Lecture	1:30		
Activity 3-2: To be determined by instructor		6:30	
Topic 3-3: Describing the ICS's Modular Development and Multibranch Response Roles and Responsibilities			
Lecture	1:30		
Activity 3-3: To be determined by instructor		6:30	

Incident Management of High Rise Fires

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 3 Totals	4:30	19:30	24:00
Unit 4: Fire and Life-Safety Systems			
Topic 4-1: Assessing and Using Fire and Life-Safety Systems			
Lecture	6:00		
Activity 4-1: To be determined by instructor		0:00	
Unit 4 Totals	6:00	0:00	6:00
Lecture, Activity, and Unit Totals:	17:30	19:30	37:00

Course Totals

Total Lecture Time (LT)	17:30
Total Activity Time (AT)	19:30
Total Testing Time (TT)	3:00
Total Course Time	40:00

Acknowledgments

State Fire Training gratefully acknowledges the following individuals and organizations for their diligent efforts and contributions that made the development and publication of this document possible.

Cadre Leadership

Kevin Conant

Cadre Leader

Fire Service Training Specialist III, Office of the State Fire Marshal

Laura Garwood

Cadre Editor

Sacramento State University

Incident Management of High Rise Fires

Cadre Participants

Cardenas, Jason

*Fire Captain, County of Los Angeles
Fire Department*

Siragusa, Tom

*Assistant Chief, San Francisco Fire
Department*

Gillette, Jeff

*Battalion Chief, Training Division,
Colton/Loma Linda Fire Department*

Tobias, Charles

Battalion Chief, Fresno City Fire Department

Juratovac, Nicol

*Battalion Chief, San Francisco Fire
Department*

Tomlinson, Surgey "Guy"

*Battalion Chief, Los Angeles Fire
Department*

Laird, Gerry

*Battalion Chief, San Jose Fire
Department*

Wise, Jack

*Battalion Chief, Los Angeles Fire
Department*

Simmons, Demond

*Battalion Chief, Oakland Fire
Department*

Partners

State Fire Training also extends special acknowledgement and appreciation to the Conference and Training Services Unit with the College of Continuing Education at California State University, Sacramento, for its ongoing meeting logistics and curriculum development support, innovative ideas, and forward-thinking services. This collaboration is made possible through an interagency agreement between CAL FIRE and Sacramento State.