

# Decision Making for Initial Company Operations

DMICO-Instructor Guide

*2nd Edition, 2nd Printing-July 2012*



**FEMA**

FEMA/USFA/NFA  
DMICO-IG  
July 2012  
2nd Edition, 2nd Printing

*Decision Making for Initial Company  
Operations*



**FEMA**

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**U.S. DEPARTMENT OF HOMELAND SECURITY**

**UNITED STATES FIRE ADMINISTRATION**

**NATIONAL FIRE ACADEMY**

**FOREWORD**

The U.S. Fire Administration (USFA), an important component of the Department of Homeland Security (DHS), serves the leadership of this Nation as the DHS's fire protection and emergency response expert. The USFA is located at the National Emergency Training Center (NETC) in Emmitsburg, Maryland, and includes the National Fire Academy (NFA), National Fire Data Center (NFDC), and the National Preparedness Network (PREPnet). The USFA also provides oversight and management of the Noble Training Center in Anniston, Alabama. The mission of the USFA is to save lives and reduce economic losses due to fire and related emergencies through training, research, data collection and analysis, public education, and coordination with other Federal agencies and fire protection and emergency service personnel.

The USFA's National Fire Academy offers a diverse course delivery system, combining resident courses, off-campus deliveries in cooperation with State training organizations, weekend instruction, and online courses. The USFA maintains a blended learning approach to its course selections and course development. Resident courses are delivered at both the Emmitsburg campus and the Noble facility. Off-campus courses are delivered in cooperation with State and local fire training organizations to ensure this Nation's firefighters are prepared for the hazards they face.

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**INSTRUCTIONAL AIDS**

**Slides**

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**Total Slides** 857

**Handouts**

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Handout 7-2:	Exercise #1 Messages
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Handout 7-5:	Exercise #4 Messages
Handout 7-6:	Exercise #5 Messages
Handout 7-7:	Exercise #6 Messages
Handout 7-8:	Exercise #7 Messages

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**COURSE SCHEDULE**

Unit 1:	Introduction	1 hr.
Unit 2:	Integration of the National Incident Management System to Fireground Management	1 hr.
Unit 3:	Fireground Decision Making	1 hr.
Unit 4:	Building Construction Types	2 hr., 25 min.
Unit 5:	The Analytical Sizeup Process	3 hr., 30 min.
Unit 6:	Burn Time Considerations and Line-of-Duty Deaths from Collapse Incidents	2 hr., 15 min.
Unit 7:	Fireground Decision Making Exercises	2 hr., 45 min.
<b>Total Time</b>		13 hr., 55 min.

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# FIREFIGHTER CODE OF ETHICS

## Background

The Fire Service is a noble calling, one which is founded on mutual respect and trust between firefighters and the citizens they serve. To ensure the continuing integrity of the Fire Service, the highest standards of ethical conduct must be maintained at all times.

Developed in response to the publication of the Fire Service Reputation Management White Paper, the purpose of this National Firefighter Code of Ethics is to establish criteria that encourages fire service personnel to promote a culture of ethical integrity and high standards of professionalism in our field. The broad scope of this recommended Code of Ethics is intended to mitigate and negate situations that may result in embarrassment and waning of public support for what has historically been a highly respected profession.

Ethics comes from the Greek word *ethos*, meaning character. Character is not necessarily defined by how a person behaves when conditions are optimal and life is good. It is easy to take the high road when the path is paved and obstacles are few or non-existent. Character is also defined by decisions made under pressure, when no one is looking, when the road contains land mines, and the way is obscured. As members of the Fire Service, we share a responsibility to project an ethical character of professionalism, integrity, compassion, loyalty and honesty in all that we do, all of the time.

We need to accept this ethics challenge and be truly willing to maintain a culture that is consistent with the expectations outlined in this document. By doing so, we can create a legacy that validates and sustains the distinguished Fire Service institution, and at the same time ensure that we leave the Fire Service in better condition than when we arrived.



# FIREFIGHTER CODE OF ETHICS

**I understand that I have the responsibility to conduct myself in a manner that reflects proper ethical behavior and integrity. In so doing, I will help foster a continuing positive public perception of the fire service. Therefore, I pledge the following...**

- Always conduct myself, on and off duty, in a manner that reflects positively on myself, my department and the fire service in general.
- Accept responsibility for my actions and for the consequences of my actions.
- Support the concept of fairness and the value of diverse thoughts and opinions.
- Avoid situations that would adversely affect the credibility or public perception of the fire service profession.
- Be truthful and honest at all times and report instances of cheating or other dishonest acts that compromise the integrity of the fire service.
- Conduct my personal affairs in a manner that does not improperly influence the performance of my duties, or bring discredit to my organization.
- Be respectful and conscious of each member's safety and welfare.
- Recognize that I serve in a position of public trust that requires stewardship in the honest and efficient use of publicly owned resources, including uniforms, facilities, vehicles and equipment and that these are protected from misuse and theft.
- Exercise professionalism, competence, respect and loyalty in the performance of my duties and use information, confidential or otherwise, gained by virtue of my position, only to benefit those I am entrusted to serve.
- Avoid financial investments, outside employment, outside business interests or activities that conflict with or are enhanced by my official position or have the potential to create the perception of impropriety.
- Never propose or accept personal rewards, special privileges, benefits, advancement, honors or gifts that may create a conflict of interest, or the appearance thereof.
- Never engage in activities involving alcohol or other substance use or abuse that can impair my mental state or the performance of my duties and compromise safety.
- Never discriminate on the basis of race, religion, color, creed, age, marital status, national origin, ancestry, gender, sexual preference, medical condition or handicap.
- Never harass, intimidate or threaten fellow members of the service or the public and stop or report the actions of other firefighters who engage in such behaviors.
- Responsibly use social networking, electronic communications, or other media technology opportunities in a manner that does not discredit, dishonor or embarrass my organization, the fire service and the public. I also understand that failure to resolve or report inappropriate use of this media equates to condoning this behavior.

**Developed by the National Society of Executive Fire Officers**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**FINAL EXAMINATION****Multiple-Choice Directions:** *Read each question carefully, and choose the best answer from the four choices.*

1. What primary factor is not pertinent for Initial Company Officer (ICO) sizeup?
  - a. Determining occupant life safety issues.
  - b. Identifying firefighter safety issues.
  - c. Estimating burn time.
  - d. Establishing a demobilization plan.
2. Incident Priorities such as Life Safety--Incident Stabilization--Property Conservation determine
  - a. Incident Objectives.
  - b. Incident Strategy.
  - c. Incident Tactics.
  - d. all of the above.
3. How many types of building construction have been identified according to the National Fire Protection Association (NFPA)?
  - a. Six.
  - b. Five.
  - c. Four.
  - d. None of the above.
4. According to empirical testing completed in 2005 by the National Institute of Standards and Technology (NIST), when lightweight building construction was exposed to fire conditions, fire progress was unabated. An approximate burn time was identified in order to determine structural collapse limitations. Four similar buildings were used in the testing. What was the approximate time that each building suffered structural collapse?
  - a. Twenty-two minutes.
  - b. Twenty-five minutes.
  - c. Seventeen minutes.
  - d. Thirteen minutes.
5. When does burn time begin for determining safe operating timeframes on an incident?
  - a. Ignition time.
  - b. Flashover time.
  - c. Arrival time.
  - d. Tactical deployment time.
6. Tests have shown that flashover may occur in a residential property with a 10- to 15-pound fuel load in approximately how many minutes after ignition?
  - a. Fifteen to 18 minutes.
  - b. Twelve to 15 minutes.
  - c. Six to 8 minutes.
  - d. Four to 6 minutes.

7. According to the NFPA Classification for Building Construction, a Type III classification implies what type of construction?
  - a. Fire-resistive.
  - b. Wood-frame.
  - c. Heavy timber/Mill.
  - d. Ordinary.
8. An Incident Objective for an operational period should be
  - a. attainable.
  - b. flexible.
  - c. measurable.
  - d. all of the above.
9. According to NFPA data gathered from 1994 to 2003, line-of-duty deaths (LODDs) due to structural collapse incidents occurred most frequently in what type of occupancy?
  - a. Store/Office.
  - b. Public building.
  - c. Residential.
  - d. Manufacturing.
10. In modern highrise building construction, the gap between the outside curtain wall and interior wall is known as
  - a. interior gap.
  - b. safing gap.
  - c. perpendicular gap
  - d. carmichael gap.
11. An Incident Strategy is defined as a
  - a. statement of guidance.
  - b. plan of action (POA).
  - c. tactical deployment.
  - d. none of the above.
12. According to NFPA data gathered from 1994 to 2003, regarding structural collapse incidents resulting in LODDs, what timeframe period had the highest group of LODDs?
  - a. 12 a.m. to 4 a.m.
  - b. 4 a.m. to 8 a.m.
  - c. 8 p.m. to 12 a.m.
  - d. 8 a.m. to 12 p.m.
13. An Incident Tactic is defined as
  - a. what needs to be accomplished by a deployed resource.
  - b. a broad statement regarding resource flexibility.
  - c. how an assignment will be accomplished by a deployed resource.
  - d. establishing a Demobilization Plan for incident resources.

14. What type of firefighting operations resulted in the highest number of LODDs due to structural collapse between 1994 to 2003?
- a. Search and rescue.
  - b. Ventilation.
  - c. Advancing a hoseline/fire attack.
  - d. Forcible entry.
15. What 3-month period recorded the most LODDs due to structural collapse between 1994 to 2003 according to NFPA data?
- a. January-February-March.
  - b. April-May-June.
  - c. July-August-September.
  - d. October-November-December.
16. NIST testing conducted during 2005 for a Type III--Ordinary Construction occupancy with a truss roof assembly indicated structural collapse occurred in how many minutes from time of ignition of fire when fire progress was unabated?
- a. Twenty-two to 25 minutes.
  - b. Twenty-six to 29 minutes.
  - c. Nineteen to 22 minutes.
  - d. Fifteen to 18 minutes.
17. What Incident Command System (ICS) form is recommended for the ICO to document the transfer of Command process during an incident?
- a. ICS Form 201, *Incident Briefing*.
  - b. ICS Form 209, *Incident Status Summary*.
  - c. ICS Form 213, *General Message*.
  - d. ICS Form 215, *Operational Planning Worksheet*.
18. An ICO best friend kit should contain
- a. Primary Factor Chart.
  - b. Personal Incident Clock.
  - c. Incident Evaluation Chart.
  - d. all of the above.
19. If an ICO responds to a residential occupancy with lightweight construction and estimates burn time at 8 minutes upon arrival, approximately how much time does the ICO have to interrupt fire progress before structural collapse may occur?
- a. Seventeen minutes.
  - b. Thirteen minutes.
  - c. Nine minutes.
  - d. None of the above.
20. What ICS form is an important tool for the IC to maintain for documentation purposes during an incident?
- a. ICS Form 207, *Incident Organization Chart*.
  - b. ICS Form 209, *Incident Status Summary*.
  - c. ICS Form 213, *General Message*.
  - d. ICS Form 214, *Unit Log*.

21. The four General Staff positions are
- a. Plans Chief, Operations Chief, Fire Chief, Logistics Chief, Administrative Chief.
  - b. Operations Chief, Plans Chief, Logistics Chief, Finance/Administrative Chief.
  - c. Operations Chief, Fire Chief, Plans Chief, Situation Chief, Finance/ Administrative Chief.
  - d. Public Information Officer (PIO), Safety Officer, Liaison, Operations Chief, Plans Chief.
22. The three Command Staff positions are
- a. Safety Officer, Logistics Officer, Liaison Officer.
  - b. Plans Chief, PIO, Liaison Officer.
  - c. Safety Officer, PIO, Liaison Officer.
  - d. Rapid Intervention Crew (RIC) Officer, PIO, Liaison Officer.
23. Planning
- a. collects and evaluates information needed for the action plan preparation.
  - b. is responsible for the fiscal documentation.
  - c. provided equipment for maintenance and refueling.
  - d. directs all tactical operations.
24. Finance/Administration
- a. collects and evaluates information needed for the action plan preparation.
  - b. is responsible for the fiscal documentation.
  - c. provided equipment for maintenance and refueling.
  - d. directs all tactical operations.
25. Operations
- a. collects and evaluates information needed for the action plan preparation.
  - b. is responsible for the fiscal documentation.
  - c. provided equipment for maintenance and refueling.
  - d. directs all tactical operations.
26. Command is
- a. responsible for overall management of the incident.
  - b. establishes the strategy and tactics for the incident.
  - c. responsible for firefighter safety.
  - d. all of the above.
27. Branches, division, or groups may be functional or geographic.
- a. True.
  - b. False.
28. The intelligence/investigation function may be
- a. a separate General Staff Position.
  - b. a unit within the Planning Section.
  - c. a branch within the Operations Section.
  - d. all of the above.

29. The Safety Officer is
- a. responsible for coordinating with assisting agencies.
  - b. responsible for monitoring and assessing safety hazards.
  - c. responsible for establishing the press area for the PIO.
  - d. none of the above.
30. The PIO is responsible for development of accurate and complete information regarding the incident but must obtain the IC's approval prior to releasing the information.
- a. True.
  - b. False.
31. Classical decision making
- a. is done within seconds.
  - b. is an instinctive decision making process.
  - c. follows a specific sequence of steps, problem identification, evaluation, selection.
  - d. seeks a "good enough" solution.
32. In fire-resistive construction, walls and structural members are made of noncombustible materials with a minimum of a 4-hour fire-resistive rating?
- a. True.
  - b. False.
33. The major objectives of fire operations are to
- a. confine.
  - b. control.
  - c. extinguish.
  - d. all of the above.

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

**FINAL EXAMINATION ANSWER SHEET**

1. \_\_\_\_\_

18. \_\_\_\_\_

2. \_\_\_\_\_

19. \_\_\_\_\_

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20. \_\_\_\_\_

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32. \_\_\_\_\_

16. \_\_\_\_\_

33. \_\_\_\_\_

17. \_\_\_\_\_

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## FINAL EXAMINATION ANSWER KEY

**Multiple-Choice Directions:** *Read each question carefully, and choose the best answer from the four choices.*

1. What primary factor is not pertinent for Initial Company Officer (ICO) sizeup?
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  - b. False.
33. The major objectives of fire operations are to
- a. confine.
  - b. control.
  - c. extinguish.
  - d. all of the above.**

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**FINAL EXAMINATION ANSWER SHEET KEY**

1.          d
2.          a
3.          b
4.          c
5.          a
6.          d
7.          d
8.          d
9.          c
10.         b
11.         b
12.         a
13.         c
14.         c
15.         a
16.         d
17.         a

18.         d
19.         c
20.         d
21.         b
22.         c
23.         a
24.         b
25.         d
26.         d
27.         a
28.         d
29.         b
30.         a
31.         c
32.         a
33.         d

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# ***UNIT 1: INTRODUCTION***

## **OBJECTIVE**

*The students will complete Activity 1.1 by introducing him/herself to the class.*

---

---

## INTRODUCTION

### POINTS FOR THE INSTRUCTOR

When facilitating small group activities throughout the course, keep in mind the following guidelines:

- Whenever possible, limit small groups to no more than five students.
- Assign students to the same scenario with the same tactical assignment. During group reporting, ask each group to compare its approach to that of the other groups assigned to the same scenario.
- As the course progresses, restructure groups so that each student has an opportunity to work within as many functions as possible.
- While groups are working, circulate among the groups and distribute prescript exercise injects and change slide displays as required. This will allow students to ask questions specific to their assigned scenario, and will enable the instructor to pick up on and correct any misunderstandings or misapplications of concepts as early in the process as possible.
- It is important to have a thorough understanding of the content of each unit in order to explain the rationale for suggested responses to the activities. In any event, always keep in mind that suggested responses are provided as a guide; they represent just some of several possible solutions. The key to acceptance of student answers is that they be reasonable, safe, and achievable with given resources.

### METHODOLOGY

This unit uses lecture, discussion, and an individual/large group activity.

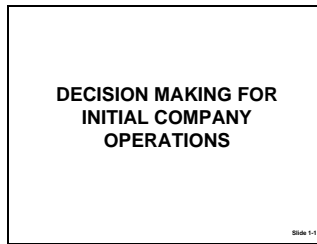
#### (Total Time: 1 hr.)

15 min.	Lecture/Discussion Introduction	IG 1-3
30 min.	Individual/Large Group Activity 1.1 Student Introductions	IG 1-5
15 min.	Lecture/Discussion Course Overview Summary	IG 1-9 IG 1-12

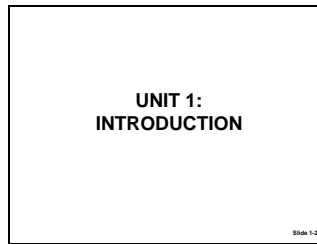
### AUDIOVISUAL

Slides 1-1 to 1-19  
Easel Pad

Slide 1-1



Slide 1-2



15 min.

Lecture/Discussion

**I. INTRODUCTION (15 min.)**

A. Welcome and instructor introductions.

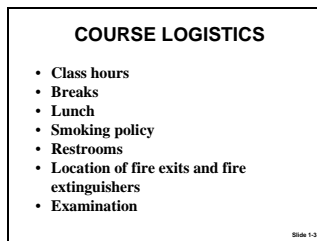
B. Course logistics.

1. Class hours.
2. Breaks.
3. Lunch.
4. Smoking policy.
5. Restrooms.
6. Location of fire exits and fire extinguishers.
7. Examination.

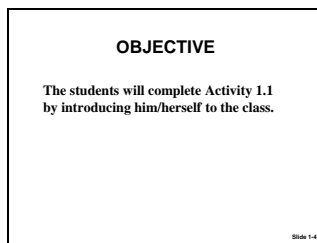
C. Objective.

The students will complete Activity 1.1 by introducing him/herself to the class.

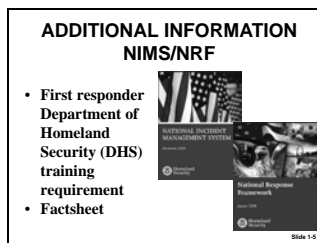
Slide 1-3



Slide 1-4



Slide 1-5



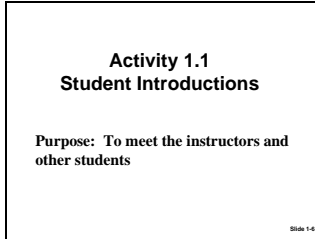
D. Additional information National Incident Management System (NIMS)/National Response Framework (NRF).

1. First responder Department of Homeland Security (DHS) training requirement.
2. Factsheet.

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30 min.  
Individual/  
Large Group  
Activity 1.1

Slide 1-6



## Activity 1.1

### Student Introductions

#### Purpose

To meet the instructors and other students.

#### Directions to Students

1. Perform roll call (from student roster).
2. Have course instructors introduce themselves and briefly discuss their backgrounds.
3. Have students introduce themselves and give a brief overview of their background and expectations for the course. Information should include their:
  - a. Name
  - b. Rank.
  - c. Department.
  - d. Current position.
  - e. Years of experience.
  - f. Course expectations.

Easel Pad

One of the instructors should record the course expectations on an easel pad for review purposes to ensure that student expectations are being met during the course.

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**STUDENT ACTIVITY WORKSHEET**

**Activity 1.1**

**Student Introductions**

**Purpose**

To meet the instructors and other students.

**Directions**

1. An instructor will perform roll call.
2. The instructors will introduce themselves and briefly discuss their backgrounds.
3. You will introduce yourself and give a brief overview of your background and expectations for the course. Information should include your:
  - a. Name.
  - b. Rank.
  - c. Department.
  - d. Current position.
  - e. Years of experience.
  - f. Course expectations.

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15 min.

Lecture/Discussion

Slide 1-7

**COURSE GOAL**

*Decision Making for Initial Company Operations (DMICO) is designed to develop the decision making skills needed by Company Officers (COs) to accomplish assigned tactics at structure fires.*

Slide 1-7

Slide 1-8

**TARGET AUDIENCE**

- Newly appointed COs
- Review for experienced COs
- Firefighters who may have acting CO responsibilities
- Firefighters who want to become COs

Slide 1-8

Slide 1-9

**ACTIVITIES**

- All activities and scenarios used in this course are based on structure fires.
- There will be a walk-through activity followed by one or more small group, scenario-driven activities for each area covered.
- A final, message-driven simulation activity will culminate Units 5 and 7.

Slide 1-9

## II. COURSE OVERVIEW (10 min.)

### A. Course goal.

*Decision Making for Initial Company Operations (DMICO) is designed to develop the decision making skills needed by Company Officers (COs) to accomplish assigned tactics at structure fires.*

### B. Target audience.

1. It is important to understand that this course material was developed for a specific target audience.
  - a. Specifically designed for newly appointed COs.
  - b. Excellent review for experienced COs.
2. Firefighters who may have acting CO responsibilities.
3. Firefighters who want to become COs.

### C. Activities.

1. All activities and scenarios used in this course are based on structure fires.
2. There will be a walk-through activity followed by one or more small group, scenario-driven activities for each area covered.
3. A final, message-driven simulation activity will culminate Units 5: The Analytical Sizeup Process and 7: Fireground Decision Making Exercises.

Slide 1-10

**STUDENT MANUAL**

- Support material (for use in class) for activities
- Text material (for postcourse reference)

Slide 1-10

D. Student Manual (SM).

1. Support material (for use in class) for activities.
2. Text material (for postcourse reference).
  - a. Provides background, and supplements course content.
  - b. Students should not try to follow the text while material is being presented.

Slide 1-11

**COURSE UNITS**

Unit 1: Introduction  
Unit 2: Integration of the National Incident Management System to Fireground Management  
Unit 3: Fireground Decision Making  
Unit 4: Building Construction Types  
Unit 5: The Analytical Sizeup Process  
Unit 6: Burn Time Considerations and Line-of-Duty Deaths from Collapse Incidents  
Unit 7: Fireground Decision Making Exercises

Slide 1-11

E. Course units.

Slide 1-12

**UNIT 1:  
INTRODUCTION**

Introduction

Slide 1-12

1. Unit 1: Introduction.

Slide 1-13

**UNIT 2:  
INTEGRATION OF THE NATIONAL  
INCIDENT MANAGEMENT  
SYSTEM TO FIREGROUND  
MANAGEMENT**

National Incident Management System (NIMS) Incident Command System (ICS)-- the integration of NIMS into fireground management

Slide 1-13

2. Unit 2: Integration of the National Incident Management System to Fireground Management.

Slide 1-14

**UNIT 3:  
FIREGROUND DECISION  
MAKING**

Naturalistic Decision Making (NDM)--  
discusses the use of a logical thought  
process to follow for decision making  
and action planning

Slide 1-14

3. Unit 3: Fireground Decision Making.

A logical thought process to follow for  
decision making and action planning.

Slide 1-15

**UNIT 4:  
BUILDING CONSTRUCTION  
TYPES**

Discusses and describes the strengths  
and weaknesses of building construction  
types

Slide 1-15

4. Unit 4: Building Construction Types.

Discusses and describes the strengths and  
weaknesses of building construction types.

Slide 1-16

**UNIT 5:  
THE ANALYTICAL SIZEUP  
PROCESS**

Describes the analytical sizeup  
and Command sequence processes

Slide 1-16

5. Unit 5: The Analytical Sizeup Process.

Describes the analytical sizeup and  
Command sequence process.

Slide 1-17

**UNIT 6:  
BURN TIME CONSIDERATIONS  
AND LINE-OF-DUTY DEATHS  
FROM COLLAPSE INCIDENTS**

Describes burn time consideration and  
identifies collapse potential while focusing on  
line-of-duty deaths (LODDs) from  
firefighting operations

Slide 1-17

6. Unit 6: Burn Time Considerations and  
Line-of-Duty Deaths from Collapse  
Incidents.

Describes burn time consideration and  
identifies collapse potential while focusing  
on line-of-duty-deaths (LODDs) from  
firefighting operations.

Slide 1-18

**UNIT 7:  
FIREGROUND DECISION MAKING  
EXERCISES**

Exercises challenge students to address  
fire incidents at:

- Type I Construction
- Type II Construction
- Type III Construction
- Type IV Construction
- Type V Construction

Slide 1-18

7. Unit 7: Fireground Decision Making  
Exercises.

Exercises challenge students to address fire  
incidents at Construction Types I, II, III,  
IV, and V.

Slide 1-19

**SUMMARY**

In this course you will be required to complete activities and exercises that are designed to enhance your decision making skills as a fireground commander.

Slide 1-19

**III. SUMMARY (5 min.)**

In this course you will be required to complete activities and exercises that are designed to enhance your decision making skills as a fireground commander.

## ***UNIT 2: INTEGRATION OF THE NATIONAL INCIDENT MANAGEMENT SYSTEM TO FIREGROUND MANAGEMENT***

### **OBJECTIVES**

*The students will:*

- 1. State the purpose of the National Incident Management System (NIMS).*
  - 2. Identify the elements of NIMS that provide the template for managing incidents.*
  - 3. State the purpose of using the Incident Command System (ICS) effectively.*
  - 4. Identify the ICS positions and state their functions.*
-

### **POINTS FOR THE INSTRUCTOR**

The Incident Command System (ICS) provides an emergency management system that applies universally proven management principles to the incident scene. It is a system that is becoming more and more accepted and is being adopted by a wide variety of response agencies throughout the country. This course is designed to introduce the students to ICS and to demonstrate its value as a method of providing for firefighter safety, coordination of available resources, and to maximize the effectiveness of those responsible for controlling the incident. The course is only an introduction and is not intended to offer the students a thorough knowledge and understanding of ICS. The goal of this unit is to give those unfamiliar with the system the motivation to seek further training and to develop a better understanding of how ICS can make them and their departments more effective in managing an emergency.

### **ATTITUDES TO FOSTER**

Emphasis should be placed on the need for an effective Incident Management System (IMS) at all incidents, not only at major emergencies.

As a Company Officer (CO) with the real possibility of being the first to arrive at an incident, the CO's initial decisions will have an impact throughout the entire incident. It is vital that they be able to make good management decisions that have a favorable impact on the eventual outcome.

In addition to a possible role as the initial Incident Commander (IC), the CO may well be assigned a subordinate position within the ICS organization. COs need to have a clear understanding of the system, the position they are assigned, and their role in the organization if they are to function effectively and help make the system work.

### **METHODOLOGY**

This unit uses lecture and discussion.

### **(Total Time: 1 hr.)**

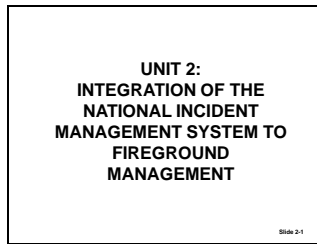
60 min.	Lecture/Discussion	
	Objectives and Overview	IG 2-3
	National Incident Management System	IG 2-4
	Using the Incident Command System Effectively	IG 2-7
	Overview of Incident Command System Positions	IG 2-9
	Summary	IG 2-15

### **AUDIOVISUAL**

Slides 2-1 to 2-25



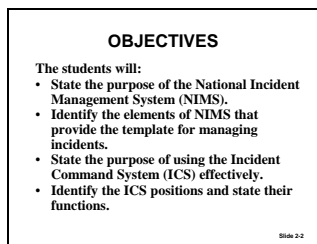
Slide 2-1



60 min.

Lecture/Discussion

Slide 2-2



**I. OBJECTIVES AND OVERVIEW (5 min.)**

A. Objectives.

The students will:

1. State the purpose of the National Incident Management System (NIMS).
2. Identify the elements of NIMS that provide the template for managing incidents.
3. State the purpose of using the Incident Command System (ICS) effectively.
4. Identify the ICS positions and state their functions.

B. Define the five ICS functions, Command Staff positions, and Staging.

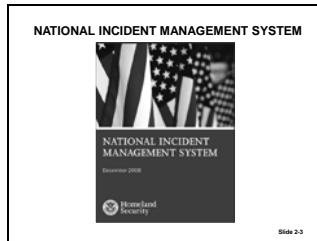
1. Preparedness.
2. Communications and information management.
3. Resource management.
4. Command and management.
5. Ongoing management and maintenance.

C. Identify the key elements of NIMS that provide the template for managing incidents.

1. Incident Commander's (IC's) role.

2. The five ICS functional areas.
3. Command Staff positions.
4. Staging.

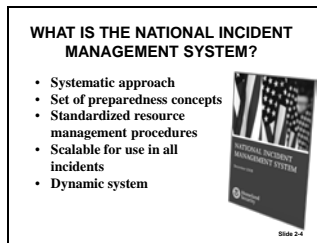
Slide 2-3



## II. NATIONAL INCIDENT MANAGEMENT SYSTEM (10 min.)

### A. NIMS overview.

Slide 2-4




1. What is NIMS?
  - a. A comprehensive, nationwide, systematic approach to incident management, including ICS, Multiagency Coordination (MAC) System, and Public Information.
  - b. A set of preparedness concepts and principles for all hazards.
  - c. Essential principles for a common operating picture and interoperability of communications and information management.
  - d. Standardized resource management procedures that enable coordination among different jurisdictions or organizations.
  - e. Scalable, so it may be used for all incidents (from day-to-day to large-scale).
  - f. A dynamic system that promotes ongoing management and maintenance.

Slide 2-5

**WHAT THE NATIONAL INCIDENT MANAGEMENT SYSTEM IS NOT**

- Response plan
- Used only in large-scale incidents
- Communications plan
- Limited applicability
- Only the ICS or an organization chart
- A static system




Slide 2-5

2. What NIMS is not:
  - a. A response plan.
  - b. Used only during large-scale incidents.
  - c. A communications plan.
  - d. Applicable only to certain emergency management/incident response personnel.
  - e. Only ICS or an organization chart.
  - f. A static system.

Slide 2-6

**THE NATIONAL INCIDENT MANAGEMENT SYSTEM INCLUDES**

- Compliance
- Training
- Standards and technology
- Resource management/Mutual aid--standardized procedures for resource management processes




Slide 2-6

3. NIMS includes
  - a. Compliance.
  - b. Training.
  - c. Standards and technology.
  - d. Resource management/Mutual aid--standardized procedures for resource management processes.

Slide 2-7

**COMMAND AND MANAGEMENT**

- Command and management envision the most familiar part of NIMS--the ICS.
- Organizations must take steps to institutionalize the use of ICS during prevention and response efforts.
- Actions to institutionalize the use of ICS take place at two levels--policy and organizational/operational.

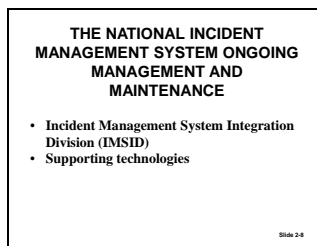


Slide 2-7

- B. Command and management.
  1. Command and management envision the most familiar (and easily implemented) part of NIMS--the ICS. Organizations must, as condition of the Federal preparedness assistance, take steps to begin institutionalizing the use of ICS during prevention and response efforts. Actions to institutionalize the use of ICS take place at two levels--policy and organizational/operational.

2. At the policy level:
  - a. Institutionalizing the ICS refers to government officials, i.e., governors, mayors, county and city managers, tribal leaders, and others.
  - b. Adopt the ICS through executive order, proclamation, or legislation for the jurisdiction.
  - c. Direct that incident managers and response organizations in their jurisdiction train, exercise, and use the ICS in their response operations.
3. At the organizational/operational level, evidence that incident managers and emergency response organizations are institutionalizing the ICS would include the following:
  - a. ICS is being integrated into functional and system-wide emergency operations policies, plans, and procedures.
  - b. ICS training is planned or underway for responders, supervisors, and Command-level officers.
  - c. Responders at all levels are participating in and/or coordinating ICS-oriented exercises that involve responders from multidisciplines and jurisdictions.

Slide 2-8



- C. Ongoing management and maintenance.
  1. Incident Management System Integration Division (IMSID).
    - a. The IMSID provides strategic direction, oversight, and coordination of NIMS.

- b. The IMSID oversees the program and coordinates with Federal, State, tribal, and local partners in the development of compliance criteria and implementation activities.

2. Supporting technologies.

As NIMS response personnel will increasingly rely on technology and systems to implement NIMS, it is crucial to be able to work with the underlying NIMS principles.

Slide 2-9

**USE THE INCIDENT COMMAND SYSTEM EFFECTIVELY**

- ICS allows you to create subordinate positions.
- The Incident Commander (IC) can then delegate responsibility and maintain span of control.
- Subordinate positions are to be used **IF** they are needed.

Slide 2-9

**III. USING THE INCIDENT COMMAND SYSTEM EFFECTIVELY (15 min.)**

A. Understanding how to use the system.

1. ICS provides the Company Officer (CO) with the ability to put in place a well organized and managed response to an incident.
2. ICS provides numerous subordinate positions for the IC to delegate responsibility and maintain span of control.
  - a. Positions are to be used **if** they are needed.
  - b. As additional resources become available, IC can reduce span of control and delegate.
  - c. If incident is escalating, IC can establish organization to meet growing problem.

B. Think of the ICS organization as a toolbox.

1. You don't need every tool in your toolbox to change the spark plugs in your car.

- a. You use only those tools you need to do the job.
  - b. The rest of the tools remain in the toolbox until there is a job for which they are needed.
2. The IC should only delegate those positions that will help do the job.
  - a. Overdelegating can be as disastrous as not delegating.
  - b. Some ICs fall into the trap of creating subordinate positions--with the result that no one is left to fight the fire.
3. Understanding the system will let you know what positions will help and how to use them to the best advantage.

Slide 2-10

**FIRST OFFICER IN IS  
INITIAL INCIDENT COMMANDER**

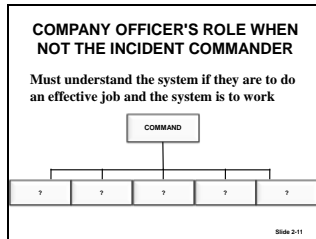
- "What starts well, ends well"
- Initial IC:
  - Organizes incident
  - Recognizes scope
  - Must have ability to deal with changes
  - Updates Incident Action Plan (IAP)

Slide 2-10

- C. First officer in is initial IC.
1. Every firefighter knows that "what starts well, ends well."
  2. How the first-in officer initially organizes the incident will affect the entire incident.
    - a. Important to recognize the scope of the incident.
    - b. Difficult to reposition equipment if it is not done properly on initial assignment.
    - c. Changes to the initial action plan can cause delays, breakdown in coordination, and additional damage.
  3. If initial response resources are well organized, it is easier to expand the organization if needed.

- a. Time is not wasted reorganizing original structure.
- b. Expansion of the system can be done in an organized, modular fashion.

Slide 2-11

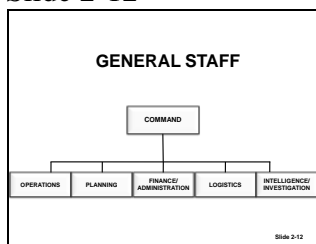


D. The CO's role when not the IC.

1. First-arriving CO may act as initial IC until Command can be passed, and then be assigned to a subordinate position.
2. Officers not first in may be assigned to subordinate positions upon their arrival.
3. Whether as initial IC or delegated to function in another ICS position, COs must understand the system if they are to do an effective job and the system is to work.
  - a. A chain is only as strong as its weakest link.
  - b. Coordination may be lost.
  - c. Firefighter safety may be jeopardized.

**IV. OVERVIEW OF INCIDENT COMMAND SYSTEM POSITIONS (25 min.)**

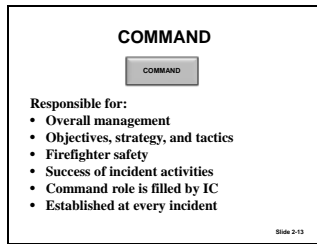
Slide 2-12



A. General Staff.

1. Command.
2. Operations.
3. Planning.
4. Finance/Administration.
5. Logistics.
6. Intelligence and Investigation.

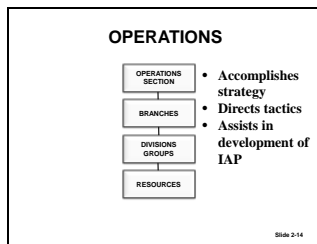
Slide 2-13



B. Command.

1. Responsible for overall management of the incident.
2. Establishes the objectives, strategy, and tactics for the incident.
3. Responsible for firefighter safety.
4. Ultimately responsible for success of incident activities.
5. Command role is filled by IC.
6. Established at every incident.

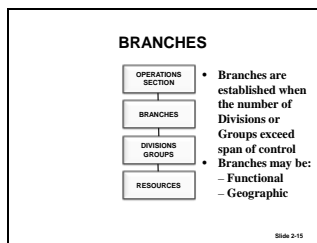
Slide 2-14



C. Operations.

1. Accomplishes strategy that Command develops by meeting the tactical objectives.
2. Directs all tactical operations.
3. Assists in the development of the Incident Action Plan (IAP).
4. Branches.

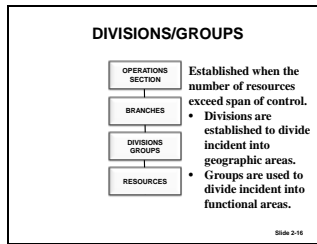
Slide 2-15



- a. Branches may be functional, geographic, or both, depending on the circumstances of the incident.
- b. Branches are established when the number of Divisions or Groups exceeds the recommended span of control.
- c. Branches are identified by the use of Roman numerals or by functional areas.



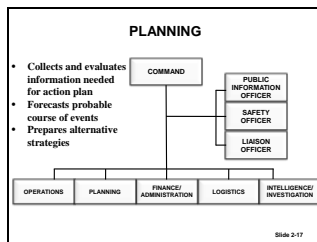
Slide 2-16



5. Divisions/Groups.

- Divisions/Groups are established when the number of resources exceeds the manageable span of control of Incident Command and the Operations Section Chief.
- Divisions are established to divide an incident into physical or geographical areas of operation.
- Groups are established to divide the incident into functional areas of operation.
- For example, Incident Command may assign evacuation or mass-care responsibilities to a functional Group in the Operations Section.

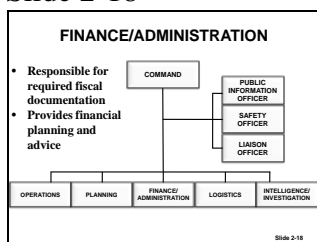
Slide 2-17



D. Planning.

- Collects and evaluates information needed for action plan preparation.
- Forecasts probable course of events.
- Prepares alternative strategies for changes or modifications to the action plan.

Slide 2-18



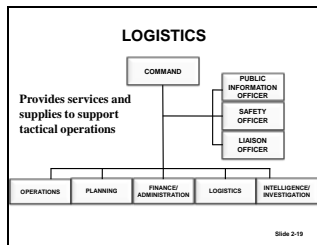
E. Finance/Administration.

- Responsible for required fiscal documentation.
- Provides financial planning and advice.

F. Command Staff positions are designed to provide aid and assistance to help the IC fulfill incident responsibilities.

- Handle key incident activities that enable the IC to manage the incident better.

Slide 2-19

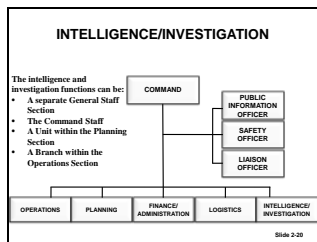


G. Logistics.

Provides services and supplies to support tactical operations.

1. Facilities.
2. Transportation.
3. Supplies.
4. Equipment maintenance and fueling.
5. Feeding.
6. Medical services for response personnel and responder rehab.

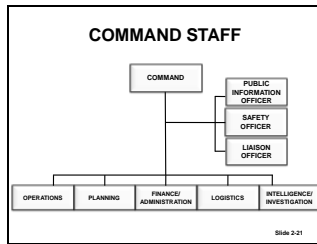
Slide 2-20



H. Intelligence/Investigation.

1. The IC may assign the intelligence and investigation functions to other parts of the ICS organization.
2. Intelligence and investigation must be appropriately analyzed and shared with personnel, designated by the IC, who have proper clearance and a "need-to-know" to ensure that they support decision making.
3. The intelligence and investigation functions can be assigned to:
  - a. A separate General Staff Section.
  - b. The Command Staff (as shown in this example).
  - c. A Unit within the Planning Section.
  - d. A Branch within the Operations Section.

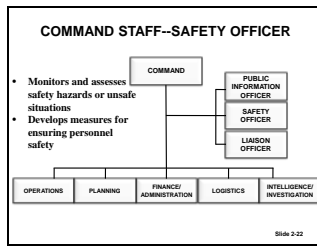
Slide 2-21



I. Command Staff includes

1. Safety Officer.
2. Liaison Officer.
3. Public Information Officer (PIO).

Slide 2-22



J. Safety Officer: Responsible for monitoring and assessing safety hazards or unsafe situations and developing measures for ensuring personnel safety.

1. Should be appointed when IC cannot adequately monitor hazards or unsafe conditions.
2. Keeps IC informed as to existing or potential safety hazards and offers suggestions on how to minimize risks.
3. Safety Officer can take immediate action to correct unsafe acts or remove personnel from threat of danger.
  - a. The Safety Officer must inform IC and other affected supervisors of the corrective actions taken and why.
  - b. Normal chain of Command is used if personnel are not in imminent danger.
  - c. Safety Officer must have requisite background and knowledge of the incident factors that could affect firefighter safety.
  - d. At structure fire, should have knowledge of building construction and fire behavior.

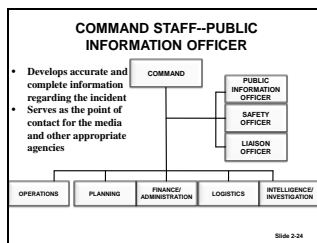
Slide 2-23



K. Liaison Officer: Responsible for providing the point of contact and coordination for assisting agencies not involved in Command functions.

1. Helps IC coordinate the efforts of assisting agencies and reduces risk of those agencies operating independently.
2. Liaison Officer must determine whether Agency Representatives have decision making authority for their agencies.
  - a. If representatives need to check with someone else to make a decision, get the name of the person with whom they are checking.
  - b. Time can be wasted and coordination lost if representatives can't make decisions for their agencies.
3. Liaison Officer's role helps each agency do what it does best, which increases effectiveness of resources and has positive impact on incident safety.

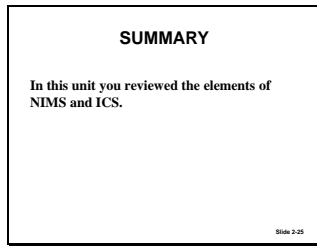
Slide 2-24



L. PIO: Responsible for the development of accurate and complete information regarding the incident and for serving as the point of contact for the media and other appropriate agencies requiring information direct from the incident scene.

1. Gets incident briefing and updates from IC for release to the media.
2. Establishes a press area away from IC and the Command Post (CP).
3. Provides for tours and photo opportunities from a designated safe area.
4. Arranges for media to speak with IC if incident conditions allow.

Slide 2-25



**V. SUMMARY (5 min.)**

In this unit you reviewed the elements of NIMS and ICS.

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## ***UNIT 3: FIREGROUND DECISION MAKING***

### **OBJECTIVES**

*The students will:*

- 1. Explain the need for a logical thought process.*
  - 2. State the difference between Classical Decision Making and Naturalistic Decision Making (NDM).*
  - 3. Assess an incident scene and determine whether Classical Decision Making or NDM is the appropriate decision making model to use at a particular incident.*
  - 4. State the importance of knowing when to be proactive and when to be reactive.*
-

### **POINTS FOR THE INSTRUCTOR**

This unit explains and reinforces the difference between Classical Decision Making and Naturalistic Decision Making (NDM).

Classical Decision Making is used when the incident type presents cues with which the decision maker has little or no experience. The incident requires a set of reactions that the decision maker has not experienced or learned before the incident occurs. In this situation, the decision maker must process information by reading the cues, comparing those cues to what has been learned from similar situations, arriving at a conclusion or result by hypothesizing, determining the actual problems and strategy for the incident, evaluating and select the most effective tactics, and implementing the action plan. Having completed this process--and if the resulting actions are successful--the decision maker in future similar situations will simply use the NDM method to reach the desired conclusions and results.

NDM is a process in which extremely fast decisions can be made. The process depends on the experiences and training of the decision maker. The decision maker relies on reading critical cues from the incident, comparing those critical cues to previously witnessed or learned critical cues, and reacting to those critical cues in a manner previously witnessed or learned. For highest efficiency, the decision maker must know what critical cues are most important for the specific situation and must know the most effective specific response to each critical cue. For example, if one learns the correct critical cues but learns the incorrect response to those critical cues, the decisions made will be flawed and the most correct and efficient solutions will not be applied. NDM is extremely rapid and is the desired method for emergency operations.

The Command sequence is presented as an outline for officers to follow when developing and implementing an action plan using the classical method of problem-solving. By following the Command sequence, officers/crew leaders are forced to think before they act when they do not possess the ability to perform NDM. Skipping any one of the elements of the Command sequence can jeopardize the safety of personnel and the effectiveness of available resources. The Command sequence is the process tool that allows an officer/crew leader to develop the ability to apply critical-cue-directed results/answers/solutions quickly.

It is important to remember and reinforce that the critical cues and responses must be learned if NDM is going to be improved. The Command sequence is not the end; it is simply a means to the end. The Command sequence should be used at the emergency scene when the decision maker lacks the ability to perform NDM at a specific incident. However, it will be most effective to use in a training environment in which the most correct critical cues and reactions can be chosen, modified, and reinforced. The highest level of learning the critical cues, conclusions, and results will be from experts reinforced by application (simulations).



### **ATTITUDES TO FOSTER**

Learning and reinforcing correct critical cues, conclusions, and results are often accomplished through a trial-and-error method. The expert instructor will often be challenging what a student already knows and what that student may consider the most appropriate conclusion or result for a specific situation. The instructor must foster student confidence in the instructor's expertise. Instructors must also recognize that the number of incident-scene variables is very high and that slight alterations in what those variables generate as critical cues may affect conclusions and results greatly. The instructor should listen closely to the student when there is a difference of opinion, attempt to understand and elicit from the student the applicable critical cues, and then form a value-based opinion on the best conclusion or result. In a number of cases, there may be several acceptable "best" answers.

### **METHODOLOGY**

This unit uses lecture and discussion. It is important that the instructor develop a supportive and open environment. Instructors should challenge the students to examine their present perceptions and values regarding incident priorities.

#### **(Total Time: 1 hr.)**

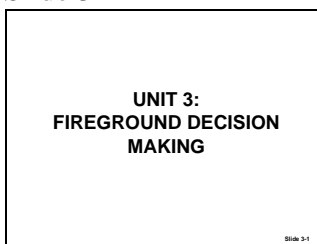
60 min.	Lecture/Discussion	
	Objectives and Overview	IG 3-5
	Need for a Logical Thought Process	IG 3-6
	Incident-Scene Decision Making	IG 3-8
	Summary	IG 3-12

### **AUDIOVISUAL**

Slides 3-1 to 3-19

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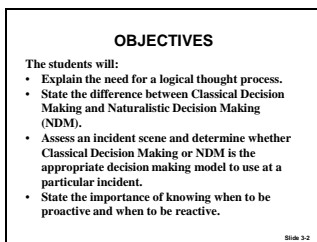
Slide 3-1



60 min.

Lecture/Discussion

Slide 3-2



**I. OBJECTIVES AND OVERVIEW (5 min.)**

A. Objectives.

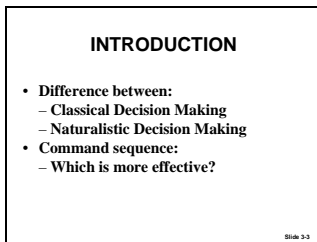
The students will:

1. Explain the need for a logical thought process.
2. State the difference between Classical Decision Making and Naturalistic Decision Making (NDM).
3. Assess an incident scene and determine whether Classical Decision Making or NDM is the appropriate decision making model to use at a particular incident.
4. State the importance of knowing when to be proactive and when to be reactive.

B. Introduction.

1. This unit explains the difference between Classical Decision Making and NDM.
2. It uses the Command sequence to teach the classical methodology.
  - a. The expert way of making incident-scene decisions is cue-based.
  - b. Therefore, this unit presents incident information in the form of cues that should trigger conclusions or actions to take or avoid.

Slide 3-3



3. Throughout this unit and the course activities, students will recognize that NDM is more effective for the incident scene.

Slide 3-4

**NEED FOR A LOGICAL  
THOUGHT PROCESS**

Confusion on arrival

- Need for immediate action
- Have only limited resources
- Many decisions must be made
- Many distractions

Slide 3-4

**II. NEED FOR A LOGICAL THOUGHT PROCESS  
(20 min.)**

- A. Emergency scene can be confusing on arrival.
  1. High demand to take immediate action.
  2. Limited resources on arrival.
  3. Many decisions to be made with minimal information.
  4. Radio traffic at its peak.
- B. Proactive versus reactive.
  1. Every incident has a leader.
    - a. If you react without assessing the incident, sometimes the incident leads.
    - b. Sometimes the Incident Commander (IC) is the leader.
  2. When the incident leads.
    - a. Events occur and we react.
    - b. We continue to react until the fire goes out.
    - c. We are in reactive mode.
  3. When the IC leads.
    - a. Initial assessment is made, objectives are developed.
    - b. Strategy is established.

Slide 3-5

**PROACTIVE VERSUS REACTIVE**

Proactive--who/what leads

- Incident leads
- Incident Commander (IC) leads

Slide 3-5

- c. Resources are evaluated.
- d. Tactics are developed that maximize the use of resources to deal with the incident.
- e. Potential problems and resource needs are identified.
- f. The IC is being **proactive**.

Slide 3-6

**PROACTIVE VERSUS REACTIVE (cont'd)**

If reactive

- Safety is jeopardized
- Poorly defined objectives
- Lack of an effective strategy
- Inappropriate tactics
- Increased growth of incident

Slide 3-6

- C. Dangers of being reactive.
  1. Safety of firefighting personnel and civilians is jeopardized.
  2. Objectives are not developed or identified, or are inappropriate.
  3. Strategy or plan for the effective use of resources is not in place.
  4. Tactics to deal with the incident are not appropriate for the situation resources available or developed.
  5. Increases damage or growth of incident.

Slide 3-7

**POINTS TO REMEMBER**

- Respond to mistakes
- Don't compound mistakes

May have only one chance to do it right

Slide 3-7

- D. Points to remember.
  1. We respond to other people's actions and mistakes.
  2. Don't compound other people's mistakes by making mistakes of your own.
  3. We may have only one chance to do it right.

Slide 3-8

**STAY PROACTIVE**

- Use a logical thought process
- Take time to gather your thoughts

Slide 3-8

- E. How to stay proactive.
  1. Use a logical thought process at every incident.
  2. Take time to gather your thoughts and to settle down when you first arrive at an incident. A few seconds taken here can save hours in the history of an incident.

3. GYST definition: **G**ather **Y**ourself **T**ogether.

Slide 3-9

**INCIDENT-SCENE DECISION MAKING**

- Classical Decision Making
- Naturalistic Decision Making

Slide 3-9

### III. INCIDENT-SCENE DECISION MAKING (30 min.)

- A. **Two primary methods** are used by incident-scene decision makers to reach conclusions, determine results, and institute actions.

1. Classical Decision Making--based on training without a depth of experience.
2. NDM--based on experience.

- B. The **classical** method is a time-consuming process. The decision maker:

1. **Gathers** information.
2. **Analyzes** the information.
3. **Determines** the problems that are present and selects and prioritizes those problems in order of importance (objectives).
4. **Determines** and **prioritizes** what the solutions must be (strategy).
5. **Selects** tactics from one or more options (tactics).
6. **Issues** directives to have the tactics implemented (tactics).

- C. The **classical** process is used when the decision maker is in **training**.

1. Being taught the critical cues, conclusions, results, and actions for an **incident type not previously learned**, or learned incorrectly. For example, an **urban or city** fire officer learning **wildland firefighting** decision making from a wildland expert.

Slide 3-10

**CLASSICAL**

- Gathers information
- Analyzes information
- Determines problems
- Determines and prioritizes solutions
- Selects tactics
- Issues directives to implement tactics

Slide 3-10

Slide 3-11

**CLASSICAL (cont'd)**

- Learning critical cues for an incident type not previously learned
- Evaluating and comparing
- Used during evaluation and planning

Slide 3-11

2. **Evaluating and comparing** the critical cues used, conclusions and results determined, and actions taken by other decision makers, e.g., case studies.
  - a. To **determine** obvious and subtle **differences**.
  - b. To **provide optional** conclusion, result, and action sets based on those differences.
  - c. To provide **cues** that would indicate that **certain** actions should **not** be directed.
3. The classical process is used during evaluation and planning when time is not a factor.

Slide 3-12

**CLASSICAL (cont'd)**

- Little or no previous experience with incident type.
- Do not direct tactical operations until there is a plan.
- Plan must be based on critical cues.
- Tactics chosen from several options.

Slide 3-12

- D. The classical process is needed when the decision maker is at an **actual incident scene** and there has been **little or no previous experience** or **training** with this specific incident type or **little or no previous experience** or **training** with an incident with the **variables** that are now present.
  1. The decision maker must **not** direct tactical actions until a basic plan has been formulated. A process that **does not include** an evaluation of the incident information, risk-benefit analysis, and appropriate strategies and tactics is not a **plan--it is a design for disaster**.
  2. The plan **must be based on** incident information (**critical cues**), real problems, and appropriate broad solutions (**strategies**).
  3. The best specific solutions (tactics) must be applied, and most often, these tactics will be chosen from several options.

Slide 3-13

**NATURALISTIC**

- Looks for critical cues
- Relates those cues to previous similar situations
- Recalls previous conclusions, results, and actions
- Issues directives

Slide 3-13

E. The **naturalistic** method is a process in which the decision maker:

1. **Looks** for certain critical cues (visual, verbal, audible, touch, smell).
2. **Relates** those critical cues to previous similar situations (experience or training).
3. **Recalls** the previous conclusions, results, and actions that best fit the new situation.
4. **Issues** directives to have the tactics implemented.

Slide 3-14

**NATURALISTIC (cont'd)**

The greater one's experience on the same type of incident, the greater one's ability to read the subtle differences at any incident of that type, draw refined conclusions, and direct the most appropriate actions to provide a solution.

Slide 3-14

F. The **greater** one's experience on the **same type** of incident, the greater one's ability to read the subtle differences at any incident of that type, draw **refined** conclusions, and direct the most appropriate actions to provide a solution.

Slide 3-15

**NATURALISTIC (cont'd)**

Basing decisions on outcomes from previous experience can produce action results much faster than following a step-by-step intellectual process.

Slide 3-15

G. Basing decisions on outcomes from previous experience can produce action results much faster than following a step-by-step intellectual process.

Slide 3-16

**NATURALISTIC (cont'd)**

- Used when decision maker has adequate experience or training for the incident type
- Almost instant recall, including interrelationships
- Always the first method that is done by the brain

Slide 3-16

H. When the decision maker has adequate experience or training for the incident type, the NDM method will be used.

1. NDM is the way the brain normally works. It will always try to perform NDM to solve any problem or answer any question.
2. When NDM fails to provide the solution or answer, then you must have a method of providing said answers and solutions.



3. The NDM method is almost **instant** recall of previously learned information.
  - a. It includes the **interrelationships** of specific information with conclusions, results, and actions based on whether or not they worked previously.
  - b. Therefore, it provides a direct, **lightning-fast** link from what I see, hear, smell, and feel to what I do.
4. Because of the **time-pressure** nature of emergency-scene decision making, the **choice** between NDM and classical methods will **not** be conscious. The decision maker's brain **always** will attempt NDM first.

Slide 3-17

**NATURALISTIC (cont'd)**

Decision maker must recognize when there is insufficient information to use the Naturalistic Decision Making method.

- Little or no experience or training with this type of incident.
- Recognizes that the cues are very unfamiliar.
- Feels lost, overwhelmed, or in a panic.

Then use classical!

Slide 3-17

- I. The decision maker must recognize when he/she possesses **insufficient** information to use the NDM method:
  1. When it is obvious to the decision maker that there has been **no** experience or too **little** training on the specific incident.
  2. When the decision maker recognizes that the incident cues are **very unfamiliar** and do **not** immediately result in what he/she considers appropriate action.
  3. When the decision maker feels **lost** or **overwhelmed, cannot think**, or is in a **panic**, the **classical** method is probably the appropriate response.

Slide 3-18

**NATURALISTIC (cont'd)**

Decision maker will use classical method to evaluate naturalistic actions that have been ordered in a specific situation to ensure that what is being done is achieving desired result.

Slide 3-18

- J. The decision maker will use the **classical** method to evaluate **naturalistic** actions that have been ordered in a specific situation to ensure that what is being done is achieving the desired result.

Slide 3-19

**SUMMARY**

- Difference between Naturalistic Decision Making and Classical Decision Making
- How decisions are made at an incident scene and how they can impact the entire situation
- How important it is to have a logical thought process in the midst of confusion and chaos
- Importance of being proactive at the incident scene

Slide 3-19

**IV. SUMMARY (5 min.)**

- A. In this unit we discussed the difference between NDM and Classical Decision Making.
- B. You saw how decisions are made at an incident scene and how they can impact the entire situation.
- C. You saw how important it is to have a logical thought process in the midst of confusion and chaos.
- D. Last, we discussed the importance of being proactive at the incident scene.

## **UNIT 4: BUILDING CONSTRUCTION TYPES**

### **OBJECTIVES**

*The students will:*

- 1. List ways to collect data and manage information.*
  - 2. List and describe the five types of building construction.*
  - 3. Identify the strengths, weaknesses, characteristics, and collapse potential for each of the five methods of building construction.*
  - 4. Identify special safety concerns.*
  - 5. Given a scenario, identify the strengths and weaknesses in different building construction types.*
-

**METHODOLOGY**

This unit uses lecture and discussion.

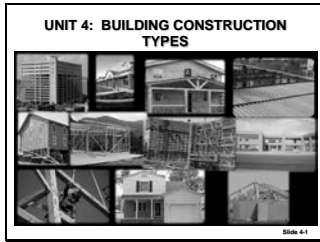
**(Total Time: 2 hr., 25 min.)**

145 min.	Lecture/Discussion	
	Objectives	IG 4-3
	Management of Information	IG 4-3
	Type I--Fire-Resistive Construction	IG 4-5
	Type II--Noncombustible/Limited Combustible Construction	IG 4-9
	Type III--Ordinary Construction	IG 4-13
	Type IV--Heavy-Timber/Mill Construction	IG 4-18
	Type V--Wood-Frame Construction	IG 4-20
	What are the Firefighting Safety Concerns?	IG 4-24
	What is the Brief Initial Report?	IG 4-29
	Summary	IG 4-31

**AUDIOVISUAL**

Slides 4-1 to 4-115

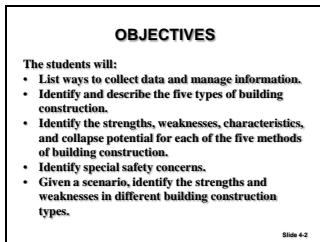
Slide 4-1



145 min.

Lecture/Discussion

Slide 4-2

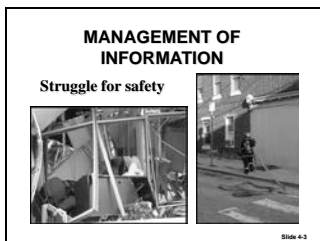


I. OBJECTIVES (5 min.)

The students will:

- A. List ways to collect data and manage information.
- B. List and describe the five types of building construction.
- C. Identify the strengths, weaknesses, characteristics, and collapse potential for each of the five methods of building construction.
- D. Identify special safety concerns.
- E. Given a scenario, identify the strengths and weaknesses in different building construction types.

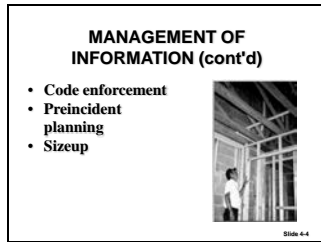
Slide 4-3



II. MANAGEMENT OF INFORMATION (5 min.)

- A. Struggle for safety.
  - 1. Improvements in safety hinges on the management of information.
  - 2. To increase the ability to survive, all responders must know their jurisdictions.
  - 3. Various construction methods and materials will create extreme risk.
  - 4. Each day must be a training day.

Slide 4-4



5. There will always be changes in the materials used.

B. Code enforcement.

Need training to spot building and fire code violations.

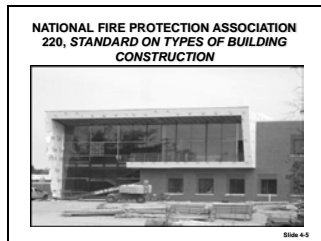
C. Preincident planning data.

1. Collection injury and death reports show 100 line-of-duty deaths (LODDs) each year.
2. Fireground changes are necessary.

D. Sizeup.

1. Improves ability to make correct decisions at an actual emergency.
2. Must be able to retrieve information in a timely manner.
3. Must allot time to gathering information.

Slide 4-5



The National Fire Protection Association (NFPA) 220, *Standard on Types of Building Construction*--explains about the NFPA standard, revision policy, and consensus of committee process used by the fire service. Others agencies may only look at combustible and noncombustible features.

Slide 4-6



E. Identification of construction classes.

1. A thorough understanding of the strengths and characteristics of various construction types is critical to effective and safe operations.
2. As noted by Francis Brannigan, responders must understand that a building code is "intended."

Slide 4-7

**TYPE I--FIRE-RESISTIVE  
CONSTRUCTION**

- What are the characteristics?
- What are the strengths?
- What are the firefighting/safety concerns?

Slide 4-7

**III. TYPE I--FIRE-RESISTIVE CONSTRUCTION  
(20 min.)**

**A. Characteristics.**

1. Structural steel, sprayed or encased.
2. All vertical openings protected with approved devices.
3. Exterior walls are normally nonsupporting (e.g., precast, glass, foam, concrete, and aluminum).
4. Exterior/Interior nonbearing walls will vary in fire resistance.
5. Stairways are enclosed in fire-resistive materials.
6. Floors may be poured-in-place or prefabricated concrete.
7. Roof construction is similar to floors.
8. "Center core" construction allows perimeter to be used for revenue producing areas. Large open areas often contain heavy fire loading. Utilities are in a common shaft.
9. "End core" buildings provide stairs at the end of each floor and a center corridor.

**B. Strengths.**

1. Stairways and corridors are enclosed in fire-rated materials.
2. Structural members are not immediately exposed to direct flames.
3. Generally have built-in fire protection systems.

4. Components may vary depending on age of building and codes in force at the time of construction.
5. Compartmentalization provided by fire-resistive walls and floors.

C. Firefighting/Safety concerns.

1. Central air-conditioning penetrates all parts of the building creating a potential for fire and smoke spread. Must be aware of poke-through construction that violates fire protective barriers.
2. Fire has a tendency to "lap" from floor to floor.
3. Ventilation is a significant problem.

D. Fire-resistive requirements.

1. Exterior bearing walls--3 to 4 hours.
2. Interior bearing walls--2 to 4 hours.
3. Columns, beams, girders, trusses, arches--2 to 4 hours.
4. Floors--2 to 3 hours.
5. Roof--1-1/2 to 2 hours.
6. Exterior nonbearing walls--0 hours.

Slide 4-8

TYPE I--FIRE-RESISTIVE REQUIREMENTS	
• Exterior bearing walls	3 to 4 hours
• Interior bearing walls	2 to 4 hours
• Columns, beams, girders, trusses, arches	2 to 4 hours
• Floors	2 to 3 hours
• Roof	1-1/2 to 2 hours
• Exterior nonbearing walls	0 hours

Slide 4-9



Show Slide 4-9. Signs on a roof may be an example of a load that was not designed into original building. Explain the differences between dead load and live load.



Slide 4-10



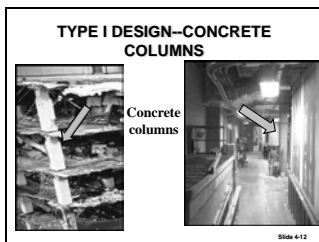
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Slide 4-11



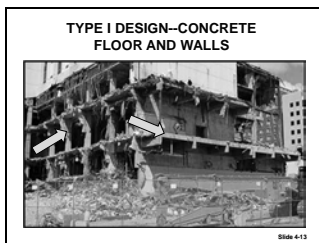
Show Slide 4-11.

Slide 4-12



Show Slide 4-12.

Slide 4-13



Show Slide 4-13.

Slide 4-14



E. MGM Grand.

1. Design of steel can vary from midrise to highrise.
2. Large loss of life can occur remotely from the fire when heating, ventilating, and air conditioning (HVAC), water supply, and electrical are not maintained.

Case study: smoke spread to upper floors in Las Vegas via the HVAC system.

Slide 4-15



F. Spray on fire protection.

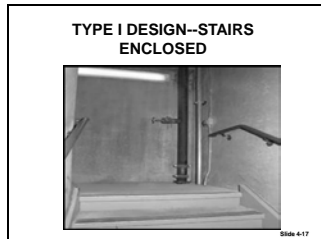
1. On steel truss and ceiling to provide 2 to 4 hours of protection under normal fire conditions.

Slide 4-16



2. On steel joist/ceiling.
3. In fire-resistive materials.

Slide 4-17

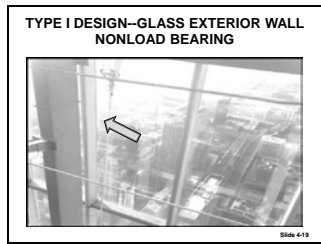


Slide 4-18



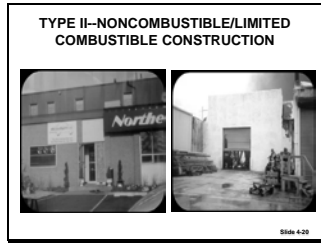
4. Gap will allow fire and smoke to spread to upper floors. This can also be called a safing gap.

Slide 4-19



5. Nonload bearing wall.

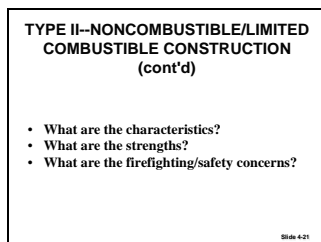
Slide 4-20



#### IV. TYPE II--NONCOMBUSTIBLE/LIMITED COMBUSTIBLE CONSTRUCTION (20 min.)

Type II construction will have structural elements with little or no protection from the effects of fire. In the event of a fire, these unprotected steel structural members may fail and collapse with little warning.

Slide 4-21



##### A. Characteristics.

1. Structural steel may be exposed to the effects of fire.
2. Noncombustible refers to structural members, not content or interior finish.
3. Structural framework is made of steel that is bolted, riveted, or welded.
4. Susceptible to expansion or contraction of steel members from heat resulting in early distortion.
5. Wall enclosures may be masonry, steel, glass, aluminum, or other materials.
6. Floor and roof support systems often will be lightweight bar joists or trusses.

##### B. Strengths.

1. Structural members will not add to the fire load.
2. Easily recognizable characteristics.

3. Means of egress may be enclosed in fire-resistive materials.
  4. Often built with fire protection systems in place.
- C. Firefighting/Safety concerns--NFPA ratings.

ASK: What are NFPA ratings?

**Suggested response:** NFPA ratings are based on test procedures.

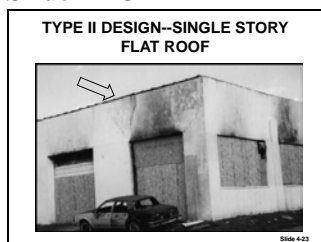
Slide 4-22

TYPE II--NONCOMBUSTIBLE/LIMITED COMBUSTIBLE CONSTRUCTION (cont'd)	
• Exterior/Interior bearing walls	0 to 2 hours
• Columns, beams, girders, trusses, arches	0 to 2 hours
• Floors	0 to 2 hours
• Roof	0 to 1 hour

Slide 4-22

1. Exterior/Interior bearing walls--0 to 2 hours.
2. Columns, beams, girders, trusses, arches--0 to 2 hours.
3. Floors--0 to 2 hours.
4. Roof--0 to 1 hour.

Slide 4-23

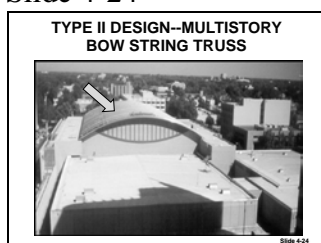


D. Design.

1. Single story--flat roof.

Large space above top of window and door could be an indicator of a truss roof assembly.

Slide 4-24



2. Multistory--bow string truss.
  - a. Indicator of a truss roof assembly and flat roof case study.
    - Truss roof assemblies have killed firefighters in many States.

- b. In 1988, after the Hackensack Ford Fire, the State of New Jersey created a new building code mandating that all new construction will have exterior signage indicating a truss floor or roof.

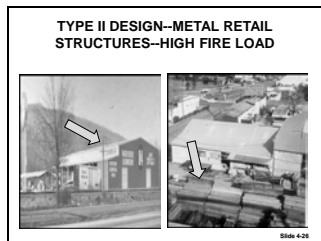
Slide 4-25



- 3. Multistory--steel framework.

Different shapes and configuration.

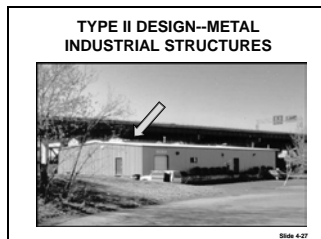
Slide 4-26



- 4. Metal retail structures.

- a. Generally high fire load.
- b. Could result in early failure of structure.

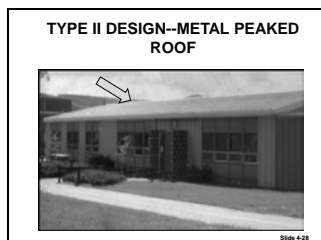
Slide 4-27



- 5. Metal industrial structures.

Building with skylights.

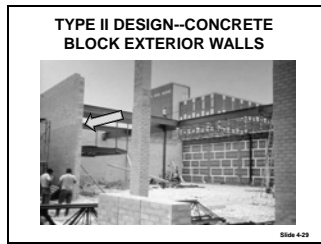
Slide 4-28



- 6. Metal peaked roof.

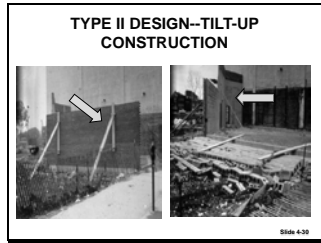
Used as office space.

Slide 4-29



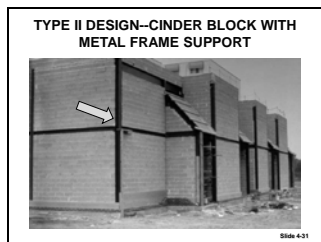
7. Concrete block exterior walls--typical in noncombustible building.

Slide 4-30



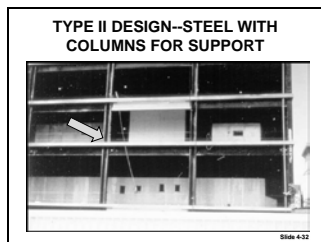
8. Tilt-up construction--failure in pancake collapse.

Slide 4-31



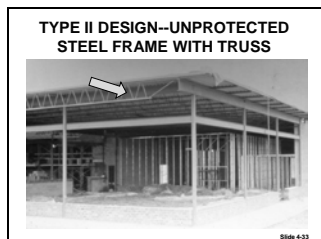
9. Cinder block--metal frame--used for support.

Slide 4-32



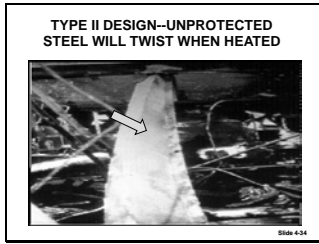
10. Steel with columns--helps carry the load.

Slide 4-33



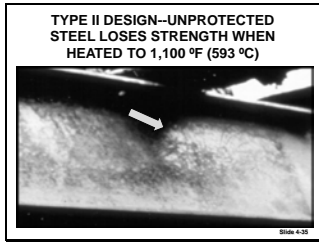
11. Unprotected steel frame with trusses--support the metal roof deck.

Slide 4-34



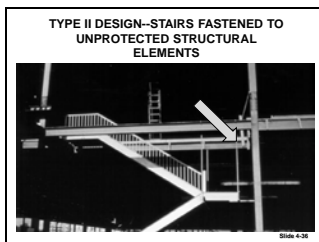
12. Unprotected steel--will twist when heated.

Slide 4-35



13. Steel loses strength at 1,100 °F (593 °C).
- Steel cannot support own weight at 1,500 °F (816 °C).
  - Steel elements can transmit heat to uninvolved portions of a building.

Slide 4-36



14. Stairs fastened to unprotected structural elements.

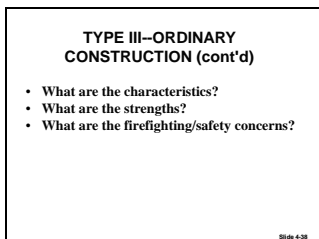
Slide 4-37



## V. TYPE III--ORDINARY CONSTRUCTION (20 min.)

These building types provide many challenges to firefighters, such as void spaces and common walls allowing rapid fire extension and little structural protection. Fire in concealed spaces can travel in many directions.

Slide 4-38



- A. Characteristics.
- Exterior walls are masonry.
  - Structural members and interior construction are made of wood. This includes floor and roof supports.

3. Floor and roof decking is usually a wood tongue-and-groove composition. Many new lightweight and durable materials can be found.
4. Height rarely exceeds six stories and is normally two or three stories.
5. Common walls may share wall sockets for floor joists and roof rafters.
6. These buildings often have parapet walls, signs, cornices, and marquees.

B. Strengths.

1. Full cut lumber used in the structural members.
2. Masonry walls.

C. Firefighting/Safety concerns.

1. Collapse is a real possibility under prolonged heating.
2. Concealed spaces that can contribute to smoke and fire spread. These open spaces or voids can be accessible as a common attic or inaccessible as in a cockloft.
3. These buildings often have undergone renovations, creating voids, dropped ceilings, and shafts that allow fire/smoke spread.
4. Walls may be tied to floors with metal bolts or wall plates; it is uncommon to use both. The observation of stars is a common indicator of a reinforced wall.

Slide 4-39

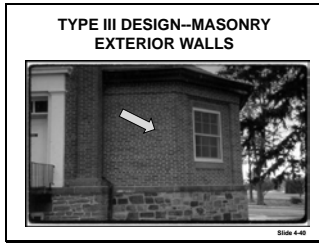


D. Design.

1. Ordinary construction--Main Street USA.
  - a. Can be found in most communities.
  - b. Also called Main Street USA construction.

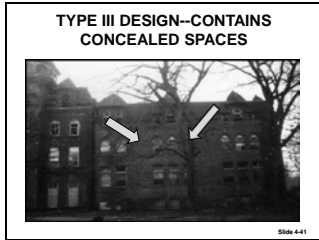


Slide 4-40



2. Masonry exterior walls--Exterior walls can be brick or stone and do not add to the fire load.

Slide 4-41



3. Contains concealed spaces.
  - a. Firefighter safety depends on the right equipment.
  - b. The thermal imaging camera (TIC) is a required piece of equipment to uncover fire in concealed spaces.

Slide 4-42



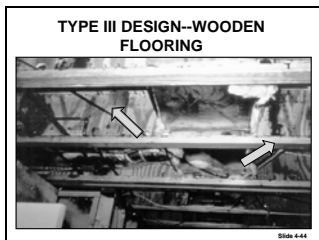
4. Commonly found in strip mall construction. Malls are one of the most common uses of ordinary construction with masonry and lightweight steel or wood trusses.

Slide 4-43



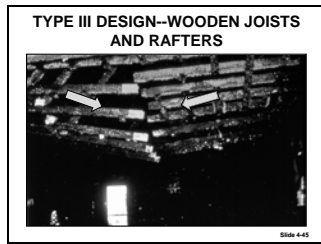
5. Wood lath over plaster--can create a channel for fire spread.

Slide 4-44



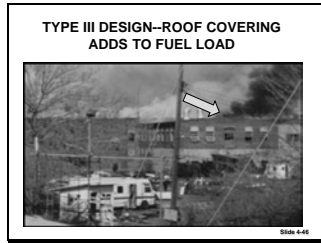
6. Wooden flooring.
  - a. Floors can burn through when exposed to fire.
  - b. Lightweight components have resulted in many firefighter injuries and deaths.

Slide 4-45



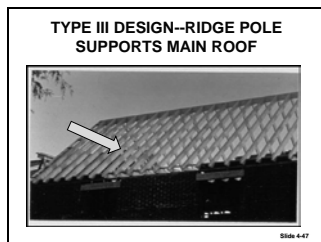
7. Wooden joists and rafters--can be full dimension wood and still fail.

Slide 4-46



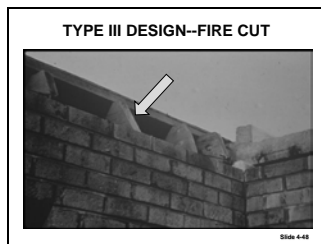
8. Roof covering adds to fuel load. Asphalt and other materials can add to fuel load.

Slide 4-47



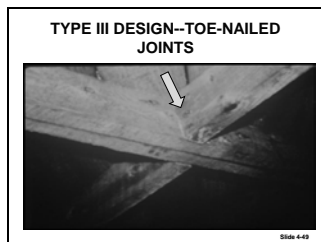
9. Ridge pole used as main roof support. Often an attic can be found in the space under a peaked roof.

Slide 4-48



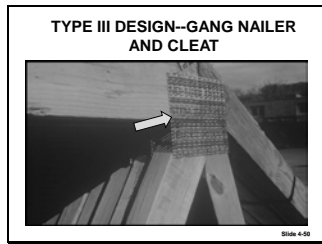
10. Fire cut--designed to permit a floor to fall downward and reduces the risk of pushing out a bearing wall.

Slide 4-49



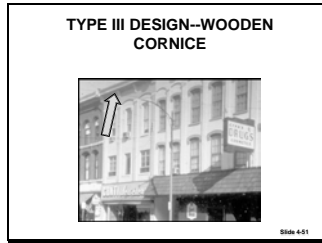
11. Toe-nailed joints--In older construction, nails were used as connectors.

Slide 4-50



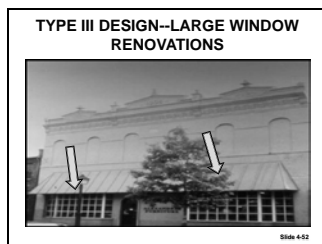
12. Gang-nailer and cleat--In new construction, lightweight materials are used as connectors.

Slide 4-51



13. Wooden cornice.
- a. Cornice overhangs can burn, leading to the spread of fire and collapse.
  - b. A safe corridor for firefighters to operate is necessary.

Slide 4-52



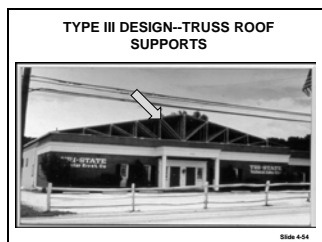
14. Large window renovations.
- a. Renovations can be used to update the appearance of an older building.
  - b. Cornice is masonry.

Slide 4-53



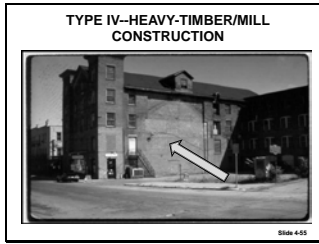
15. Marquee overhang--can collect a lot of water and may fail due to excessive weight.

Slide 4-54



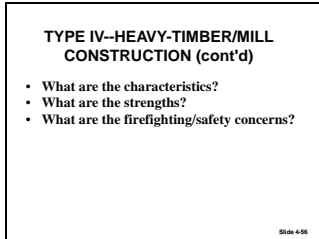
16. Do not trust the truss. Experience has shown that truss assemblies can quickly fail.

Slide 4-55



17. Heavy-timber/Mill construction.
  - a. Heavy timber is an ideal design.
  - b. The heavy timber will resist collapse from fire and there are few concealed spaces.

Slide 4-56



**VI. TYPE IV--HEAVY-TIMBER/MILL CONSTRUCTION (15 min.)**

**A. Characteristics.**

1. Common in older factories and mills.
2. Masonry exterior walls have large dimension lumber as structural supports.
3. Minimum size lumber, usually 8 inches, is used in columns, beams, girders, and arches.
4. Minimum dimensions of all exposed wood is 2 inches.
5. Wood floors have a minimum thickness of 3 inches.
6. Roof supports have minimum dimensions of 4 by 6 inches with decking of 1-1/8-inch thickness.

**B. Strengths.**

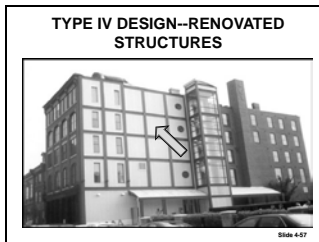
1. Support members have a large mass and can sustain fire for a long time before being destroyed.
2. Heavy timber roof and floor elements should support the building during an offensive attack.
3. Floors usually will have scupper to help with water runoff.

4. Often will have a built-in sprinkler system, especially in those buildings recently renovated.

C. Firefighting/Safety concerns.

1. Often contains an unprotected opening for freight elevators or utility shafts. Potential for rapid fire development.
2. Large open area.
3. Floors may be soaked from years of supporting machinery.
4. Often has a heavy fire load of stock waiting to be shipped.

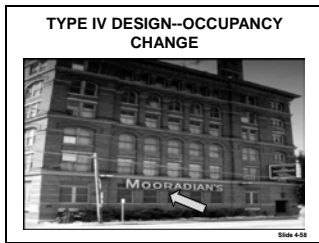
Slide 4-57



D. Designs.

1. Renovated structures.
  - a. Renovations are very popular.
  - b. Energy efficiency and handicap access changes are common.
2. Occupancy change--Heavy timber buildings can be changed in retail outlets.

Slide 4-58



Slide 4-59



3. Sealed windows--can be sealed for security and energy efficiency.

Slide 4-60



4. Interior wooden columns.
  - a. Heavy-timber buildings can be renovated without creating concealed spaces.
  - b. Note open columns, beams, and flooring.

Slide 4-61



5. Heavy timber--large water supply requirements.
  - a. Heavy-timber buildings need a good water supply for extinguishment, use of master streams to prevent extension, and can quickly escalate into a campaign-type incident.
  - b. Firefighter's rehab is essential for long-duration incidents.

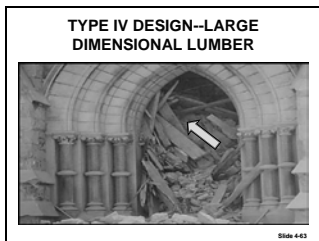
Slide 4-62



6. Potential collapse zone.

In the initial stages, proper placement of the apparatus and establishment of a collapse zone are very important.

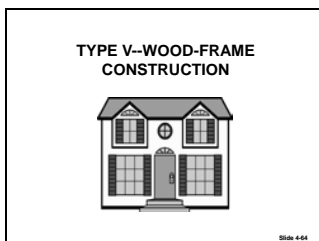
Slide 4-63



7. Large dimensional lumber.

Large dimensional lumber is characteristic of heavy-timber construction.

Slide 4-64



## VII. TYPE V--WOOD-FRAME CONSTRUCTION (20 min.)

The wood-frame structure is the most common type of construction in America.

Slide 4-65

**TYPE V--WOOD-FRAME  
CONSTRUCTION (cont'd)**

- What are the characteristics?
- What are the strengths?
- What are the firefighting/safety concerns?

Slide 4-65

A. Characteristics.

Walls, floors, and roof structures are all constructed from combustible wooden framing.

B. Strengths.

The adjoining sidewalls in a townhouse design are more stable than free standing walls.

C. Firefighter/Safety concerns.

1. Technology is changing.
2. Most of the technological changes are related to adding lightweight components. These components fail at an early rate and create many toxic gases.
3. Roof leak or plumbing pipe leakage will weaken wood beams/joists.

D. Comparison of wood frame to heavy timber.

Slide 4-66

**TYPE V COMPARISON**


National Fire Protection Association (NFPA) 220 defines Type V construction as the type in which the following materials are made of wood and are less substantial than NFPA Type IV (heavy timber/mill) construction:

- Exterior wall
- Bearing walls
- Columns
- Beams, girders, trusses, arches
- Floors and roofs

Slide 4-66

Slide 4-67

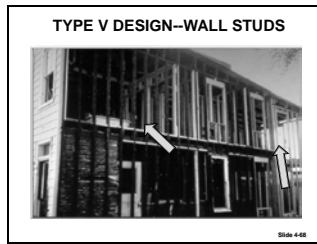
**TYPE V DESIGN--COMBUSTIBLE  
EXTERIOR**



Slide 4-67

1. Wooden-frame exterior will add to the fire load.

Slide 4-68



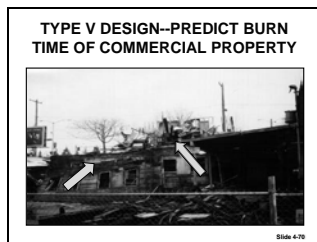
2. Wall studs provide strength and support for structural elements.

Slide 4-69



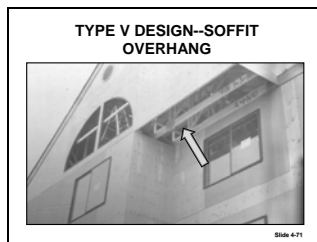
3. Firefighters must be aware of residential burn time and anticipate structural failure.

Slide 4-70



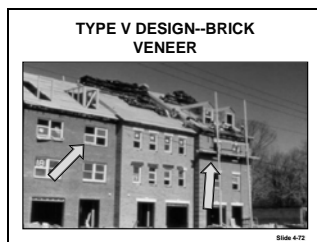
4. Firefighters must be aware of commercial property burn time and anticipate structural failure.

Slide 4-71



5. Plywood can be used for the exterior wall.
  - a. It is normally covered to protect against the weather.
  - b. Soffits/Overhangs can permit fire to enter the inside of the structure.

Slide 4-72



6. Exterior covering.
  - a. Brick veneers in a townhouse design provide more strength than freestanding bearing walls.

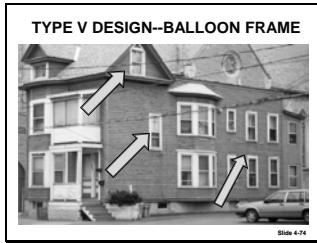


Slide 4-73



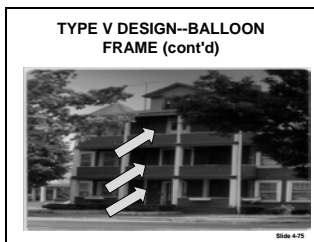
- b. Vinyl siding.

Slide 4-74



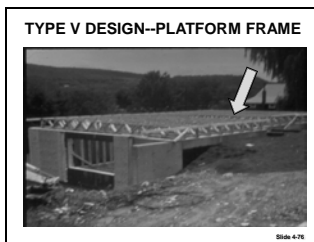
7. Balloon frame has studs that run from the foundation to the attic.

Slide 4-75



8. Platform frame has the walls of each story built on a platform formed by the preceding floor.

Slide 4-76

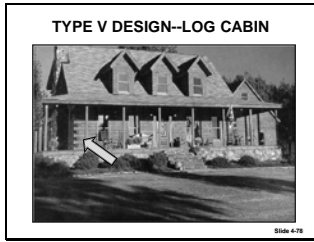


Slide 4-77



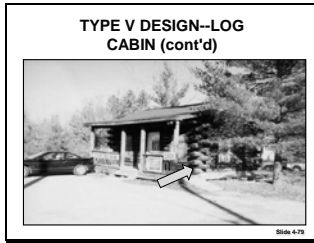
9. Post and beam has structural members of substantial dimensions and is sided with a lightweight covering such as wood board.

Slide 4-78



10. Log cabins have wooden logs that are interlocked by notching the ends.

Slide 4-79



11. A log cabin design can have many new energy efficient features. Heavy logs will add to the fuel load.

Slide 4-80



## VIII. WHAT ARE THE FIREFIGHTING SAFETY CONCERNS? (25 min.)

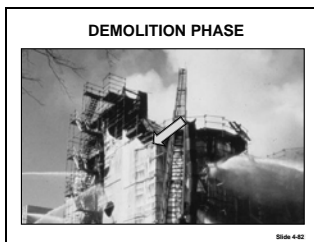
Slide 4-81



- A. Building being constructed.

Construction phase has new concrete and accountability of workers.

Slide 4-82



- B. Building being demolished.

1. Many times explosives/cutting equipment are used.
2. Plastic wraps can easily ignite causing early failure of the structure when columns are altered or removed.

Slide 4-83



- C. Changes in occupancy result in commodities that exceed the capacity of the sprinkler system.

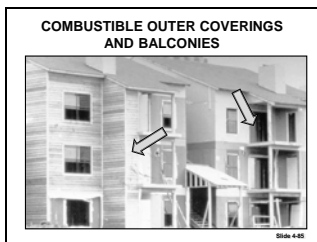
Slide 4-84



- D. Mixed construction adds many dangers to responders.

Risks of concealed spaces can add to suppression, search, rescue, and ventilation challenges.

Slide 4-85



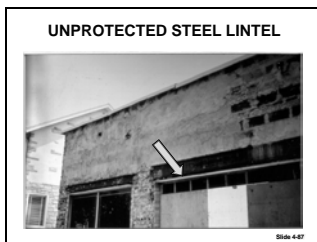
- E. Combustible outer coverings and balconies.

Slide 4-86



- F. Wooden lintel will burn and fail.

Slide 4-87



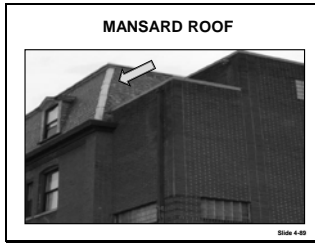
- G. Metal lintel will expand and fail.

Slide 4-88



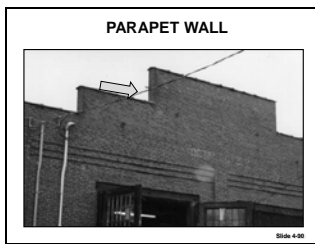
H. Overhangs add much fuel load.

Slide 4-89



I. Mansard roof adds a significant fuel load.

Slide 4-90



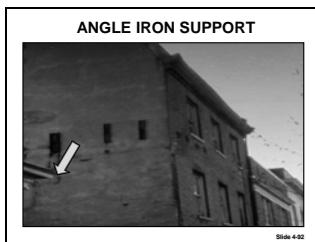
J. Parapet walls are free standing and can collapse without much advance warning.

Slide 4-91



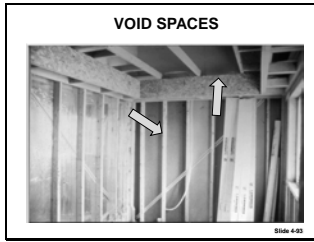
K. Star indicator of an unstable wall.

Slide 4-92



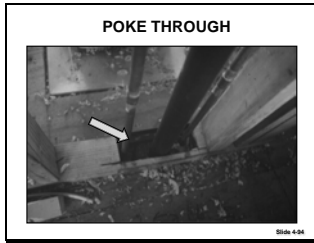
L. Angle iron to support exterior wall.

Slide 4-93



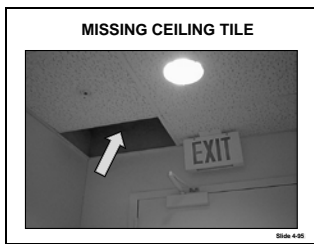
M. Void spaces can spread fire problems.

Slide 4-94



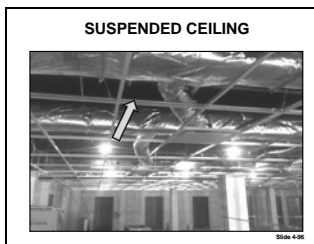
N. Poke through can spread fire problems.

Slide 4-95



O. Missing ceiling tiles will reduce fire protection rating of a ceiling.

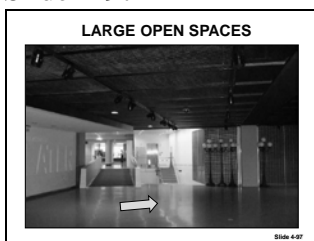
Slide 4-96



P. Suspended ceilings are attached to the ceiling with light gauge metals.

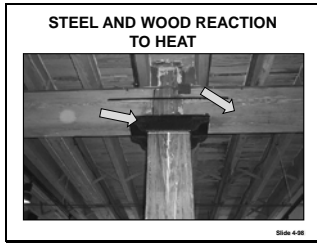
1. These ceiling assemblies can hide a spreading fire problem and quickly fail.
2. The use of a TIC is necessary to pinpoint heat sources.

Slide 4-97



Q. Large open spaces can lead to firefighters getting disoriented and lost.

Slide 4-98



R. Different building materials react to heat in different ways.

1. Steel expands and lightweight pre-engineered may collapse.
2. Wood gives off toxic gases.
3. Both suddenly fail.

S. Danger of steel that expands and wood that burns.

T. New technology can create less stable building components under fire conditions.

U. The strength of lightweight construction is the floor-by-floor approach.

Slide 4-99



Slide 4-100

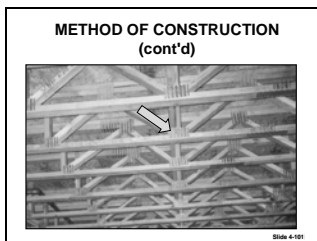


V. Method of construction.

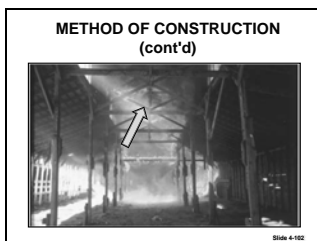
1. "All at once."
  - a. Resulted in many large-scale fires.
  - b. The exposed wooden walls create the potential for a conflagration.
2. Lightweight truss without firestops will create a significant fuel load.

Lightweight connectors will loosen and the structural integrity of the entire roof will be lost.

Slide 4-101

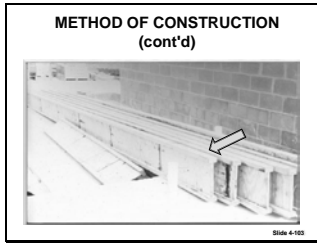


Slide 4-102



3. Truss and columns have various type fasteners and are made of materials that react differently during a fire.

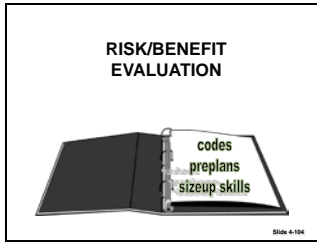
Slide 4-103



W. Hazards and safety scale.

New building construction methods and materials equal new rules and new tactics.

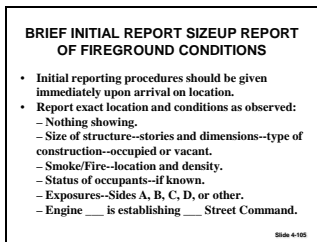
Slide 4-104



X. Risk/Benefit evaluation based on code enforcement inspections, company level preplans, and onscene sizeup skills.

Y. Knowledge of the different building construction types will prevent serious and fatal injuries.

Slide 4-105

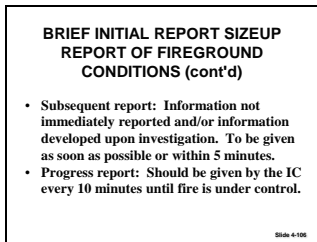


**IX. WHAT IS THE BRIEF INITIAL REPORT? (10 min.)**

A. Knowledge of the different building construction types will prevent serious and fatal injuries.

B. What do I have?

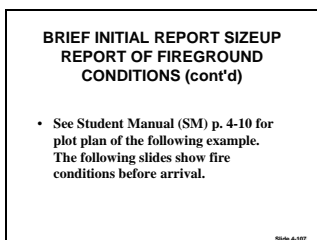
Slide 4-106



1. Building and occupancy type.
  - a. Size of structure--stories and dimension.
  - b. Type of construction.
  - c. Occupied or vacant.

SM p. 4-10

Slide 4-107



Refer students to their Student Manual (SM). They can review the plot plan and follow the example Brief Initial Report (BIR) used by the instructor for this section.

Slide 4-108



Slide 4-109



2. Description of conditions.

- a. Describe situation or incident conditions and where those conditions are seen.

- Nothing showing.

- Smoke/Fire--location and density.

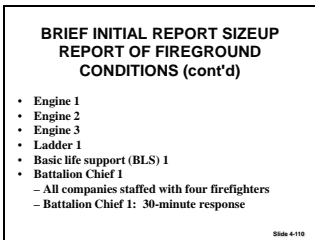
- Status of occupants if known.

- Exposures--Sides A, B, C, D, or other.

- b. Example.

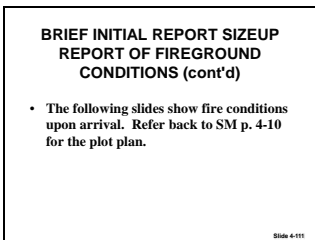
- Heavy smoke and fire showing from the second floor, Side A.

Slide 4-110



Emphasize the critical importance of recognizing building construction types.

Slide 4-111

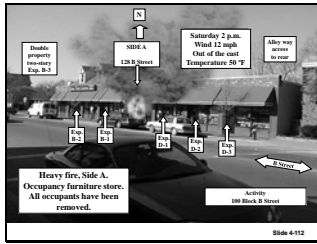


C. Who is in Command?

While it is assumed that the first-arriving officer is in Command until Command is transferred, the initial report should make it clear whether that first officer is keeping Command or if it is being transferred, and to whom.



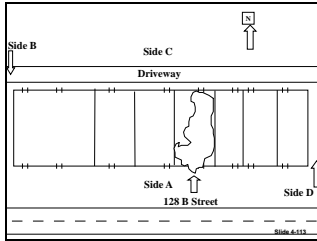
Slide 4-112



D. Example.

1. Engine \_\_\_\_\_ arrived on location at Side \_\_\_\_\_ of a (describe structure or facility).
2. Describe incident conditions, e.g., fire, smoke conditions, and apparent location.
3. Tell what tactical operation your crew is doing.
4. (Rank) Engine is Command.
5. Call for additional resources, if needed.

Slide 4-113



Slide 4-114

**BRIEF INITIAL REPORT SIZEUP  
REPORT OF FIREGROUND  
CONDITIONS (cont'd)**

Sizeup report example:

- On location at 128 B Street, one-story strip store, Type III-ordinary construction, 20'x45', occupied as a furniture store.
- Heavy fire and smoke, Side A.
- All occupants have been removed.
- Exposures B 1 and D 1 similar type stores, medium smoke showing.

Slide 4-115

**SUMMARY**

If you think building construction has changed, you are right! Now, you must change your thinking and decision making process.

**X. SUMMARY (5 min.)**

If you think building construction has changed, you are right! Now, you must change your thinking and decision making process.

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## ***UNIT 5: THE ANALYTICAL SIZEUP PROCESS***

### **OBJECTIVES**

*The students will:*

- 1. Discuss the scientific method.*
  - 2. Describe the primary sizeup factors and determine their impact on objectives and strategies.*
  - 3. Analyze the Command Sequence Action Panning Cycle.*
-

**POINTS FOR THE INSTRUCTOR**

The content of this unit is based on the theories and information presented in *Firefighting Strategy and Leadership*, by Charles V. Walsh and Leonard G. Marks, published by Gregg Division of McGraw Hill Book Company (2nd ed., 1977).

**METHODOLOGY**

This unit uses lecture, discussion and small group activities.

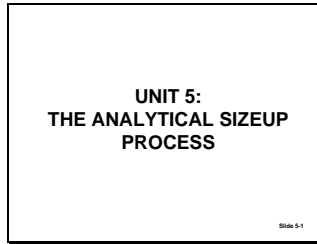
**(Total Time: 3 hr., 30 min.)**

120 min.	Lecture/Discussion	
	Objectives	IG 5-3
	The Scientific Method	IG 5-3
	The Primary Factors Chart	IG 5-4
	Making Decisions	IG 5-5
	Limits	IG 5-6
	Evaluating Primary Factors	IG 5-6
	The Command Sequence Cycle	IG 5-17
45 min.	Small Group Activity 5.1	
	Primary Factors Chart Exercise	IG 5-27
45 min.	Small Group Activity 5.2	
	Objectives-Strategy-Tactics Chart Exercise	IG 5-57

**AUDIOVISUAL**

Slides 5-1 to 5-122

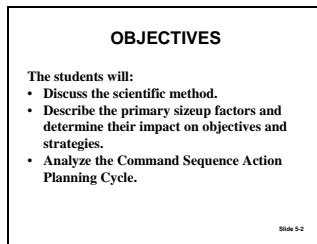
Slide 5-1



60 min.

Lecture/Discussion

Slide 5-2

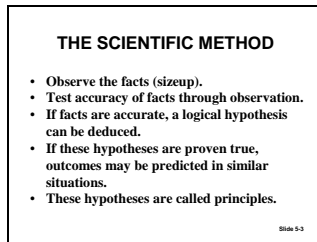


**I. OBJECTIVES (5 min.)**

The students will:

- A. Discuss the scientific method.
- B. Describe the primary sizeup factors and determine their impact on objectives and strategies.
- C. Analyze the Command Sequence Action Planning Cycle.

Slide 5-3



**II. THE SCIENTIFIC METHOD (5 min.)**

- A. Observe the facts (sizeup).
- B. Test the accuracy of these facts through observation.
- C. If these facts are accurate, a logical hypothesis can be deduced.
- D. If these hypotheses are proven true, outcomes may be predicted in similar situations.
- E. These hypotheses are called principles.

Slide 5-4

**THE PRIMARY FACTORS CHART**

Set up in Columns

- Column 1--Primary Factors
- Column 2--Incident Objectives
- Column 3--Incident Strategies
- Column 4--Evaluate Strategies

Slide 5-4

SM p. 5-6

Slide 5-5

Slide 5-5

Slide 5-6

**COLUMN 1: PRIMARY FACTORS**

- Step 1: Analyze the Primary Factors
- Step 2: Establish Major Incident Objectives
- Step 3: Identify Incident Strategies
- Step 4: Assign Incident Strategies
- Step 5: Evaluate Incident Strategies

Slide 5-6

### III. THE PRIMARY FACTORS CHART (10 min.)

As an instructor, you should have read the material on primary factors and became familiar with the Student Manual (SM) text before beginning this section of the course.

Refer students to the Primary Factors Chart in the SM. Take time to explain how the chart is used and why it is important. The information on Primary Factors, Objectives, and Strategies is explained in detail in the SM. Recommend to students that they read this material after class.

Columns on the Primary Factors Chart.

A. Column 1: Primary Factors.

1. **Primary factors** are the conditions and elements that should be recognized and evaluated on arrival and during operations.
2. Some examples of primary factors:
  - a. Life hazard.
  - b. Location/Fire.
  - c. Construction.
  - d. Structural collapse.
  - e. Time/Duration of operations.

B. Column 2: Incident Objectives.

1. **Safe Removal of Occupants:** When the life hazard for occupants is the limiting or strategic factor.

2. **Contain and Control Fire to Room/ Building of Origin:** No life hazard for occupants and fire is considered to be controllable by a direct or indirect attack.
  3. **Contain, Control, and Limit Fire in Exposures:** No life hazard for occupants and the situation is temporarily uncontrollable.
- C. Column 3: Incident Strategies.
- D. Column 4: Evaluate Strategies.

Slide 5-7

**MAKING DECISIONS**

Example: Effective ventilation facilitates the advancement of hoselines, yet ineffective stretching or laying of hoselines nullifies the effectiveness of ventilation. Ineffective stretching or lying of hoselines can be harmful if it results in spreading the fire before a line is ready to operate.

Slide 5-7

Slide 5-8

**MAKING DECISIONS (cont'd)**

Strategies can affect:

- Extent of fire after arrival
- Heat and smoke conditions
- Exposure requirement hazards
- Duration of operation
- Requirements to operate

Slide 5-8

Slide 5-9

**MAKING DECISIONS (cont'd)**

Each of the primary factors has an effect on strategies:

- We determine objectives and strategies based on sizeup we conduct evaluating primary factors.
- When we implement actions to meet our objectives, these actions affect primary factors. This is a circular process.

Slide 5-9

**IV. MAKING DECISIONS (5 min.)**

- A. Example: Effective ventilation facilitates the advancement of hoselines, yet the ineffective stretching or laying of hoselines nullifies the effectiveness of ventilation. Ineffective stretching or lying of hoselines can be harmful if it results in spreading the fire before a line is ready to operate.
- B. Strategies can also affect primary factors such as the extent of fire after arrival, heat and smoke conditions, exposure requirement hazards, duration of operation, requirements to operate, etc.
- C. Each of the primary factors has an effect on strategies.
1. We determine objectives and strategies based on the sizeup we conduct evaluating the primary factors.
  2. When we implement actions to meet our objectives, these actions affect the primary factors. This is a circular process.

Slide 5-10

**LIMITS**

For practical purposes, there are two limits:

- Life hazard for occupants--risks to firefighters may be warranted.
- If there is no life hazard for occupants, personnel are never to be jeopardized unnecessarily.

Slide 5-10

**V. LIMITS (5 min.)**

For practical purposes, there are two limits.

- A. Life hazard for occupants. Risks to firefighters, ranging from merely unusual to extreme, may also be warranted.
- B. **If there is no life hazard for occupants, personnel are never to be jeopardized unnecessarily.**

Slide 5-11

**EVALUATING PRIMARY FACTORS**

Life hazard for occupants

- Rescue work
  - Forcible entry
- Covering exposures
  - Becomes more difficult and may delay attack on fire itself

Slide 5-11

**VI. EVALUATING PRIMARY FACTORS (50 min.)**

- A. Life hazard for occupants.

1. Rescue work.

Forcible entry is made with less regard for structural damage, exposure hazards, or the availability of a hose stream to protect personnel.

2. Covering exposures.

Life hazard may make the task of covering exposures more difficult and may delay the attack on the fire itself.

Slide 5-12

**EVALUATING PRIMARY FACTORS (cont'd)**

Life hazard for firefighters--Acceptance of warranted risks is essential for good results in carrying out fire activities.

Slide 5-12

- B. Life hazard for firefighters.

Acceptance of warranted risks is essential for good results in carrying out fire activities.

Slide 5-13

**EVALUATING PRIMARY FACTORS (cont'd)**

Location of fire--entry

- Preferable to force entry near fire location, especially when the area involved is large.
- Enables firefighters to get water on the fire more quickly and minimizes physical hardship of advancing hoselines.

Slide 5-13

- C. Location of fire on arrival.

1. Entry.

- a. It is preferable to force entry near the location of the fire, especially when the area involved is large.



Slide 5-14

**EVALUATING PRIMARY FACTORS (cont'd)**

Location of fire--ventilation

- Localize the fire to stop horizontal spread.
- Example:
  - Fire is extending into a cockloft via pipe recess or similar channel, the roof should be opened.
  - If this were done in the wrong place, it could be disastrous.

Slide 5-14

- b. This enables firefighters to get water on the fire most quickly and minimizes the physical hardship of advancing hoselines.

2. Ventilation.

- a. The main objective of ventilation is to localize the fire and stop its horizontal spread within a structure.
  - b. For example, if a fire is extending into a cockloft via pipe recess or similar channel, the roof should be opened. If this were done in the wrong place, it could be disastrous.

Slide 5-15

**EVALUATING PRIMARY FACTORS (cont'd)**

Location of fire--removal of occupants

- Location of fire is critical. Fire on first floor of five-story building could endanger all occupants.
- However, if fire started on fourth floor, it may be different.

Slide 5-15

3. Removal of occupants.

- a. Location of fire is critical. A fire on the first floor of a five-story residential building could endanger all the occupants and necessitate their removal.
  - b. However, if the same fire originated on the fourth floor, it might be better to move occupants off the fifth floor to the first or second floor. This is especially true if the fire occurs on a cold night and occupants are scantily clothed.

Slide 5-16

**EVALUATING PRIMARY FACTORS (cont'd)**

Location of fire--checking for extension of fire

- Fire near vertical or horizontal structure channel will spread readily.
- Officers assigned to check for fire extension should note location of fire and keep in mind how heat travels.

Slide 5-16

4. Checking for extension of fire.

- a. A fire near a vertical or horizontal structure channel will spread readily.
  - b. Officers assigned to check for fire extension should note the location of the fire and keep in mind how heat travels by conduction, convection, and radiation via exposed channels.

Slide 5-17

**EVALUATING PRIMARY FACTORS (cont'd)**

- Placement and use of hoselines
  - The location of the fire determines the amount of hoseline to be stretched and, in some cases, the size.
- Use of special equipment
  - High-level fires may require standpipe systems, ladder pipe, or other high-caliber streams.
  - Fire may influence use of sprinkler systems.

Slide 5-17

5. Placement and use of hoselines.

The location of the fire determines the amount of hoseline to be stretched and, in some cases, the size.

6. Use of special equipment.

- a. High-level fires may require the use of standpipe systems, ladder pipes, or other high-caliber streams.
- b. The fire also may influence the decision to use sprinkler systems or fixed systems of various types.

Slide 5-18

**EVALUATING PRIMARY FACTORS (cont'd)**

- Heat transfer
  - Radiation
  - Conduction
  - Convection
- Extent of fire after arrival
- Construction: ordinary, wood frame, fire resistive (modern highrise)

Slide 5-18

7. Heat transfer.

- a. Radiation.
- b. Conduction.
- c. Convection.

D. Extent of fire after arrival.

Slide 5-19

**What effect would the extent of the fire have on objectives and strategies?**

Slide 5-19

**ASK:** What effect would extent of the fire have on objectives and strategies?

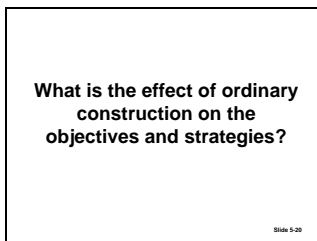
**Suggested responses:**

- Forcible entry--In light fire, entry should be made in the manner least damaging to property. The use of a key may be a solution. However, in situations where the extent of the fire is obviously substantial, such consideration is not warranted. Speed in getting an efficient operation underway is more important.
- Ventilation--The amount of structural damage done in ventilating should have a reasonable relationship to the extent of the fire.

E. Construction.

1. Ordinary construction.

Slide 5-20



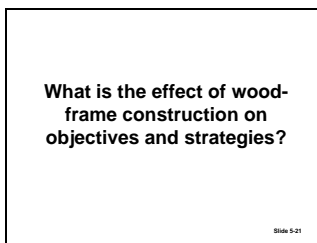
ASK: What is the effect of ordinary construction on the objectives and strategies?

**Suggested responses:**

- Concealed spaces can contribute to smoke and fire spread--cocklofts, common attics, etc.
- These buildings often have undergone renovation, creating voids, dropped ceilings, etc., that allow fire spread.
- Walls may be tied to floors with metal bolts, stars, and/or wall plates.
- Collapse is a real possibility under prolonged, heated fire conditions.
- While cooling is a good tactic, beware lest unprotected metal columns, especially cast iron, fail when very hot and struck with water.

2. Wood-frame construction.

Slide 5-21



ASK: What is the effect of wood-frame construction on objectives and strategies?

**Suggested responses:**

- Balloon frame rarely has firestops and floor joists are tied to walls, allowing for fire spread in any direction.
- Unprotected vertical openings for heating/air-conditioning vents, plumbing, utilities, etc., create a path for fire extension.

- Structure is totally combustible.
- Roof and floor supports may be of lightweight construction.

3. Fire-resistive (modern highrise) construction.

Slide 5-22

What is the effect of fire-resistive construction on objectives and strategies?

Slide 5-22

ASK: What is the effect of fire-resistive construction on objectives and strategies?

**Suggested responses:**

- Central air-conditioning penetrates all parts of the building, creating a potential for smoke and fire spread.
- Fire has a tendency to "lap" from floor to floor.
- In the Las Vegas, NV, Hilton fire in 1981, fire "lapped" 22 floors in 20 minutes (8th to 30th floors).
- Office buildings of this type of construction often contain large open areas with heavy fire loading.
- Ventilation is a significant problem.
- Operations are extremely labor-intensive, demanding extensive resources.

Slide 5-23

What effect would noncombustible construction have on your objectives and strategies?

Slide 5-23

ASK: What effect would noncombustible construction have on objectives and strategies?

**Suggested responses:**

- Buildings may be used as office buildings, warehouses, automobile repair, etc.

Slide 5-24

What is the effect of buildings under construction on objectives and strategies?

Slide 5-24

- Structural members are noncombustible or limited-combustible materials:
  - walls;
  - floors;
  - roofs; and
  - support members.
- Unprotected steel is a common structural component. While noncombustible, it is not resistive to bending, flexing, expanding, or relaxing.

ASK: What is the effect of buildings under construction on objectives and strategies?

**Suggested responses:**

- There is a minimal need for forcible entry and ventilation.
- Stress is placed on the placement and use of hoselines.
- Operative standpipes should be supplied and used, or lines have to be stretched up the outside of the structure, in which case, sufficient personnel must be anticipated.
- If fire is within reach from ladder pipes or tower ladder platforms, fog from the windward side can be effective. Solid streams would be advisable, however, if greater penetration were needed.
- Exterior exposure hazard in buildings under construction can present multiple problems, because besides the danger to nearby buildings from radiation and convection of heat, a spark ember hazard may exist.

Slide 5-25

What is the effect of buildings under demolition on objectives and strategies?

ASK: What is the effect of buildings under demolition on objectives and strategies?

**Suggested response:** No life hazard for occupants--the effects are similar to those of buildings under construction, assuming comparable heights.

Slide 5-26

**EVALUATING PRIMARY FACTORS (cont'd)**

Occupancy and contents

- Ventilation
- Placement of hoselines
- Selecting an extinguishing agent
- Overhauling

F. Occupancy and contents.

1. Ventilation.

- a. Some materials give off gases that are toxic or injurious to the eyes or skin. Ventilation is achieved more slowly.
- b. Where the presence of explosive mixtures or substances is suspected, exterior ventilation measures should be taken to prevent an explosion or to minimize its results.

2. Placement of hoselines.

Difficulty in ventilating can reduce the effectiveness of hoselines.

3. Selecting an extinguishing agent.

In some cases, water will spread the fire or may cause an explosion or release of gases that may intensify and exacerbate extension of the fire.

4. Overhauling.

The quantity of material involved, the manner in which it is stored, its nature, and the degree to which it has been subjected to the fire all affect overhauling.

Slide 5-27

**EVALUATING PRIMARY FACTORS (cont'd)**

Height

- Ventilation
- Placement of hoselines

Slide 5-27

G. Height.

1. Ventilation.

- a. Height can affect activities at fires in highrise buildings.
- b. At lower-level fires, roof or window ventilation may be possible, thus facilitating the advancement of lines from either side of the fire, as well as the search for and removal of occupants.

2. Placement of hoselines.

- a. Exterior lines also may be used.
- b. In either case, control is likely to be established more quickly at a lower-level fire than at a similar but higher fire, which can only be attacked from the interior.

Slide 5-28

**EVALUATING PRIMARY FACTORS (cont'd)**

Area

- If fire can be confined to small room, total floor area hardly matters.
- Proximity of exposures
  - Alone, doesn't make exposure vulnerable.
  - Must be considered with other contributing factors.

Structural collapse

- Carefully consider type of construction.

Slide 5-28

H. Area.

1. If the fire can be confined to a small room, the fact that the total floor area is 200 by 200 feet (40,000 square feet) hardly matters.
2. However, if such an area is not effectively subdivided and there is no small room, sooner or later, the extent of the fire can cover the total floor area.
3. Proximity of exposures.
  - a. Proximity alone does not make an exposure vulnerable.

- b. To evaluate the effects of proximity in selecting objectives and activities, it must be considered in conjunction with other contributing factors--such as construction, location of fire, occupancy, wind direction, and velocity.

I. Structural collapse.

In assessing the effects of other factors on structural collapse, officers should carefully consider the type of construction involved in the fire.

J. Weather.

- 1. Low temperatures retard the initial development of fire, but once a fire has started, they impair firefighters' efficiency.
- 2. High temperatures generally are classified as temperatures in the 80s and 90s.
  - a. High humidity and inversion conditions are characterized by dense smoke and poor visibility.
  - b. High humidity and high moisture content of the air make it more difficult for a vigorous fire to become established, but do not slow its spread once it is well started.
- 3. Rain greatly reduces the probability of fire spreading from building to building.
- 4. Wind.
  - a. Velocity is an important factor. With winds less than 15 miles per hour (mph), the effects of the wind can usually be controlled by defensive measures.
  - b. With winds 15 to 30 mph, the rate of fire propagation increases dramatically.

Slide 5-29

**EVALUATING PRIMARY FACTORS (cont'd)**

Weather

- Low temperatures retard initial development of fire
- High temperatures generally are classified as temperatures in the 80s or 90s
- Humidity
- Rain
- Wind
- Visibility

Slide 5-29



- A wind of 30 mph threatens exposures downwind.

- Winds of 30 mph are conducive to conflagrations.

5. Visibility.

Impaired visibility makes it more difficult to recognize and evaluate pertinent factors properly, thereby hampering decision making and increasing the possibility of error.

Slide 5-30

**EVALUATING PRIMARY FACTORS (cont'd)**

Resource requirements--Water, apparatus, equipment, personnel, and special extinguishing agents are required and available for an effective fire operation.

Slide 5-30

K. Resource requirements.

The water, apparatus, equipment, personnel, and special extinguishing agents required and available for an effective fire operation.

Slide 5-31

**EVALUATING PRIMARY FACTORS (cont'd)**

Auxiliary appliances

- Sprinkler systems
- Pressurization of stairways or other building areas

Slide 5-31

L. Auxiliary appliances.

1. Sprinkler systems.
2. Pressurization of stairways or other building areas.

Slide 5-32

**EVALUATING PRIMARY FACTORS (cont'd)**

Topography

- When operating at a fire on steeply-graded streets, it may be advisable to position aerial trucks or tower ladders on the high side of the fire to ensure maximum reach.
- Effective use of wedges to level portable ladders to allow for safe climbing on hilly terrains.
- Streets that are one-way, congested by vehicular traffic, or covered by snow or ice tend to delay response of the fire department.

Slide 5-32

M. Topography.

1. When operating at a fire on steeply-graded streets, it may be advisable to position aerial trucks or tower ladders on the high side of the fire to ensure maximum reach.
2. Wedges can be used effectively to level portable ladders to allow for safe climbing on hilly terrains.
3. Streets that are one-way, congested by vehicular traffic, or covered by snow or ice tend to delay response of the fire department.

Slide 5-33

**EVALUATING PRIMARY FACTORS (cont'd)**

Explosions

- Smoke explosions or backdrafts
- Bomb explosions

Slide 5-33

N. Explosions.

1. Smoke explosions or backdrafts at fires are essentially caused by the rapid combustion of a mixture of flammable gas, vapor, mist, or dust and air under certain conditions.
2. Bomb explosions.
  - a. Warnings of the impending explosion may or may not be given.
  - b. Chief officers responding to the designated target must assume the warning is authentic and conduct operations accordingly.

Slide 5-34

**EVALUATING PRIMARY FACTORS (cont'd)**

Duration of operations

- Longer duration, generally difficult to deal with
- Heavy involvement and structural collapse
- Maximize exposure hazard
- Consider relief for personnel

Slide 5-34

O. Duration of operations.

1. Fire operations of long duration are generally difficult to deal with from the beginning.
2. They may feature heavy involvement and structural collapse.
3. They may maximize the exposure hazard.
4. Consider relief for personnel.

Slide 5-35

Factor	Rating	Impact	Notes
1. Location of fire	1	Low	
2. Type of fire	2	Medium	
3. Size of fire	3	High	
4. Duration of fire	4	Very High	
5. Structural integrity	5	Critical	
6. Exposure hazard	6	High	
7. Personnel safety	7	Critical	
8. Environmental impact	8	Medium	
9. Public safety	9	High	
10. Property damage	10	High	
11. Fire department resources	11	Medium	
12. Fire department equipment	12	Medium	
13. Fire department personnel	13	Medium	
14. Fire department training	14	Medium	
15. Fire department communication	15	Medium	
16. Fire department coordination	16	Medium	
17. Fire department response time	17	Medium	
18. Fire department effectiveness	18	Medium	
19. Fire department efficiency	19	Medium	
20. Fire department reliability	20	Medium	

Slide 5-35

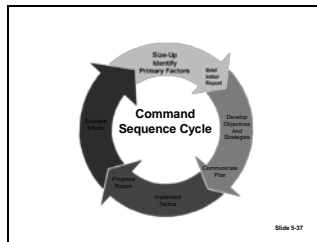
Slide 5-36

**THE COMMAND SEQUENCE CYCLE**

- Critical factors of incident operations often are overlooked (or are not given enough emphasis).
- This can result in:
  - Poor use of resources.
  - Inappropriate strategies and tactics.
  - Safety problems.
  - High-incident costs.
  - Lower effectiveness.

Slide 5-36

Slide 5-37



Slide 5-38

**THE COMMAND SEQUENCE CYCLE (cont'd)**

Consists of these sequential steps:

1. Sizeup: identify primary factors
  - Brief Initial Report (BIR)
2. Develop Incident Objectives and Strategies
  - Communicate plan
3. Implement Tactics
  - Progress report
4. Evaluate effects of Strategies

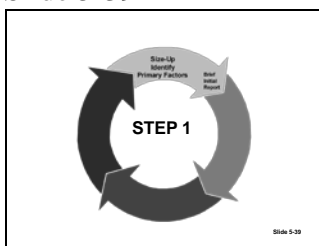
Slide 5-38

## VII. THE COMMAND SEQUENCE CYCLE (40 min.)

### A. Overview.

1. Critical factors of incident operations often are overlooked (or are not given enough emphasis). This can result in:
  - a. Poor use of resources.
  - b. Inappropriate strategies and tactics.
  - c. Safety problems.
  - d. High-incident costs.
  - e. Lower effectiveness.
2. A simple (but thorough) process for planning can be used for small, short-term, long-term, or more complex incidents and events.
3. This process is referred to as the Command Sequence Cycle and consists of the following sequential steps.
  - a. Understanding the situation (sizeup the primary factors).
  - b. Establishing Incident Objectives.
  - c. Developing Incident Strategy (activities).
  - d. Tactical direction and resource assignments.
  - e. Implementing the plan.
  - f. Evaluating the plan.

Slide 5-39



B. Understanding the situation. Sizeup primary factors.

1. In general, the essential elements of information needed to understand the situation fully consist of:

Slide 5-40

**SIZEUP: IDENTIFY PRIMARY FACTORS**

Involves knowing:

- What has occurred
- If the incident will expand (or get smaller)
- Present (and future) resources and organizational needs

Slide 5-40

- a. **What** has occurred?
- b. Whether the incident will get bigger (or smaller).
- c. Present (and future) resources and needs.

2. The analysis and comparison of incident primary factors and cues are the basis for problem identification.

- a. Report of occupants trapped.
- b. Fire extending to exposures.
- c. Presence of flammable vapors.

Slide 5-41

**PRIMARY FACTORS**

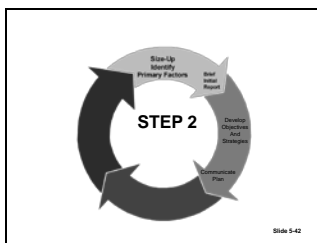
• Life hazard	• Weather
• Location of incident/fire	• Apparatus/Personnel
• Construction	• Auxiliary appliances
• Occupancy (contents)	• Explosions/Backdraft
• Height	• Topography
• Area	• Time
• Structural collapse	

Slide 5-41

3. Primary factors.
  - a. Life hazard.
  - b. Location of incident/fire.
  - c. Construction.
  - d. Occupancy (contents).
  - e. Height.
  - f. Area.
  - g. Structural collapse.
  - h. Weather.

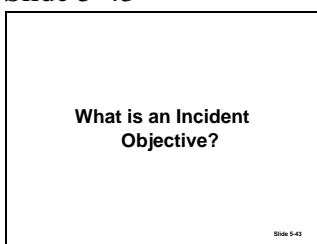
- i. Apparatus/Personnel.
- j. Auxiliary appliances.
- k. Explosions/Backdraft.
- l. Topography.
- m. Time.

Slide 5-42



### C. Establishing Incident Objectives.

Slide 5-43

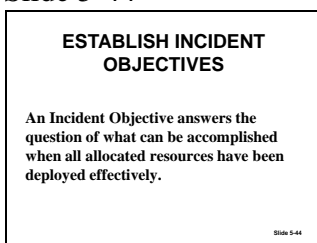


ASK: What is an Incident Objective?

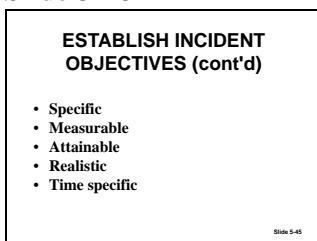
#### Suggested responses:

- Incident Objectives are statements of guidance and direction necessary for the selection of appropriate Strategy(ies) and the tactical direction of resources.
- Answering the question of **what** can be accomplished when all allocated resources have been deployed effectively (based on realistic expectations).
- Determining Incident Objectives and Strategies is an essential prerequisite to developing a plan.

Slide 5-44



Slide 5-45

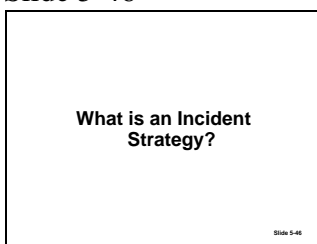


1. Incident Objectives must be (SMART)
  - a. **Specific**--to determine the needs to be accomplished.
  - b. **Measurable**--so that a final evaluation can determine whether Objectives were achieved.

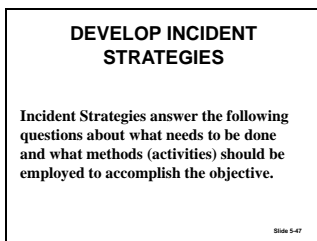
- c. **Achievable/Attainable**--with the resources available to the agency.
- d. **Realistic/Results Oriented**--enough to allow for consideration of strategic and tactical alternatives.
- e. **Time Specific**--when should this be accomplished/how long to complete?

2. Establishing Incident Strategy (activities).

Slide 5-46



Slide 5-47

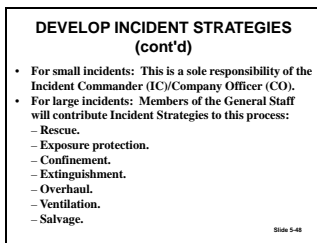


ASK: What is an Incident Strategy?

**Suggested responses:**

- Incident Strategies are a general plan or direction selected to accomplish Incident Objectives.
- They generally answer the question of what needs to be done and describe the method (or methods) that should be used--either singly or in combination--that will result in achieving the Incident Objectives.
- It is essential to also consider alternative strategies that may be employed (should the primary strategy fail to achieve the intended results).

Slide 5-48



- a. **For small incidents**, Incident Objectives and Strategies are the sole responsibility of the Incident Commander (IC)/Company Officer (CO) and may take only a few minutes to complete.
- b. **For larger incidents**, members of the General Staff (and others) will contribute to this process.

Slide 5-49

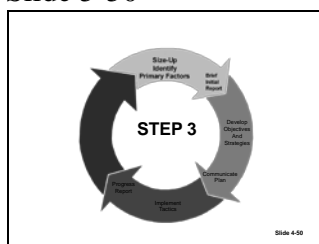
**COMMUNICATION**

- Communicate assignments clearly
- Ensure assignments are understood
- Obtain timely feedback

Slide 5-49

- c. Communication.
- Communicate assignments clearly.
  - Ensure assignments are understood.
  - Obtain timely feedback.

Slide 5-50



- D. Tactical direction and resource assignments.

Slide 5-51

**What is a Tactic?**

Slide 5-51

ASK: What is a Tactic?

**Suggested responses:**

- Tactics refer to the deployment and direction of incident resources to accomplish the strategy--as guided by the objectives.
- Tactics generally answer the question of **how** we are going to accomplish the strategy.
- They are normally established to be conducted within an operational period.

Slide 5-52

**ESTABLISH INCIDENT OBJECTIVES (cont'd)**

A Tactic answers the question of how we are going to accomplish the strategy.

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**TACTICAL DIRECTION**

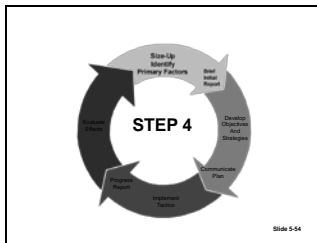
- Tactical direction includes determining Tactics necessary for selected strategy and assigning appropriate resources.
- Developed around specific operational periods.
- Large incidents may last for some time.
- Tactical directions should be realistic.
- Resource assignments will be made for each of the specific tasks.

Slide 5-53

1. Tactical direction includes
  - a. Determining the Tactics and operations necessary for the selected strategy.
  - b. Determining and assigning appropriate resources.

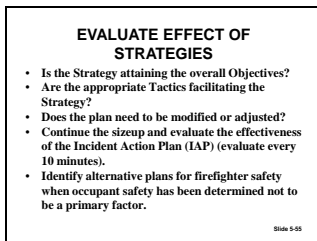
2. The tactical direction is developed around a specific operational period and must have measurable results.
3. For large incidents that may last for some time, there is a limit to what may be achieved (in terms of accomplishing an Incident Objective in a single operational period).
4. Therefore, tactical directions should be stated in terms of accomplishments that can be achieved realistically within the timeframe of an operational period.
5. Resource assignments will be made for each of the specific work tasks.
  - a. These assignments will consist of the kind and number of resources needed to achieve the tactical operations for each operational period.
  - b. If resources are not available for a specific tactical operation, then the IC may need to prioritize tactical assignments or reassess the tactics (and perhaps the overall strategy).

Slide 5-54



E. Evaluating the plan.

Slide 5-55



1. Is the Strategy attaining the overall Objectives?
2. Are appropriate Tactics facilitating the Strategy?
3. Does the plan need to be modified or adjusted?



4. Continue the sizeup and evaluate the effectiveness of the Incident Action Plan (IAP) (evaluate every 10 minutes).
5. Identify alternative plans for firefighter safety when occupant safety has been determined not to be a primary factor.

Slide 5-56



Slide 5-57

**EXAMPLES OF OBJECTIVES**

Occupied house fire: Two-story occupied dwelling, 20 by 40 foot ordinary construction, fire located in living room area first floor, Side D, report of occupants trapped in second-floor bedroom, Side A. No external exposures.

**Objectives**

1. Safe removal of occupants within 10 minutes.
2. Contain and control fire to room/building of origin.

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**EXAMPLES OF STRATEGIES**

Example of Strategies for Objective #1--safe removal of occupants:

- Strategy #1: rescue occupants
- Strategy #2: confinement/extinguishment
- Strategy #3: ventilation

Slide 5-58

**Use this example to illustrate Objectives, Strategies, and Tactics.**

**Occupied house fire:**

Two-story occupied dwelling, 20 by 40 foot ordinary construction, fire located in living room area first floor, Side D, report of occupants trapped in second-floor bedroom, Side A. No external exposures.

**Objectives**

- safe removal of occupants within 10 minutes; and
- contain and control fire to the room/building of origin.

**Strategies**

Example of Strategies for Objective #1: safe removal of occupants.

- Strategy #1: rescue occupants;
- Strategy #2: confinement/extinguishment; and
- Strategy #3: ventilation.

Slide 5-59

**EXAMPLES OF TACTICS**

For Objective #1 the Strategy and Tactics may be

- Rescue
  - Tactic #1: deploy search/rescue group to upper floors
  - Tactic #2: deploy hoseline to first floor for stairwell/occupant protection
- Ventilation
  - Tactic #3: ventilate stairwell (if possible) and Side A to support occupant removal

Slide 5-59

Slide 5-60

**EXAMPLES OF STRATEGIES (cont'd)**

Example of Strategies for Objective #2--contain and control fire to room/building of origin:

- Strategy # 1: confine/extinguish
- Strategy # 2: ventilation
- Strategy # 3: salvage

Slide 5-60

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**EXAMPLES OF TACTICS (cont'd)**

For Objective #2 the Strategies, the Tactics might be

- Confine/Extinguish
  - Tactic #1: deploy hoseline to first floor, Side D, for confinement/extinguishment
  - Tactic #2: deploy hoseline to second floor, Side D, for interior exposure protection
- Ventilation
  - Tactic #3: vertical ventilation of roof apertures and horizontal ventilation of first and second floors

Slide 5-61

Slide 5-62

**EXAMPLES OF TACTICS (cont'd)**

Salvage

- Tactic #4: positive-pressure ventilation with proper use of fans
- Tactic #5: use of salvage covers and control of water runoff

Slide 5-62

**Tactics**

For the rescue Strategies, the Tactics might be

- Tactic #1: deploy search/rescue group to upper floors;
- Tactic #2: deploy one 1-3/4-inch hoseline to first floor for stairwell/occupant protection; and
- Tactic #3: ventilate stairwell (if possible) and Side A to support occupant removal.

**Strategies**

Example of Strategies for Objectives #2: contain and control fire to room/building of origin.

- Strategy #1: confine/extinguish;
- Strategy #2: ventilation; and
- Strategy #3: salvage.

**Tactics**

For the confine/extinguish Strategies, the Tactics might be

- Tactic #1: deploy one 1-3/4-inch hoseline to first floor, Side D, for confinement/extinguishment;
- Tactic #2: deploy one 1-3/4-inch hoseline to second floor, Side D, for interior exposure protection; and
- Tactic #3: vertical ventilation of the roof apertures and horizontal ventilation of first and second floors.

**Alternatives**

- Tactic #4: positive-pressure ventilation with proper use of fans; and
- Tactic #5: use of salvage covers and control of water runoff.

Slide 5-63

**SUMMARY**

- Scientific method of sizeup
- Using the Primary Factors Chart
- Making decisions
- Evaluating primary factors
- Command Sequence Cycle

Slide 5-63

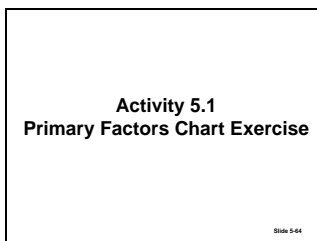
F. Summary.

1. Scientific method of sizeup.
2. Using the Primary Factors Chart.
3. Making decisions.
4. Evaluating primary factors.
5. Command Sequence Cycle.

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45 min.  
Small Group  
Activity 5.1

Slide 5-64



## Activity 5.1

### Primary Factors Chart Exercise

#### Purpose

To identify primary factors at an incident scenario.

#### Directions to Students

1. Place students into groups of five or six.
2. There are five primary factor exercises. You can choose one of the following options.
  - a. Select one primary factor exercise for all of the student groups.
  - b. Select one primary factor exercise for each student group.
3. Review the exercise or exercises with the student group. Point out construction features and types (hip roofs, knee walls, etc.).
4. Refer students to the Primary Factors Chart.
5. Walk students through the Primary Factors Chart application.
6. Explain that the exercise objective is to concentrate on Column 1 (students will address Columns 2 to 4 of the Primary Factors Chart).
7. Conduct a walkaround of untouched slides for Sides A-B-C-D for each selected scenario.
8. Conduct second walkaround of touched up slides for Sides A-B-C-D.

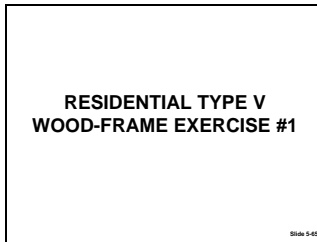
SM p. 5-35

SM p. 5-37  
IG p. 5-35

9. Student groups shall develop a Primary Factors Exercise Chart report for their assigned scenario.
  - a. Identify the most pertinent 13 primary factors for each scenario.
  - b. Place findings on Column 1 of the Primary Factors Exercise Chart.
  - c. Identify the most pertinent subfactors for each identified primary factor for the exercise scenario. Place findings on Column 2 of the Primary Factors Exercise Chart.
  - d. Identify pertinent precautions to be taken to address each identified subfactor for the exercise scenario. Place findings on Column 3 of the Primary Factors Exercise Chart.
  - e. Each group shall select a spokesperson to report Primary Factors Exercise Chart findings to the class.

### Exercise #1 Slides

Slide 5-65



Slide 5-66



Slide 5-67



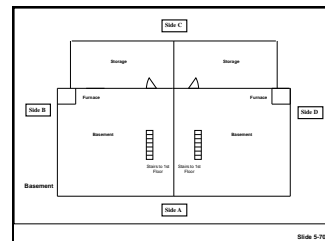
Slide 5-68



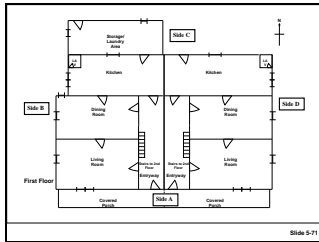
Slide 5-69



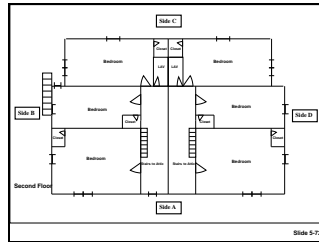
Slide 5-70



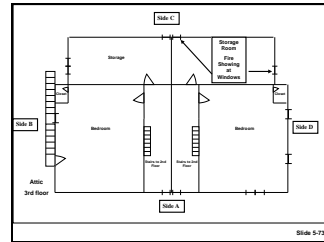
Slide 5-71



Slide 5-72



Slide 5-73



Slide 5-74



Slide 5-75



Slide 5-76

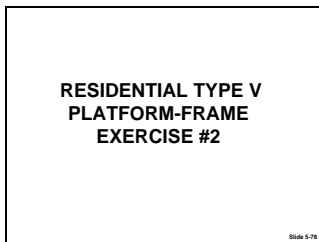


Slide 5-77



## Exercise #2 Slides

Slide 5-78



Slide 5-79



Slide 5-80



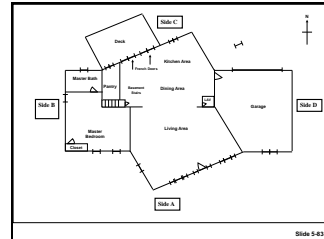
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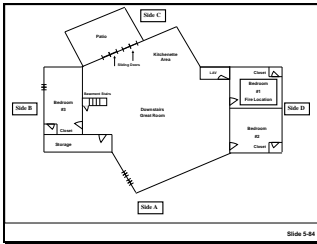
Slide 5-82



Slide 5-83



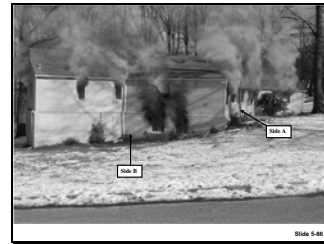
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Slide 5-85



Slide 5-86



Slide 5-87

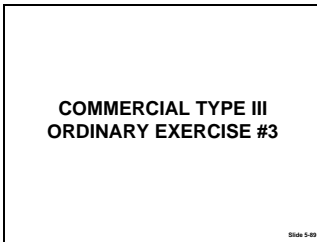


Slide 5-88

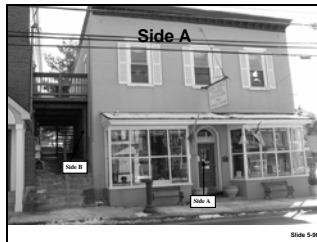


### Exercise #3 Slides

Slide 5-89



Slide 5-90



Slide 5-91



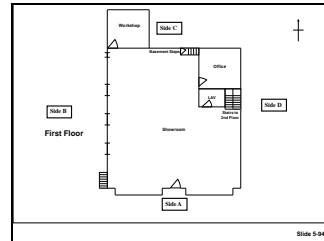
Slide 5-92



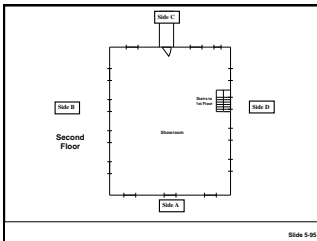
Slide 5-93



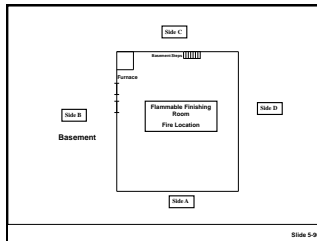
Slide 5-94



Slide 5-95



Slide 5-96



Slide 5-97

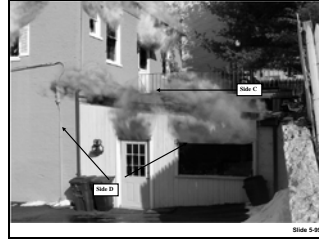




Slide 5-98



Slide 5-99

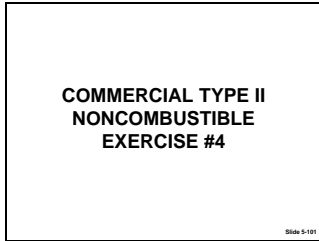


Slide 5-100

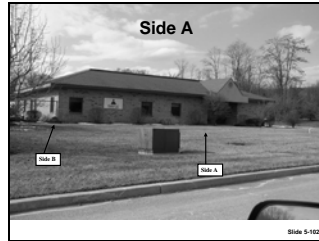


## Exercise #4 Slides

Slide 5-101



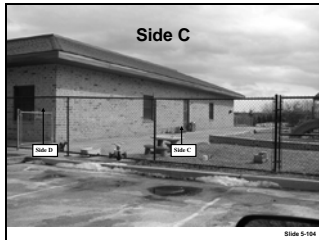
Slide 5-102



Slide 5-103



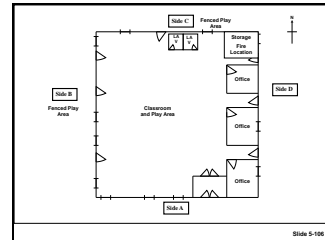
Slide 5-104



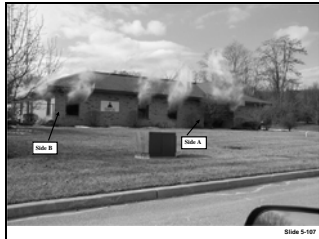
Slide 5-105



Slide 5-106



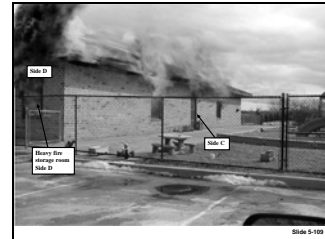
Slide 5-107



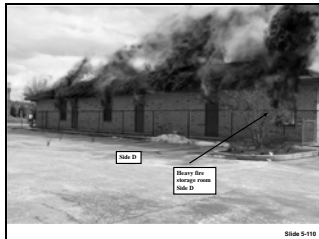
Slide 5-108



Slide 5-109

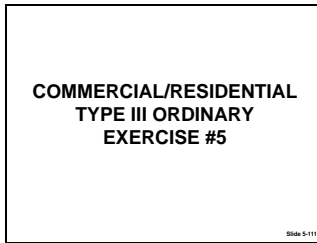


Slide 5-110



## Exercise #5 Slides

Slide 5-111



Slide 5-112



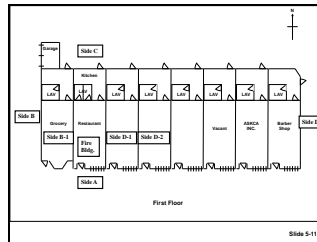
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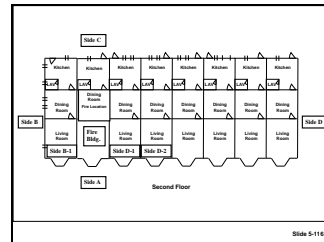
Slide 5-114



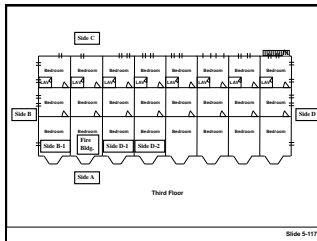
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Slide 5-116



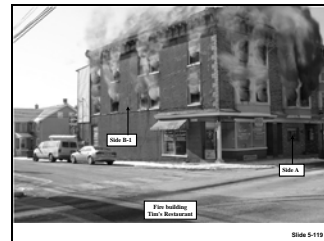
Slide 5-117



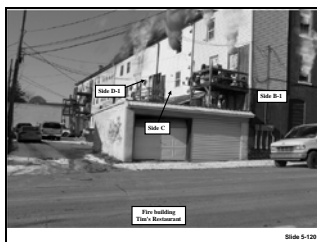
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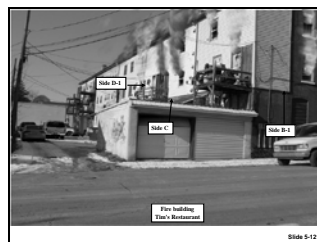
Slide 5-119



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**STUDENT ACTIVITY WORKSHEET**

**Activity 5.1**

**Primary Factors Chart Exercise**

**Purpose**

To identify primary factors at an incident scenario.

**Directions**

1. You will be placed into groups of five or six.
2. The instructor will select the exercise or exercises for your group to work on.
3. Review the exercise or exercises within your group.
4. You will develop a Primary Factors Exercise Chart report for your assigned scenario.
  - a. Identify the most pertinent 13 primary factors for each scenario.
  - b. Place findings on Column 1 of the Primary Factors Exercise Chart.
  - c. Identify the most pertinent subfactors for each identified primary factor for your exercise scenario. Place findings on Column 2 of the Primary Factors Exercise Chart.
  - d. Identify pertinent precautions that will be taken to address each identified subfactor for your exercise scenario. Place findings on Column 3 of the Primary Factors Exercise Chart.
  - e. You will select a spokesperson to report Primary Factors Exercise Chart findings to the class.

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STUDENT ACTIVITY WORKSHEET

Activity 5.1 (cont'd)

Primary Factors Chart

Column #1 Primary Factor - Situation Awareness- Chart (Check appropriate boxes)		Column #2 Incident Objectives Attainable/ Measurable/ Flexible	Column #3 Activities (Strategies)	Column #4 Evaluate Effect of Activities (Strategies) Every 10 Minutes
Primary Factors	Pertinent Sub-Factors (P)			Effective
Life Hazard Risks	Occupants	<b>Examples of Incident Objectives:</b> <ul style="list-style-type: none"> <li>Safe Removal of All Occupants within 10 minutes.</li> <li>Contain and Control Fire to Room/Building of Origin within 10 minutes</li> <li>Contain, Control and Limit Fire in Exposures within 10 minutes</li> <li>Other.</li> </ul>	[R] Rescue Interior/Exterior/Both	
	Firefighters			
Location/Fire	Fire Building on Arrival- Burn Time	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	[E] Exposure Protection Exposure Examination	
	Exposures On Arrival - Burn Time			
Construction	Fire Spread Considerations Radiation/Conduction/Convection	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	[C/E] Confinement/Extinguishment Hose Line Placement	
	Fire Building - Type 1-2-3-4-5 (Lightweight Awareness)			
Occupancy (Contents)	Exposures - Type 1-2-3-4-5 (Lightweight Awareness)	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	[O] Overhaul Expose Hidden Fire	
	Fire Building - (Fuel Load)			
Height	Exposures (Fuel Load)	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	[V] Ventilation Removal of Occupants Fire Control	
	Fire Building (A-B-C-D)			
Area	Exposures (A-B-C-D)	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	[S] Salvage Water - Run-Off Apply Covers	
	Fire Building/Configuration			
Structural Collapse	Proximity of Exposures /Configuration	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	Forcible Entry Location Method	
	Fire Building - Burn Clock After Arrival			
Weather	Exposures - Burn Clock After Arrival	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	Special Equipment Imaging Cameras	
	Collapse Zone - Safe Corridors			
Resource Requirement	Apparatus Placement	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	Assign Tactics:	
	Visibility			
Fire Protection Systems	Temperature/Humidity	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	For Objective # 1:	
	Wind - Direction/Velocity			
Topography	Apparatus/Personnel/Equipment - RIC	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	For Objective # 2:	
	Water Supply/Suppression Agent			
Explosions/Back Draft	Fire Building Supplied/Activated	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	For Objective # 3:	
	Exposures Supplied/Activated			
Time	Front-Rear	<b>List Incident Objectives:</b>  1. _____ _____ _____ 2. _____ _____ _____ 3. _____ _____ _____ 4. _____ _____ _____ 5. _____ _____ _____	For Objective # 4:	
	Proper Ventilation Flash-Over Time Awareness Time of Day Time of Year Duration of Incident			

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STUDENT ACTIVITY WORKSHEET

**Activity 5.1 (cont'd)**

**Residential--Type V--Balloon Frame--Exercise #1**

**Structure:** Three-story, 18 by 40 foot

**Building Construction:** Type V--balloon frame

**Roof Construction:** 2- by 6-inch beam-and-rafter system

**Floors:** 2- by 6-inch plywood flooring system

**Alarm System:** No smoke detectors installed

**Occupants:** Six occupants per occupancy  
Three children, three adults  
each occupancy

**Special Concerns:** One bedridden occupant on O<sub>2</sub>--located front bedroom--third floor--Side A/D

**Situation Report:**

**Fire Building:**

It is November 30, 0600 hours, temperature is 23 °F (-5 °C), wind from east at 10 mph. Upon arrival, one adult and three children are outside of the fire building. Occupants report two adults unaccountable from fire building including a bedridden occupant in third-floor front bedroom. The other missing occupant slept on second floor, but could not be located by occupants.

**Exposure Building:**

Two adults and three children from attached exposure occupancy are also outside.

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STUDENT ACTIVITY WORKSHEET

Activity 5.1 (cont'd)		
Primary Factors Exercise Chart		
Pertinent Primary Factors	Pertinent Subfactors	Pertinent Precautions To Be Taken
1.	1. 2.	1. 2.
2.	1. 2. 3.	1. 2. 3.
3.	1. 2.	1. 2.
4.	1. 2.	1. 2.
5.	1. 2.	1. 2.
6.	1. 2.	1. 2.
7.	1. 2. 3. 4.	1. 2. 3. 4.
8.	1. 2. 3.	1. 2. 3.
9.	1. 2.	1. 2.
10.	1. 2.	1. 2.
11.	1.	1.
12.	1. 2.	1. 2.
13.	1. 2.	1. 2.

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STUDENT ACTIVITY WORKSHEET

**Activity 5.1 (cont'd)**

**Residential--Type V--Platform Frame--Exercise #2**

**Structure:** Two-story, 40 by 60 foot

**Building Construction:** Type V--platform frame

**Roof Construction:** 2- by 6-inch truss roof support system

**Floors:** 2- by 4-inch truss floor system

**Alarm System:** No smoke detectors installed

**Occupants:** Eight occupants  
Two adults--three children  
Ages--8, 10, and 12 years  
One dog (collie)

**Special Concerns:** One 12-year-old child has a lower leg cast suffering from a dislocated left knee

**Situation Report:**

**Fire Building:**

It is Sunday, February 2, 0800 hours, temperature is 18 °F (-8 °C), wind from east at 12 mph. Upon arrival, two adults and one child are outside of the fire building. Occupants report two children, ages 10 and 12, are unaccounted for along with their collie dog. Missing children slept in bedrooms #2 and #3 downstairs.

**Exposure Building:**

No immediate exposures.

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STUDENT ACTIVITY WORKSHEET

Activity 5.1 (cont'd)		
Primary Factors Exercise Chart		
Pertinent Primary Factors	Pertinent Subfactors	Pertinent Precautions To Be Taken
1.	1. 2.	1. 2.
2.	1. 2. 3.	1. 2. 3.
3.	1. 2.	1. 2.
4.	1. 2.	1. 2.
5.	1. 2.	1. 2.
6.	1. 2.	1. 2.
7.	1. 2. 3. 4.	1. 2. 3. 4.
8.	1. 2. 3.	1. 2. 3.
9.	1. 2.	1. 2.
10.	1. 2.	1. 2.
11.	1.	1.
12.	1. 2.	1. 2.
13.	1. 2.	1. 2.

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STUDENT ACTIVITY WORKSHEET

**Activity 5.1 (cont'd)**

**Commercial--Type III--Ordinary--Exercise #3**

<b>Structure:</b>	Two-story, 20 by 40 foot
<b>Building Construction:</b>	Type III--ordinary
<b>Roof Construction:</b>	Post-and-beam
<b>Floors:</b>	2- by 6-inch flooring system tongue and groove
<b>Alarm System:</b>	Smoke detectors installed
<b>Occupants:</b>	Eight employees
<b>Special Concerns:</b>	High fuel load--all floors Flammable materials--basement

**Situation Report:**

**Fire Building:**

It is Saturday, March 5, 1300 hours, temperature 25 °F (-4 °C), and wind from north at 7 mph. Upon arrival, the Art Gallery manager reports two employees are unaccounted for; they were refinishing wooden antiques in the basement. He reports that he has a large amount of flammable paints and solvents in 5- to 10-gallon cans in the basement. Three employees were in the basement working at the time. They report that a small explosion occurred in the finishing room. Two of those employees are outside with severe arm and face burns. One employee is still missing. All other customers and employees are accounted for.

**Exposure Building:**

Occupied as Richmond Art Gallery Side B--two-story, 20 by 40 foot--Type III--ordinary balloon frame.

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STUDENT ACTIVITY WORKSHEET

Activity 5.1 (cont'd)		
Primary Factors Exercise Chart		
Pertinent Primary Factors	Pertinent Subfactors	Pertinent Precautions To Be Taken
1.	1. 2.	1. 2.
2.	1. 2. 3.	1. 2. 3.
3.	1. 2.	1. 2.
4.	1. 2.	1. 2.
5.	1. 2.	1. 2.
6.	1. 2.	1. 2.
7.	1. 2. 3. 4.	1. 2. 3. 4.
8.	1. 2. 3.	1. 2. 3.
9.	1. 2.	1. 2.
10.	1. 2.	1. 2.
11.	1.	1.
12.	1. 2.	1. 2.
13.	1. 2.	1. 2.

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STUDENT ACTIVITY WORKSHEET

**Activity 5.1 (cont'd)**

**Commercial--Type II--Noncombustible--Exercise #4**

<b>Structure:</b>	One-story, 40 by 50 foot
<b>Building Construction:</b>	Type II--noncombustible
<b>Roof Construction:</b>	Metal truss roof support system
<b>Floors:</b>	Concrete
<b>Alarm System:</b>	Smoke detectors installed
<b>Sprinklers:</b>	Yes--partial playroom area
<b>Occupants:</b>	Thirty preschool children Five adults
<b>Special Concerns:</b>	Locked fence--rear play area

**Situation Report:**

**Fire Building:**

It is January 25, 1015 hours, temperature 15 °F (-9 °C), wind from north at 10 mph. Upon arrival, several children are outside along with four adults. Two children and one adult are unaccounted for. All three were last seen in the children's lavatory.

**Exposure Building:**

No immediate exposures.

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STUDENT ACTIVITY WORKSHEET

Activity 5.1 (cont'd)		
Primary Factors Exercise Chart		
Pertinent Primary Factors	Pertinent Subfactors	Pertinent Precautions To Be Taken
1.	1. 2.	1. 2.
2.	1. 2. 3.	1. 2. 3.
3.	1. 2.	1. 2.
4.	1. 2.	1. 2.
5.	1. 2.	1. 2.
6.	1. 2.	1. 2.
7.	1. 2. 3. 4.	1. 2. 3. 4.
8.	1. 2. 3.	1. 2. 3.
9.	1. 2.	1. 2.
10.	1. 2.	1. 2.
11.	1.	1.
12.	1. 2.	1. 2.
13.	1. 2.	1. 2.

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STUDENT ACTIVITY WORKSHEET

**Activity 5.1 (cont'd)**

**Commercial/Residential--Type III--Ordinary--Exercise #5**

<b>Structure:</b>	Three-story, 20 by 40 foot
<b>Building Construction:</b>	Type III--ordinary
<b>Roof Construction:</b>	2- by 12-foot flat plywood with asphalt
<b>Floors:</b>	2- by 6-inch plywood flooring
<b>Alarm System:</b>	Smoke detectors installed
<b>Sprinklers:</b>	Kitchen cooking area
<b>Occupants:</b>	Eight employees Eight diners
<b>Special Concerns:</b>	Two commercial kitchens--first and second floors

**Situation Report:**

**Fire Building:**

It is April 1, 1830 hours, temperature 40 °F (4 °C), wind from southwest at 23 mph. Upon arrival, the manager of Tim's Restaurant reports that a candle fell from a table on a second floor dining room igniting the fire. All diners and six employees are accounted for, but two cooks from the second floor kitchen area are unaccounted for. He further stated that he did not think anyone was on the third floor at the time of the fire, but was not sure.

**Exposure Building:**

Exposure buildings are similar commercial/residential occupancies, first floor commercial, second and third floors residential. Status of occupants unknown upon arrival.

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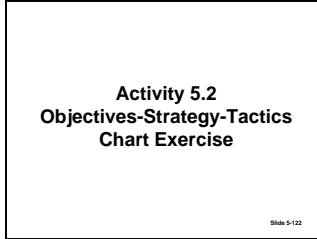
STUDENT ACTIVITY WORKSHEET

Activity 5.1 (cont'd)		
Primary Factors Exercise Chart		
Pertinent Primary Factors	Pertinent Subfactors	Pertinent Precautions To Be Taken
1.	1. 2.	1. 2.
2.	1. 2. 3.	1. 2. 3.
3.	1. 2.	1. 2.
4.	1. 2.	1. 2.
5.	1. 2.	1. 2.
6.	1. 2.	1. 2.
7.	1. 2. 3. 4.	1. 2. 3. 4.
8.	1. 2. 3.	1. 2. 3.
9.	1. 2.	1. 2.
10.	1. 2.	1. 2.
11.	1.	1.
12.	1. 2.	1. 2.
13.	1. 2.	1. 2.

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45 min.  
Small Group  
Activity 5.2

Slide 5-122



## Activity 5.2

### Objectives-Strategy-Tactics Chart Exercise

#### Purpose

To identify objectives, strategy(ies), and tactics at an incident scenario.

#### Directions to Students

1. Place students into groups of five or six.
2. Refer students back to their Activity 5.1 materials. Have each group use the same scenario.
3. Refer students to Primary Factors Chart Columns 2 to 4.
4. Walk students through the Primary Factors Chart application for Columns 2 to 4.
5. Explain that this portion of the exercise is to concentrate on Columns 2 to 4, and develop the Objectives, Strategies, and Tactics for their scenario.
6. Refer students to the Central City Fire/EMS Dispatch Criteria sheet in their SM for initial 1st Alarm Assignment. Refer students to their Plot Plans-- Situation Report for each selected scenario.
7. Conduct second walkaround of touched up slides for Sides A-B-C-D.
8. Student groups shall develop an Objectives-Strategy-Tactics Chart report for their assigned scenario.
  - a. Column 1--identify the 1st Operational Period Objectives for the scenario.
  - b. Column 2--identify the 1st Operational Period Strategies for each objective.

SM p. 5-69

SM p. 5-35

SM p. 5-37

IG p. 5-35

SM p. 5-71

IG p. 5-61

- c. Column 3--identify the 1st Operational Period Tactics for each strategy.
- d. Column 4--assign companies to perform tactics.
- e. Each group shall select a spokesperson to report Objectives-Strategy-Tactics Chart findings to the class.

**Each scenario has 1st Alarm Structural Resources available at start of the exercise.**

- Engine 1
- Engine 2
- Engine 3
- Ladder 1
- Basic Life Support (BLS) 1

**Each scenario will have working incident structural resources arrive 10 minutes into incident.**

- Engine 5
- Engine 6
- Squad 1
- Engine 6 (Rapid Intervention Crew (RIC))
- Air Cascade-1 FF
- Safety Officer

STUDENT ACTIVITY WORKSHEET

**Activity 5.2**

**Objectives-Strategy-Tactics Chart Exercise**

**Purpose**

To identify objectives, strategy(ies), and tactics at an incident scenario.

**Directions**

1. You will be placed into groups of five or six.
2. Your instructor will review the Primary Factors Chart Exercise and the Primary Factors Chart.
3. Use the Central City Fire/EMS Dispatch Criteria sheet for initial 1st Alarm Assignment.
4. Your groups will develop an Objectives-Strategy-Tactics Chart report for their assigned scenario.
  - a. Column 1--identify the 1st Operational Period Objectives for the scenario.
  - b. Column 2--identify the 1st Operational Period Strategies for each objective.
  - c. Column 3--identify the 1st Operational Period Tactics for each strategy.
  - d. Column 4--assign companies to perform tactics.
  - e. Each group shall select a spokesperson to report Objectives-Strategy-Tactics Chart findings to class.

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STUDENT ACTIVITY WORKSHEET

Activity 5.2 (cont'd)									
Central City Fire/EMS Dispatch Criteria									
Assignment	Alarm Type	Engine	Ladder	Squad	Battalion Chief	EMS Unit	RIT	Safety Officer	Air Cascade
1st Alarm	Structural	3	1			1 BLS			
Working Incident	Structural	2		1	1		1	1	1
1st Alarm	Target Hazard	3	2	1	1	1 BLS			
Working Incident	Target Hazard	2				1 ALS	1	1	1
2nd Alarm	Structural/ Target Hazard	2	1		1	1 EMS		1	1
3rd Alarm	Structural/ Target Hazard	2	1			1 EMS			
4th Alarm	Structural/ Target Hazard	2	1		1				

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STUDENT ACTIVITY WORKSHEET

Activity 5.2 (cont'd)			
Objectives-Strategy-Tactics Chart			
Objectives	Strategy(ies)	Tactics	Assigned to:
Objective #1	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.
Objective #2	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.
Objective #3	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.

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# **UNIT 6: BURN TIME CONSIDERATIONS AND LINE-OF-DUTY DEATHS FROM COLLAPSE INCIDENTS**

## **OBJECTIVES**

*The students will:*

1. *Given examples of different types of structures and different fire loads, predict the time of collapse.*
  2. *Discuss the impact of the primary factor, construction, on line-of-duty deaths (LODDs).*
-

**METHODOLOGY**

This unit uses lecture and discussion.

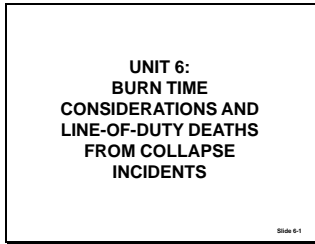
**(Total Time: 2 hr., 15 min.)**

135 min.	Lecture/Discussion	
	Objectives	IG 6-3
	Wood Frame	IG 6-3
	Ordinary Warehouse	IG 6-14
	Line-of-Duty Deaths 1994 to 2002	IG 6-22
	Summary	IG 6-30

**AUDIOVISUAL**

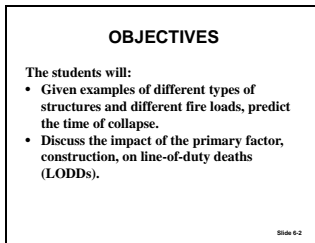
Slides 6-1 to 6-84

Slide 6-1



135 min.  
Lecture/Discussion

Slide 6-2

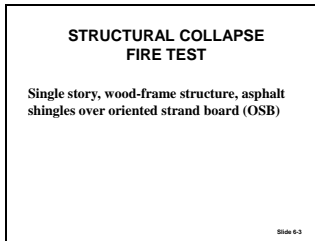


**I. OBJECTIVES (5 min.)**

The students will:

- A. Given examples of different types of structures and different fire loads, predict the time of collapse.
- B. Discuss the impact of the primary factor, construction, on line-of-duty deaths (LODDs).

Slide 6-3



**II. WOOD FRAME (55 min.)**

- A. Predicting a potential structural collapse is one of the most challenging tasks facing an Incident Commander (IC) at a fire scene.
- B. Usually the lack of information on the construction of the building, fire size, fire location, fire burn time, condition of the building, fuel load, etc., makes the task nearly impossible.
- C. Phoenix, AZ, example:
  - 1. A series of fire tests were conducted to collect data for a project examining the feasibility of predicting structural collapse.
  - 2. The fire test scenario was selected as part of a training video being prepared by the Phoenix Fire Department.

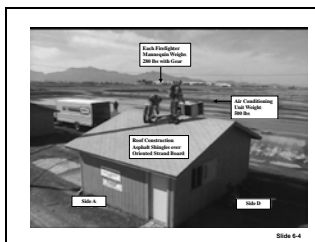
3. Multiple fires were started in each structure to facilitate collapse; the fires were not intended to test the fire endurance of the structures.
4. Four structures with different roof constructions were used for the fire tests.
  - a. Some were scheduled for demolition and other structures were built specifically for the fire tests.
  - b. Each structure was allowed to burn until some portion of the structure collapsed.
  - c. These structures were constructed for test experiments in order to examine several issues related to firefighter health and safety.
  - d. Temperatures were measured as a function of time in four locations within each structure.
  - e. Furniture items were placed in the front and back of each structure to simulate living room and bedroom areas.
  - f. The living room and bedroom areas of each structure were ignited simultaneously using electric matches.
  - g. Peak temperatures obtained during the tests ranged from approximately 800 °C (1,470 °F) to 1,000 °C (1,800 °F).
5. **The roof of each structure collapsed approximately 17 minutes after ignition.**

- D. The fire department in Phoenix conducted a series of live fire training exercises in various structures in an effort to better educate firefighters about structural collapse.
1. The first goal of the tests was to obtain temperature data from a burning structure during a collapse.
  2. Second, various techniques and tools were evaluated for use in predicting structural collapse.  
  
Specifically, the use of thermal imaging techniques was examined as a means to predict collapse.
  3. In addition, the exterior of the building was observed prior to and during collapse to identify any visual indicators of impending collapse.
  4. In collaboration with the Phoenix Fire Department, researchers from the National Institute of Standards and Technology (NIST) provided measurement support during the fire tests.
  5. These tests were not designed to evaluate the fire endurance of wood trusses, gypsum wallboard, wood studs, or any other structural elements used in the construction of the four structures.
  6. The fire scenario used in this study was designed to reach flashover conditions rapidly to force a partial or complete collapse of the structure.
- E. Using video and data obtained from two different fire test series, the fire department developed a set of three videotapes dealing with fireground command and collapse issues.

This unit presents the results obtained from a set of tests that were conducted in single-story wood-frame residential structures.

- F. Many factors influence the failure of structural elements including the load on the element, protection of the element, fire intensity, and fire duration.
1. More or less time may be available before failure of the element depending on the particular fire scenario.
  2. The fire resistance and ability of a structural member to maintain its load during an actual fire are influenced by a number of factors.
  3. Many of these factors can vary significantly depending on the specific fire scenario.
  4. Fire-resistance ratings, and measured or predicted times to failure or collapse should not be relied on as absolute indicators of time available for operating on or within a burning structure.
  5. Each structure must be evaluated and reevaluated during the fire to determine whether or not it is safe for firefighters to remain within any potential collapse zone.

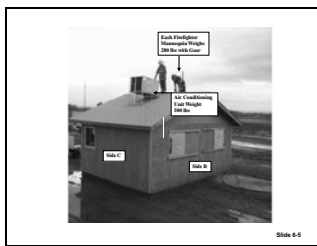
Slide 6-4



- G. Asphalt shingles over oriented strand board (OSB) structure was used in this test.
- H. Photograph showing the front (Side A) and (Side D) of test structure with asphalt shingle roof over OSB prior to start of test.



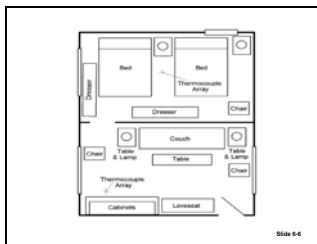
Slide 6-5



1. Two firefighter mannequins were placed on the roof.
2. Each firefighter weighed 280 pounds with gear.
3. Air-conditioning unit weighed 500 pounds.

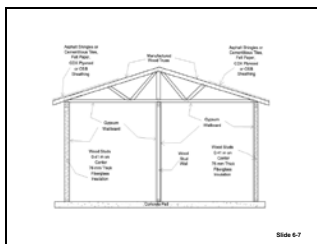
I. Photograph showing rear (Side C) and (Side B) of test structure with asphalt shingle roof over OSB prior to start of test. (Note air-conditioning unit.)

Slide 6-6



J. Plan view of generic test structure showing approximate placement of furniture and other items within structure (not to scale), and showing locations of measurement instruments and dimensions (all dimensions in meters).

Slide 6-7



K. Diagram showing typical construction of the structure.

1. Two rooms with attic space.
2. Interior walls were constructed of 2- by 4-inch wood studs with 1/2-inch gypsum board nailed to each side. Doorways were 2.9 by 6.5 feet.
3. Interior walls and ceilings had 1/2-inch gypsum board nailed to studs. All joints and nails were taped and covered with joint compound.
4. Exterior walls were composed of 2- by 4-inch wood studs on 1.3-foot centers, covered with 5/8-inch wood siding.

Slide 6-8

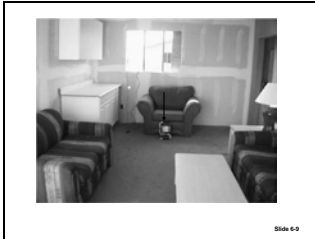


L. Photograph of "living room" area showing furniture arrangement.

Note: Ignition point will be on couch under paper.

1. Room contained a couch, love seat, and two chairs consisting of wood frames with polyurethane foam cushioning material.
2. Two wooden end tables, coffee table, and two table lamps were also placed in the living room.
3. A hollow core wood door was mounted in the doorway opening.

Slide 6-9



M. Photograph showing "living room" with furniture, cabinets, and thermocouple array.

1. Two walls in living room were covered with 1/8-inch press board paneling attached with adhesive and brads.
2. Two living room walls were covered with gypsum board.
3. In the living room, the wall adjacent to the front wall had an approximate 4- by 3-foot section removed to let air into the room.
4. A piece of plywood on a slide track allowed it to be moved back and forth to regulate the flow of air into the room.

Slide 6-10



N. Photograph showing "living room" ceiling with plastic vent to help facilitate fire into the attic space, electrical box is noted, and a 2- by 2-1/2-foot attic access is cut into the ceiling and covered with 1/2-inch drywall with molding strips holding it in place.

Slide 6-11



O. Photograph showing furniture in "bedroom" area of test structure. A thermocouple array is visible in the foreground.

1. The bedroom walls were covered with 1/8-inch press board and paneling attached with adhesive brads.

Slide 6-12



2. One wall in the bedroom had 4- by 3-foot high section removed and the rear wall had a 3- by 3-foot window with glass.
  3. A piece of plywood on a slide track allowed it to be moved back and forth to regulate the flow of air into the room.
- P. Photograph showing two double beds, nightstands, and lamps in the "bedroom."
1. Bedroom contained two sets of foam mattresses and box springs on metal frames.
  2. Wooden nightstands were placed adjacent to each bed.
  3. Two wooden dressers were located in the room.
  4. One dresser was located along the wall opposite the end of the two beds while the second dresser was adjacent to the side of the second bed.
  5. A chair with polyurethane padding on a wood frame was positioned in the bedroom diagonally opposite the end corner of the first bed.
  6. Table lamps were placed on top of the two nightstands.
  7. Both rooms had nylon wall-to-wall carpet laid over on the floor over a 3 pound pad.

Slide 6-13



- Q. Photograph showing roof structure. A thermocouple array is also visible.
1. Gable ends were studded with 2- by 3-inch lumber and covered with 1/2-inch high density fiberboard.
  2. Trusses were nailed on each end and attached to the top plate with metal hurricane ties.

3. Structure had 2- by 6-inch boards nailed to the truss tails, and the tails on the trusses were cut off at 1.7 feet.
4. The outside rafts were nailed to 2- by 4-inch boards and attached to the second truss at 4-inch intervals.

Slide 6-14



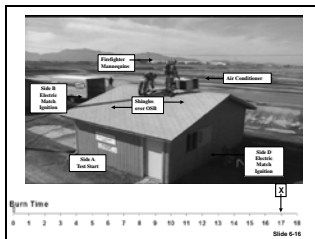
- R. Photograph of "living room" showing ignition location in corner of couch under newspaper.

Slide 6-15



- S. Photograph showing "bedroom" with ignition location in corner of chair under the newspaper.

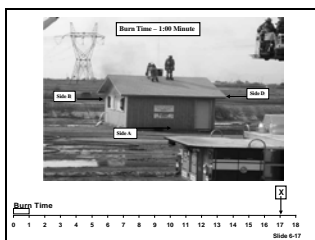
Slide 6-16



Point out roof construction asphalt shingles over OSB. Point out electric match ignition to chair in bedroom (Sides B and D).

For the following slides, point out the burn time scale.

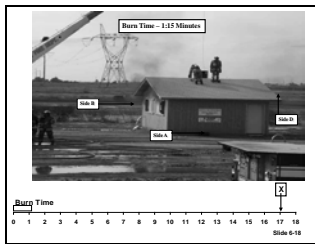
Slide 6-17



- T. Timeline.

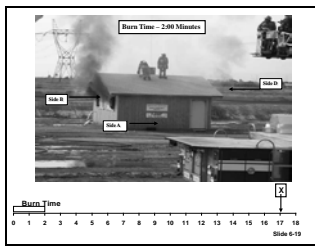
1. Photograph of test structure at **"1:00 minute"** after ignition.

Slide 6-18



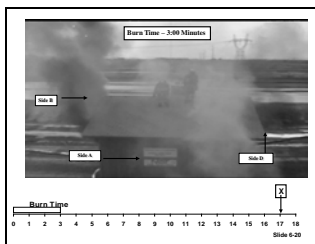
2. Photograph of test structure at "**1:15 minutes**" after ignition.

Slide 6-19



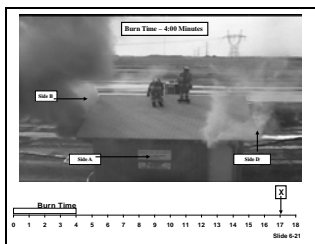
3. Photograph of test structure at "**2:00 minutes**" after ignition.

Slide 6-20



4. Photograph of test structure at "**3:00 minutes**" after ignition, living room reached flash over temperature.

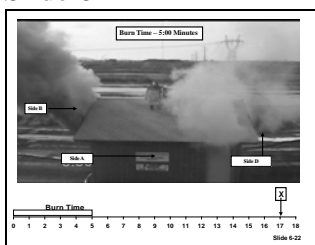
Slide 6-21



5. Photograph Side D fire increasing in living room at "**4:00 minutes.**"

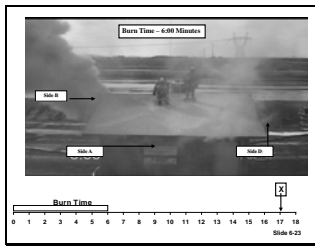
Point out fire now showing Side D. Flashover has occurred. Heavier smoke conditions showing on Side B.

Slide 6-22



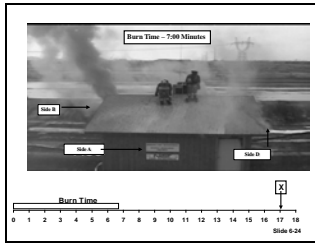
6. Photograph showing conditions on Side D--fire begins diminishing in living room at "**5:00 minutes.**" Most likely a result of the falling ceiling causing a temporary decrease in temperatures in living room. Side B maintains heavy smoke conditions.

Slide 6-23



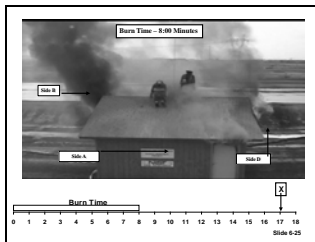
7. Photograph showing conditions on Side D--fire and temperatures still diminishing in living room at **"6:00 minutes."** Side B maintains heavy smoke conditions.

Slide 6-24



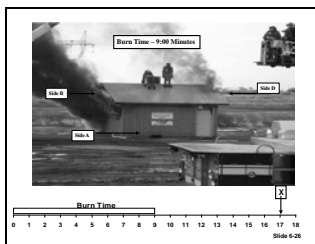
8. Photograph of test structure at **"7:00 minutes"** after ignition.

Slide 6-25



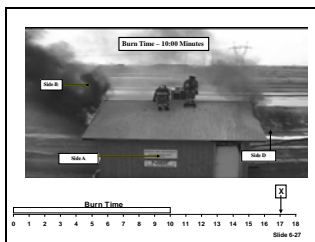
9. Photograph showing temperatures increasing on Sides B and D. Fire appears to have entered the attic space at approximately **"8:00 minutes."**

Slide 6-26



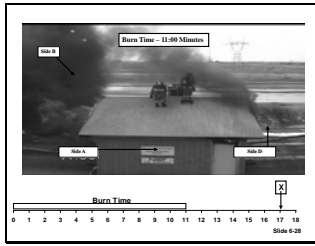
10. Photograph of test structure at **"9:00 minutes"** after ignition.

Slide 6-27



11. Photograph of test structure at **"10:00 minutes"** after ignition.

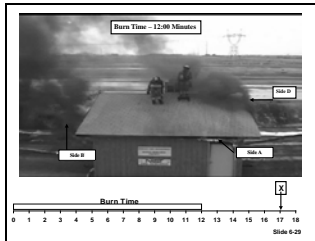
Slide 6-28



12. Photograph of test structure at "**11:00 minutes**" after ignition.

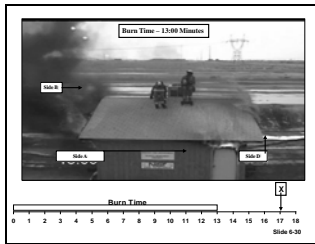
Point out that conditions are not showing much change from the 9:00-minute mark.

Slide 6-29



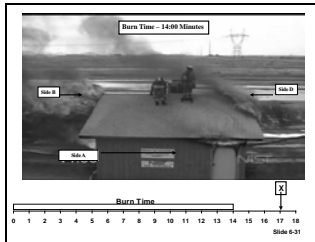
13. Photograph of test structure at "**12:00 minutes**" after ignition. Fire now extending to roof/attic area Side A.

Slide 6-30



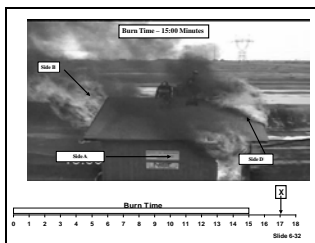
14. Photograph of test structure at "**13:00 minutes**" after ignition; increased fire showing from Sides A-B-D with fire extending into roof/attic area on Sides A and D.

Slide 6-31



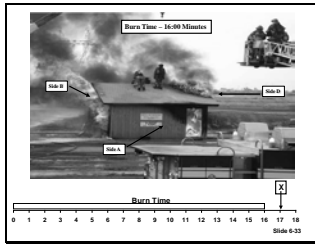
15. Photograph of test structure at "**14:00 minutes**" after ignition; increased temperatures and volume of fire all sides and roof area.

Slide 6-32



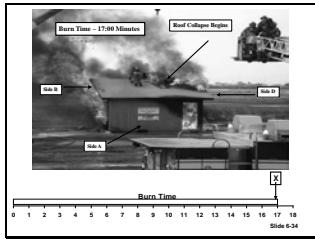
16. Photograph of test structure at "**15:00 minutes**" after ignition; front door burned away with portion of roof structure burning. Structure is fully involved.

Slide 6-33



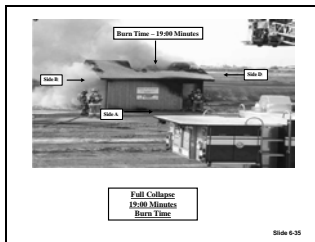
17. Photograph of test structure at "**16:00 minutes**" after ignition as internal collapse has started. Roof/Attic area is fully involved.

Slide 6-34



18. Photograph of test structure at "**17:00 minutes**" after ignition; roof collapse has begun.

Slide 6-35



19. Photograph of test structure at "**19:00 minutes**" after ignition; full roof collapse.

Slide 6-36



### III. ORDINARY WAREHOUSE (40 min.)

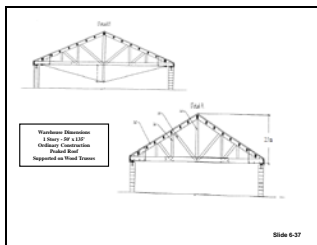
#### A. Overview.

1. Two fire tests were conducted in a warehouse located in Phoenix to develop data for evaluation of a methodology for predicting structural collapse.
2. A firewall was constructed to divide the warehouse into two fire compartments.
3. Temperatures were measured as a function of time in three locations during the first test and in two locations during the second test.



4. In addition, the volume fraction of carbon monoxide was measured at selected locations during each test.
5. Stacks of wood pallets were used as the primary fuel source and were ignited using paper and an electric match.
6. Some combustible debris and building structural elements provided the remainder of the fuel load.
7. Peak temperatures obtained at different elevations ranged from approximately 300 °C (570 °F) to 800 °C (1,470 °F).
8. Peak carbon monoxide volume fraction reached 4 percent in the first test and 5 percent during the second test.
9. The roof of the front half of the structure burned through approximately 18 minutes after ignition of the fire for the first test.
10. The roof of the back half of the structure burned through about 15 minutes after the start of the second test.

Slide 6-37

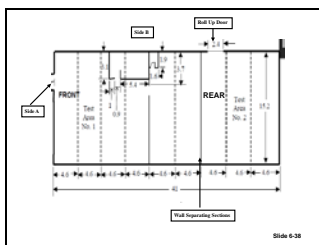


- B. Elevation views showing details of wood trusses supporting the roof of the warehouse.
1. Building was a single story with peaked roof composed of rolled roofing material laid over 2- by 8-inch boards supported on wood trusses.
  2. Trusses used 2- by 12-inch lumber for the top and bottom chord and various lumber sizes for the web members.
  3. Trusses were spaced 15 feet apart and oriented perpendicular to the long dimension of the building.

4. Peak of the roof was 18 feet above the floor with the bottom chord of truss located 10 feet above the floor.
5. Trusses rested on bearing walls composed of brick and block.

### C. Test #1.

## Slide 6-38

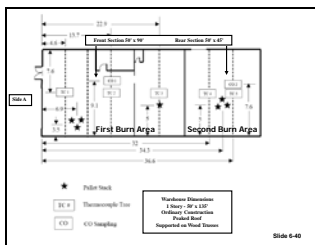


1. Plan view of warehouse showing layout and dimensions (dimensions in meters).
  - a. Arrow shows wall separating two warehouse sections.
    - Front entrance Side A and front section are Test Area #1.
    - Fifty- by 90-foot roll up door Side C and the rear section are Test Area #2.
    - Forty-five- by 50-foot warehouse was separated into two halves with a wall constructed of 2- by 4-inch wood studs with 1/2-inch plywood nailed to one side.
  - b. Plywood was covered with two layers of 5/8-inch fire-rated gypsum board.
  - c. Separation wall was built along a truss 90 feet from the front of the building.
  - d. Front half of building was 50-feet wide and 90-inches long overall.
  - e. Area had been subdivided into smaller areas.
  - f. Primary separation wall was composed of gypsum board on wood studs and located along the truss 60 feet from the front of the building.



- d. The second burn area was 45 by 50 feet with a single doorway in the east wall. The doorway was 8-feet wide and 8-feet high. It was located 96 feet from the front wall of the building and 6 feet from the separating wall.

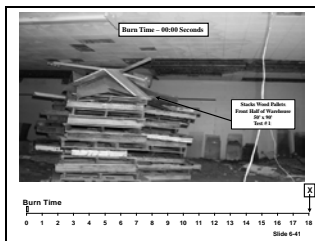
Slide 6-40



5. Plan view of warehouse showing locations of measuring instruments and fuel packages.

Point out pallet locations on view. One set of three and one single stack for first burn area.

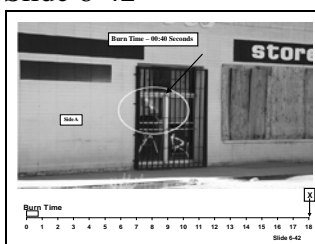
Slide 6-41



6. Photograph showing the placement of wood pallets in the front part of the warehouse used for the first test.

- a. Warehouse dimensions:
- One story--50 by 135 feet.
  - Ordinary construction.
  - Peaked roof.
  - Supported on wood trusses.
  - Front section 50 by 90 feet.
  - Rear section 45 by 50 feet.

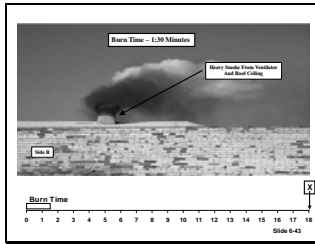
Slide 6-42



7. Photograph of front of warehouse with flames visible through front door at the start of the first test. Warehouse closed tight "**40 seconds**" after ignition.

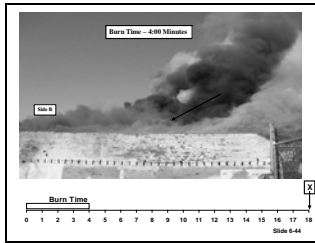
Point out burn time scale for the following slides.

Slide 6-43



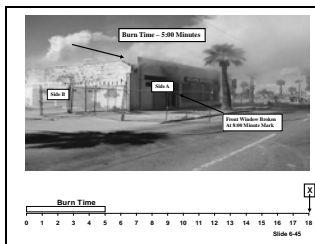
8. Photograph of smoke coming from roof top ventilator during the first test. Heavy smoke from ventilator; flames reached warehouse ceiling level in **"1:30 seconds"** after ignition.

Slide 6-44



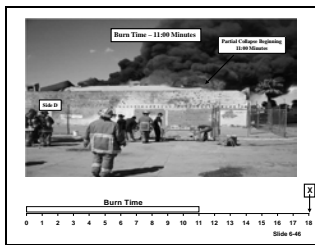
9. Photograph of roof area showing flames coming from ventilator during first test. Roof area around ventilator began to burn between the **"3:00 and 4:00 minute"** mark after ignition. Inside temperatures are at flashover conditions at the **"4:00 minute"** mark.

Slide 6-45



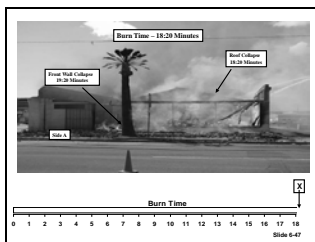
10. Photograph showing smoke coming from roof and front of warehouse as fire is becoming oxygen deficient during the first test in **"5:00 minutes"** after ignition. Front window broken at the **"8:00 minute"** mark to allow oxygen into building.

Slide 6-46



11. Photograph showing fire involving significant portion of roof structure with partial collapse beginning during first test in **"11:00 minutes."**

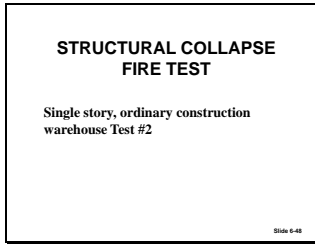
Slide 6-47



12. Photograph showing the warehouse at the conclusion of the first test with the roof structure over the front half completely gone. Portions of the roof collapse at the **"18:00 minute"** mark. Full collapse in **"18:20 minutes"** after ignition.

Front wall collapses at **"19:20 minutes."**

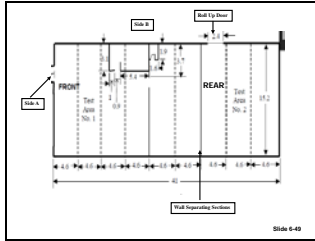
Slide 6-48



D. Test #2.

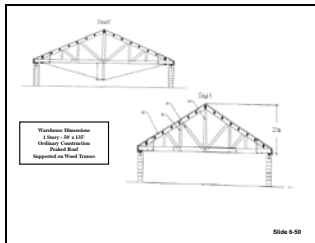
1. Structural collapse fire test--single-story ordinary construction warehouse.

Slide 6-49



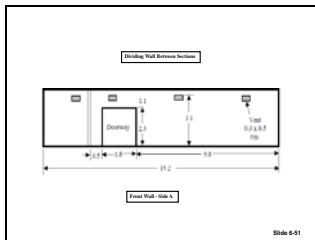
2. Plan view of warehouse showing layout and dimensions (dimensions in meters).
  - a. Arrow shows wall separating two warehouse sections.
  - b. Second burn area was 45 by 50 feet with a single doorway in the east wall.
  - c. The doorway was 8-feet wide and 8-feet high.
  - d. It was located 96 feet from the front wall of the building and 6 feet from the separating wall.

Slide 6-50



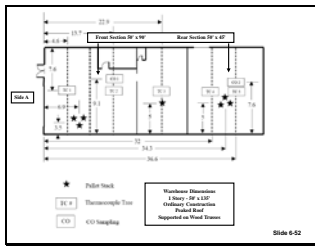
3. Plan and elevation views showing details of wood trusses supporting the roof of the warehouse.

Slide 6-51



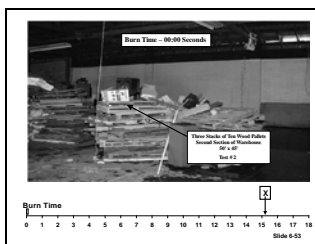
4. Top view--elevation view of wall dividing front and rear sections. Plywood/Gypsum wall materials on 2- by 4-inch studding separating sections.

Slide 6-52



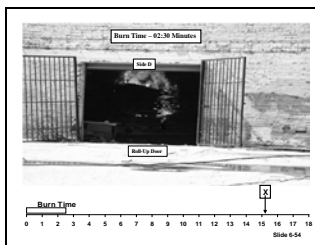
5. Bottom view--elevation view showing front wall (Side A) of area used for first test.
6. Plan view of warehouse showing locations of measuring instruments and fuel packages.
  - a. Point out pallet set used for second test.
  - b. Point out doorway on Side B.

Slide 6-53



7. Photograph showing placement of wood pallets and adjacent thermocouple tree in the front portion of the warehouse used for the second test.

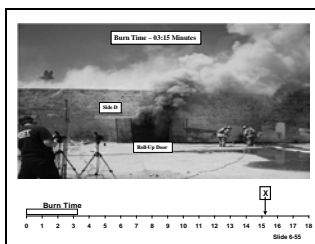
Slide 6-54



8. Photograph of fully-involved fuel package through open door after the start of the second test. Roll up door view, fire is free burning in "**2:30 minutes.**"

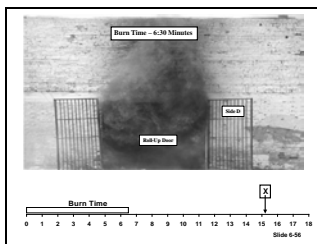
Point out burn time scale for the following slides.

Slide 6-55



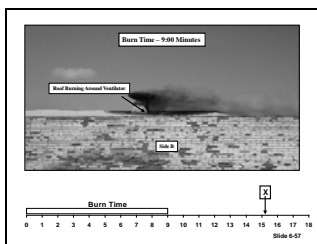
9. Photograph of smoke coming from open door during second test in "**3:15 minutes**" after ignition. Flashover temperatures are reached at the "**4:00 minute**" mark.

Slide 6-56



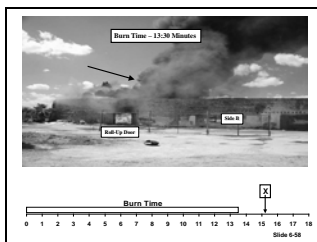
10. Photograph of smoke coming from open door during second test in "**6:30 minutes.**"

Slide 6-57



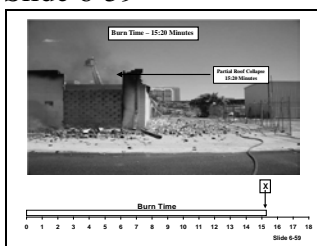
11. Photograph of rooftop ventilator after it collapsed due to severe heat exposure during second test in "**9:00 minutes**" after ignition.

Slide 6-58



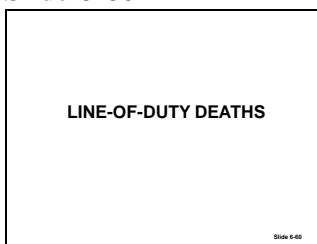
12. Photograph showing flames through open door and burning roof during the second test. Fire showing through portions of roof in "**13:30 minutes.**"

Slide 6-59



13. Photograph showing partial collapse of the rear and side walls after the second test in "**15:20 minutes.**" At "**16:30 minutes**" additional portions of the roof collapsed.

Slide 6-60



#### IV. LINE-OF-DUTY DEATHS 1994 TO 2002 (30 min.)

##### A. Overview.



1. As part of a project funded by the U.S. Fire Administration (USFA), the Building and Fire Research Laboratory (BFRL) at the National Institute of Standards and Technology (NIST) is exploring the feasibility of developing a system for use by firefighters to predict structural collapse during fireground operations.
  - a. Predicting a potential structural collapse is one of the most challenging tasks facing an IC at a fire scene.
  - b. Usually the lack of information on the construction of the building, fire size, fire location, fire burn time, condition of building, fuel load, etc., makes the task nearly impossible.
2. They examined records to determine if there were any trends or patterns that could be detected in firefighter fatalities due to structural collapse.
3. If so, these trends could be brought immediately to the attention of training officers and ICs and investigated further to determine probable causes.
4. This study examined data from structural collapse incidents that occurred from 1994 to 2002 involving one or more firefighter fatalities in which fire weakened to failure structural members of a building resulting in the complete or partial collapse of any part of the structure, excluding the cases described above.
5. Several data parameters were analyzed for each incident, including
  - a. The time of the incident.

- b. The property type of the structure.
  - c. The firefighter's age.
  - d. Years of experience.
  - e. Status (i.e., career or volunteer).
  - f. Nature and cause of death.
  - g. Activity at the time of death.
- 6. In the case of rank, individuals ranked higher than captain were designated chief officers. Any dual-trained firefighter (**e.g., firefighter/paramedic**) was designated as **firefighter**.
  - 7. The 1994 to 2002 data were also compared to results reported in two earlier National Fire Protection Association (NFPA) reports addressing firefighter fatalities due to structural collapse.
  - 8. These reports analyzed data from incidents that occurred from 1979 to 1988 and 1983 to 1992, respectively.
  - 9. The raw data from these reports were not available.
  - 10. In order to make comparisons, several categories of the data were restructured for the more recent years in order to fit the criteria established in the NFPA reports.
    - a. For instance, in the historical reports the category for cause of death only had the two parameters "caught or trapped" and "struck by contact with object."
    - b. Data collected for the years 1994 to 2002 included "exposure" and "fell or jumped" as additional causes of death (as designated by the USFA Memorial database).

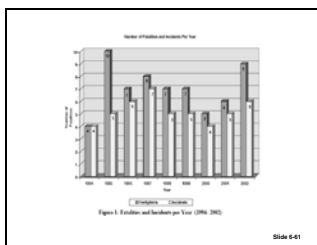
- c. Cases that belonged to the latter two categories were realigned with the criteria established in the NFPA reports.
- d. For example, the cause of death of a firefighter who fell through a floor during a fire attack and was unable to escape or be rescued would be designated in the USFA database as "fell or jumped."
- e. To compare this case to the NFPA reports the cause of death would be reassigned to **"caught or trapped."**

B. Between the years 1979 and 2002 there were over 180 firefighter fatalities due to structural collapse, not including those firefighters lost in 2001 in the collapse of the World Trade Center Towers.

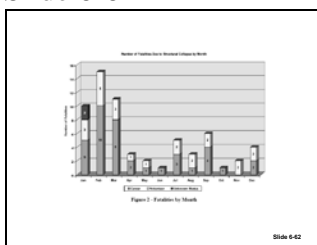
- 1. Structural collapse is an insidious problem within the firefighting community.
- 2. It often occurs without warning and can easily cause multiple fatalities.

C. Between the years 1994 and 2002 there were 63 deaths caused by structural collapse in a total of 47 fires.

Slide 6-61

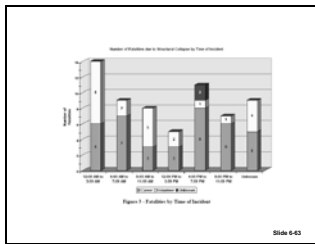


Slide 6-62



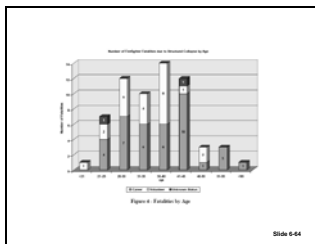
- 1. Of these deaths, over two-thirds occurred within the first 6 months of the year and over one-half occurred in the first 3 months.

Slide 6-63

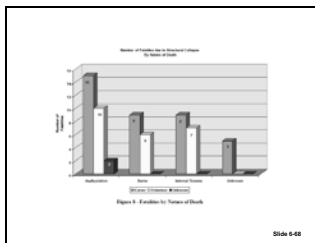


2. Over 42 percent of deaths with known incident times occurred in the first eight hours of the day (12:00 a.m. to 7:59 a.m.).

Slide 6-64



Slide 6-68



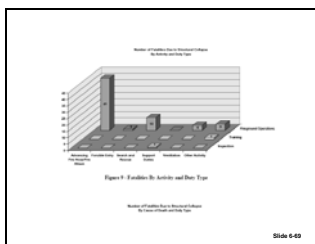
- A majority of the victims (over 65 percent) were involved in fire attack or advancing hose.

e. Fatalities by nature of death.

- The nature of firefighter deaths in collapsed structures is categorized as asphyxiation, burns, internal trauma, and other causes.

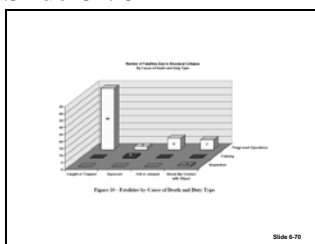
- Over 42 percent of fatalities (27 deaths) were by asphyxiation.

Slide 6-69



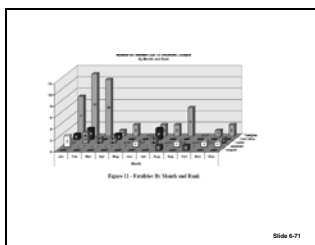
f. Fatalities by activity and duty type.

Slide 6-70



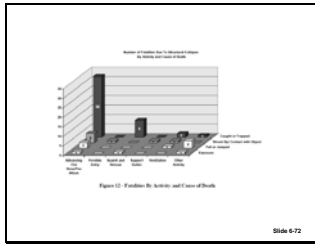
g. Fatalities by cause of death and duty death.

Slide 6-71



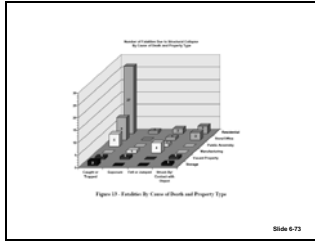
h. Fatalities by month and rank.

Slide 6-72



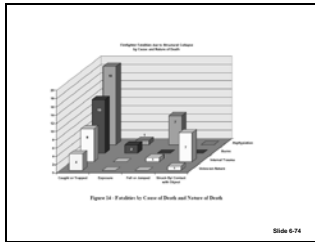
- i. Fatalities by activity and cause of death.

Slide 6-73



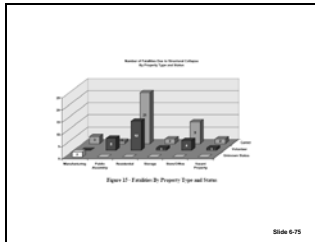
- j. Fatalities by cause of death and property type.

Slide 6-74



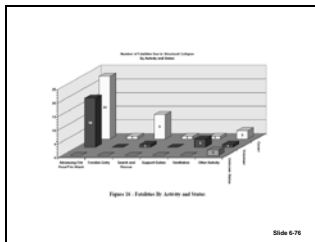
- k. Fatalities by cause of death and nature of death.

Slide 6-75



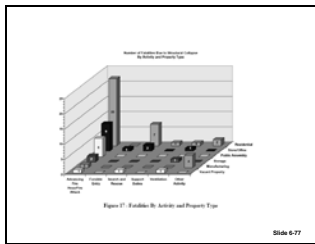
- l. Fatalities by property type and status.

Slide 6-76



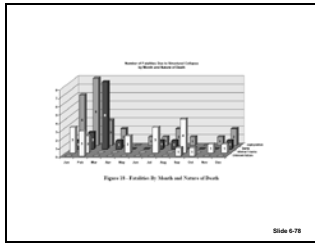
- m. Fatalities by activities and status.

Slide 6-77



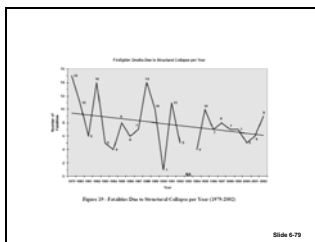
- n. Fatalities by activity and property type.

Slide 6-78



- o. Fatalities by month and nature of death.

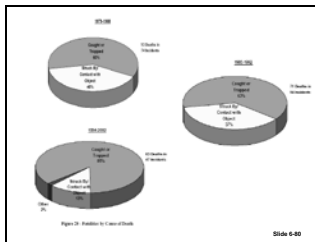
Slide 6-79



- D. Fatalities due to structural collapse per year (1979 to 2002).

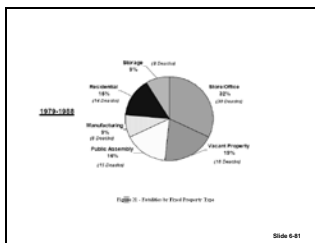
Point out categories--decrease from 1989 to 1990. (Why?)  
Possibly enactment of NFPA 1500.

Slide 6-80



1. Fatalities by cause of death.

Slide 6-81

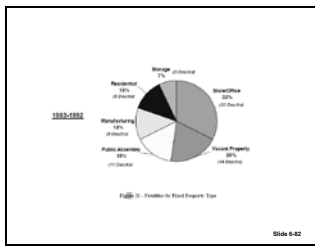


2. Fatalities by fixed property type.

Point out categories (1979 to 1988):

Stores/Offices--32 percent  
Residential--15 percent

Slide 6-82

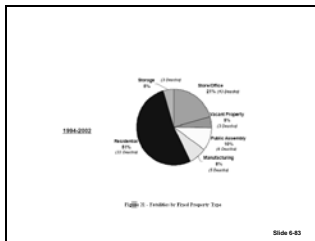


Point out categories (1983 to 1992):

Stores/Offices--32 percent

Residential--13 percent

Slide 6-83



Point out categories (1994 to 2002):

Stores/Offices--21 percent

Residential--51 percent

Slide 6-84

**SUMMARY**

- In this lesson you saw the importance of understanding burn time with regard to structural collapse.
- You must consider how long the fire has been burning when you arrive on the scene.
- The LODD statistics provided you with compelling information regarding how and where firefighters become fatalities. Use this information to keep you and your crew safe.

**V. SUMMARY (5 min.)**

- In this lesson you were shown burn times and the importance of understanding burn time for crew safety.
- You must always consider the length of time a structure has been burning when you arrive on the scene.
- The LODD statistics provided with compelling information regarding how and where firefighters become fatalities. Use the information you learned to keep you and your crew safe.



# **UNIT 7: FIREGROUND DECISION MAKING EXERCISES**

## **OBJECTIVES**

*The students will:*

1. *State the objectives when confronted with a Type I, II, III, IV, or V occupancy when conducting an analytical sizeup of the structure.*
  2. *State the strategies when confronted with a Type I, II, III, IV, or V occupancy when conducting an analytical sizeup of the structure.*
  3. *State the tactics when confronted with a Type I, II, III, IV, or V occupancy when conducting an analytical sizeup of the structure.*
  4. *Identify and write the findings from the walkaround in Columns 1, 2, and 3 of the Primary Factors Chart.*
  5. *As a group, prepare a briefing of the findings from the Initial Company Officer (ICO), the Initial Company Officer Assistant (ICOA), the Initial Incident Safety Officer (IISO), Initial Planning Section, and Initial Logistics Section.*
  6. *Given a simulated incident where building construction is a critical issue, develop a sizeup report of fireground conditions, complete the Primary Factors Chart, and document progress using the Command Sequence Tactical Chart.*
-

### **POINTS FOR THE INSTRUCTOR**

This unit focuses on the Initial Company Officer's (ICO's) responsibility in situational assessment and decision making as related to decision making, objectives, strategies and tactics on an incident scene. It is critical that the students already have proficiency in the task activities associated with structural firefighting operations and with other basic tactical operations before completing this unit.

It is important that the instructor have a thorough understanding of the content of this unit and the rationale for acceptable responses to the activity. The suggested answers are provided as a guide and illustrate one of several acceptable answers.

The instructor should not let unsafe or poor tactical/task decisions go unchallenged or unjustified.

### **ATTITUDES TO FOSTER**

1. The ICO must not underestimate the importance of developing an adequate water supply. Regardless of the size of the fire, water supply is essential to support all tactical operations. If water supply issues are overlooked, the safety of firefighters and the overall objectives of the action plan are jeopardized.
2. ICOs also must remember that the use of fixed fire protection systems can and will support fire confinement, fire extinguishment, and exposure protection operations. The loss of property not involved in the fire on the arrival of the fire department is not acceptable.
3. ICOs also must be aware of providing salvage operations early into the firefighting efforts. It is essential that salvage operations become an integral part of firefighting operations.

### **METHODOLOGY**

This unit introduces each of the key concepts with a lecture. The large group activity then provides an opportunity for students to apply key learning. Depending on the time available, the activity segment of the unit can be expanded, as necessary, to allow students to develop mastery of the decision making skills involved.

### **(Total Time: 2 hr., 45 min.)**

10 min.	Lecture/Discussion	
	Objectives	IG 7-5
	Activity Exercises	IG 7-6
155 min.	Large Group Activity 7.1	
	Large Exercise Overview	IG 7-7
20 min.	Exercise #1: Frame Townhouse	IG 7-25
20 min.	Exercise #2: Office Complex	IG 7-36
20 min.	Exercise #3: Highrise	IG 7-44
20 min.	Exercise #4: Mill Building	IG 7-55
20 min.	Exercise #5: Shopping Center	IG 7-67
20 min.	Exercise #6: Bank Mansard Roof	IG 7-75
20 min.	Exercise #7: Noncombustible Warehouse	IG 7-87

**AUDIOVISUAL**

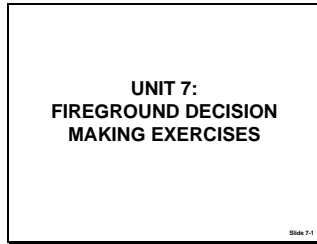
Slides 7-1 to 7-473

**HANDOUTS**

Handout 7-1: Pre-exercise Information Forms  
Handout 7-2: Exercise #1 Messages  
Handout 7-3: Exercise #2 Messages  
Handout 7-4: Exercise #3 Messages  
Handout 7-5: Exercise #4 Messages  
Handout 7-6: Exercise #5 Messages  
Handout 7-7: Exercise #6 Messages  
Handout 7-8: Exercise #7 Messages

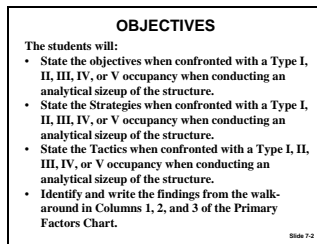
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Slide 7-1



10 min.  
Lecture/Discussion

Slide 7-2

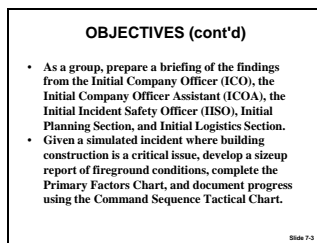


**I. OBJECTIVES (5 min.)**

The students will:

- A. State the objectives when confronted with a Type I, II, III, IV, or V occupancy when conducting an analytical sizeup of the structure.
- B. State the strategies when confronted with a Type I, II, III, IV, or V occupancy when conducting an analytical sizeup of the structure.
- C. State the tactics when confronted with a Type I, II, III, IV, or V occupancy when conducting an analytical sizeup of the structure.
- D. Identify and write the findings from the walk around in Columns 1, 2, and 3 of the Primary Factors Chart.
- E. As a group, prepare a briefing of the findings from the Initial Company Officer (ICO), the Initial Company Officer Assistant (ICOA), the Initial Incident Safety Officer (IISO), Initial Planning Section, and Initial Logistics Section.
- F. Given a simulated incident where building construction is a critical issue, develop a sizeup report of fireground conditions, complete the Primary Factors Chart, and document progress using the Command Sequence Tactical Chart.

Slide 7-3



Slide 7-4



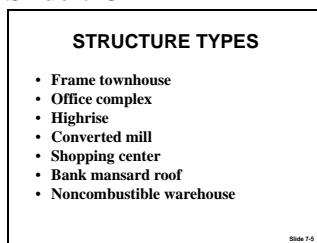
## II. ACTIVITY EXERCISES (5 min.)

- A. Students will be shown a structure type and have to identify the primary factors for the incident and develop Objectives, Strategies, and Tactics as the ICOA.

These activity exercises are intended to teach the use of the Primary Factors Chart, and to place the **ICO** as the Incident Commander (IC) until relieved by the next level of authority arriving at the incident (*simulated by instructor*). For simulation purposes the **ICO** will have additional students assigned to Command and General Staff positions, which under normal field conditions would be the sole responsibility of the ICO.

Emphasize that each group will be receive timed messages that they must respond to, and will use the Primary Factors Chart in their walk around of the structure.

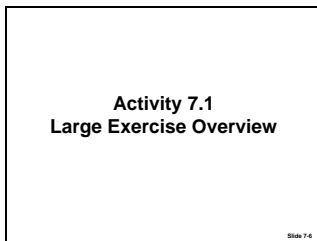
Slide 7-5



- B. Conduct a walkaround of the uninvolved structure prior.
- C. Structure types.
1. Frame townhouse.
  2. Office complex.
  3. Highrise.
  4. Converted mill.
  5. Shopping center.
  6. Bank mansard roof.
  7. Noncombustible warehouse.

150 min.  
Large Group  
Activity 7.1

Slide 7-6



## Activity 7.1

### Large Exercise Overview

#### Purpose

To allow students to demonstrate their knowledge, skills, and abilities (KSAs) they have gained as a result of attending this course.

The exercise format places students into groups of five who assume the role as one person, the ICO. The ICO will be the highest level of authority on an emergency scene until relieved by a higher level during the exercises. The next level of higher level of authority to arrive at the emergency incident will be assumed by the instructor who will facilitate that role during the debriefing portion of the exercise.

There are **seven** exercises from which the instructor can choose from. It is recommended that instructors assign one specific exercise to each student group. An option for the instructor may be to have all student groups address the same exercise. However, this format may become redundant for the debriefing and limit student learning, whereas multiple exercises and debriefings will provide additional student learning.

The five exercise functions for each group:

1. ICO (one student).
2. Safety Officer (one student).
3. Planning Function--Situation Unit Leader--Resource Unit Leader (one student).
4. Logistics Function--Service and Support Branch Director (one student).
5. ICOA scribe position (one student).

<p>Handout 7-1</p> <p>IG p. 7-13</p> <p>Easel Pad</p>	<p><b>Stress</b> the fact that in an actual incident the exercise five functions would be performed by the ICO.</p> <p><b>The students must understand this exercise concept prior to starting the exercises.</b></p> <p><b>Directions to Students</b></p> <p><b>Prepare Students</b></p> <ol style="list-style-type: none"> <li>1. Hand out pre-exercise information forms.</li> <li>2. Go over each form with the students to ensure they understand the purpose of Primary Factors Chart, Primary Factors Exercise Chart, Objectives-Strategy-Tactics Chart, and Incident Command System (ICS) forms and how they will be used in the exercise.</li> <li>3. Ensure that students understand the available Central City resources for the exercise. Ensure that the easel pads set aside for each student group reflect the exercise working chart that will be used to chart the primary factors. Unit 5: The Analytical Sizeup Process prepared students for identifying incident primary factors.</li> <li>4. Do a walkaround showing the exposures with the students. Use the slides for the selected exercise or exercises. There is no smoke on walkaround slides. Point out the location of the fire on the walkaround slides.</li> </ol> <p>Upon completing this student preparation, the instructor is ready to start the exercise.</p> <p><b>Begin Exercise</b></p> <p><b>NOTE: When an exercise message is delivered, the slide views should change to reflect burn time clock changes on each message.</b></p> <p><b>Show Slide Iteration #1 (10 min.)</b></p> <ol style="list-style-type: none"> <li>5. Place Slide Iteration #1 on screen for the selected exercise(s) and distribute Exercise Message #1.</li> </ol>
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Easel Pad	<p>6. Students must use the Primary Factors Exercise Chart to identify primary factors, subfactors, and factor precautions for the first operational period. These entries should be charted on enlarged exercise Primary Factors Chart or written out on an easel pad. Allow 10 minutes to identify and chart pertinent factors on exercise working chart.</p> <p><b>Show Slide Iteration #2 (20 min.)</b></p> <p>7. Place Slide Iteration #2 on the screen, and distribute Exercise Message #2.</p> <p>8. Inform the students that they must now develop the Objectives, Strategy, and Tactics for the first operational period based on pertinent factors identified on the Primary Factors Chart.</p>
Easel Pad	<p>9. Based on the Primary Factors Exercise Chart findings, the first operational period Objectives, Strategy, and Tactics should be charted on an enlarged Objectives-Strategy-Tactics Chart or easel pad.</p> <p><b>NOTE:</b> Unit 5 has prepared students for identifying and preparing Objectives, Strategy, and Tactics.</p> <p><b>Slide Iteration #3, #4, # 5, #6, #7, and #8 (30 min.)</b></p> <p>10. Once the Objectives, Strategy, and Tactics are developed and tactics are assigned, the exercise will continue. Instructors will follow the Message distribution sequence and Slide Iteration changes.</p> <p>11. During the exercise students groups are required to document their activities on the exercise charts and ICS Form 214, <i>Unit Log</i> and ICS Form 201, <i>Incident Debriefing</i>.</p> <p>ICOA:</p> <ul style="list-style-type: none"> <li>• required exercise documentation; and</li> <li>• Primary Factors Chart and Objectives-Strategy-Tactics Chart.</li> </ul>

	<p>ICO:</p> <ul style="list-style-type: none"> <li>• required exercise documentation; and</li> <li>• ICS Form 214.</li> </ul> <p>Safety Officer:</p> <ul style="list-style-type: none"> <li>• ICS Form 214.</li> </ul> <p>Planning (Situation Unit/Resource Unit Leader):</p> <ul style="list-style-type: none"> <li>• ICS Form 214; and</li> <li>• ICS Form 201.</li> </ul> <p>Logistics (Service/Support Branches Director):</p> <ul style="list-style-type: none"> <li>• ICS Form 214; and</li> <li>• ICS Form 201.</li> </ul> <p>12. When the exercise is completed, allow students 15 minutes to prepare their group documentation for debriefing process.</p> <p><b>Instructor shall assume the simulated role of the next level of authority Central City Battalion Chief to arrive at the emergency incident for debriefing.</b></p> <p>13. Students shall present their group's charts and ICS forms to the next level of authority (the instructor).</p> <p>14. The instructor shall make corrections during debriefings on the charts and ICS forms as required.</p> <p>15. Allow 15 minutes for each group to present debriefing.</p>
SM p. 7-13	<p>1. The class will be divided into table groups, preferably four students per group.</p> <p>2. There are seven scenarios.</p> <p>3. A floor/plot plan is in the Student Manual (SM) for each occupancy. The floor/plot plans show the amount of involvement in the building.</p>
SM p. 7-39	

4. The students will be shown several slides of the building's various sides and one slide showing smoke and/or fire.
5. The instructor will assign one scenario to each group or, assign each group a different scenario. Have students look at their floor/plot plans for the scenario in their SM.
6. Each group will prepare a Primary Factors Chart and develop Objectives, Strategy, and Tactics for the structure.
7. Groups will be required to report back to the class their action plans using the Command Sequence Cycle.
8. Allow 150 minutes for each group to complete its assignment.

Instructor should lead each group through the reporting back process. Allow 15 minutes for reporting back. The activity should take students approximately 150 minutes to complete.

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Primary Factor - Situation Awareness-Chart		Column #1	Column #2	Column #3	Column #4
Primary Factors	(Check appropriate boxes)	Pertinent Sub-Factors (P)	Incident Objectives Attainable/Measurable/Flexible	Activities (Strategies)	Evaluate Effect of Activities (Strategies) Every 10 Minutes
		P			Effective
Life Hazard		Occupants	<u>Examples of Incident Objectives:</u> <ul style="list-style-type: none"> <li>Safe Removal of All Occupants within 10 minutes.</li> <li>Contain and Control Fire to Room/Building of Origin within 10 minutes</li> <li>Contain, Control and Limit Fire in Exposures within 10 minutes</li> <li>Other.</li> </ul>	[R] Rescue Interior/Exterior/Both	
		Firefighters			
Location/Fire		Fire Building on Arrival- Burn Time		[E] Exposure Protection Exposure Examination	
		Exposures On Arrival - Burn Time			
Construction		Fire Spread Considerations Radiation/Conduction/Convection		[C/E] Confinement/Extinguishment Hose Line Placement	
		Fire Building - Type 1-2-3-4-5 (Lightweight Awareness)			
Occupancy (Contents)		Exposures - Type 1-2-3-4-5 (Lightweight Awareness)	<u>List Incident Objectives:</u>	[O] Overhaul Expose Hidden Fire	
		Fire Building - (Fuel Load)			
Height		Exposures (Fuel Load)		[V] Ventilation Removal of Occupants Fire Control	
		Fire Building (Front-Rear)		[S] Salvage Water - Run-Off Apply Covers	
Area		Exposures (Front-Rear)		[F] Forcible Entry Location Method	
		Fire Building/Configuration		[S] Special Equipment Imaging Cameras	
Structural Collapse		Proximity of Exposures /Configuration			
		Fire Building - Burn Clock After Arrival			
		Exposures - Burn Clock After Arrival			
		Collapse Zone - Safe Corridors			
Weather		Apparatus Placement			
		Visibility			
Resource Requirement		Temperature/Humidity			
		Wind - Direction/Velocity			
Auxiliary Appliances		Apparatus/Personnel/Equipment - RIT			
		Water Supply/Suppression Agent			
Topography		Fire Building Supplied			
		Exposures Supplied			
Explosions/Back Draft		Front-Rear			
		Proper Ventilation Flash-Over Time Awareness			
Time		Time of Day			
		Time of Year			
		Duration of Incident			

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Primary Factors Exercise Chart		
Pertinent Primary Factors	Pertinent Subfactors	Pertinent Precautions To Be Taken
1.	1. 2.	1. 2.
2.	1. 2. 3.	1. 2. 3.
3.	1. 2.	1. 2.
4.	1. 2.	1. 2.
5.	1. 2.	1. 2.
6.	1. 2.	1. 2.
7.	1. 2. 3. 4.	1. 2. 3. 4.
8.	1. 2. 3.	1. 2. 3.
9.	1. 2.	1. 2.
10.	1. 2.	1. 2.
11.	1.	1.
12.	1. 2.	1. 2.
13.	1. 2.	1. 2.

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Objectives-Strategy-Tactics Chart			
Objectives	Strategy(ies)	Tactics	Assigned to:
Objective #1	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.
Objective #2	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.
Objective #3	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.

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IG 7-19

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Incident Command System Form 201: <i>Incident Debriefing</i>			
<b>INCIDENT BRIEFING</b>	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
4. MAP SKETCH			
ICS 201 PAGE 1 OF 4	5. PREPARED BY (NAME AND POSITION)		

## 6. SUMMARY OF CURRENT ACTIONS

ICS 201

PAGE 2

## 7. CURRENT ORGANIZATION

ICS 201

PAGE 3





### Exercise #1: Frame Townhouse

SM p. 7-13

1. Display enlarged Primary Factors Chart at all student working positions.
2. Place students into groups of five students. Students will work at their assigned table position.
3. Exercise is designed to place the ICO as the IC until relieved by the next level of authority arriving at the incident (simulated by instructor).
4. For simulation purposes the **ICO** will have additional students assigned to Command and General Staff positions, which under normal field conditions, would be the sole responsibility of the ICO.
5. Student group assignments for each group:
  - a. ICO.
  - b. ICOA--scribe.
  - c. IISO.
  - d. Initial Planning Section (Situation Unit).
  - e. Initial Logistics Section (service and support).
6. Instructor has the option to assign student groups the same exercise scenario or assign each student group a different exercise scenario. There are seven large exercise scenarios. It is recommended that each student group address a different scenario.

Handout 7-2

**NOTE: When an exercise message is delivered. The slide views should change to reflect burn time clock changes on each message.**

**LARGE EXERCISE #1**  
**Vital Building Information**  
**Situation Report**

RESIDENTIAL--TYPE V--BALLOON FRAME

**Structure:** Two-story--18 by 40 foot townhouses  
Five townhouse units

**Building Construction:** Type V--balloon frame

**Roof Construction:** 2- by 6-inch truss roof support system

**Floors:** 2- by 6-inch plywood flooring system

**Alarm System:** No smoke detectors installed

**Occupants:** Two adult occupants per occupancy  
Units 1, 3, and 5 each have one young child

**Special Concerns:** Unit 2 has two senior citizen occupants

**Situation Report:**

**Fire Building:**

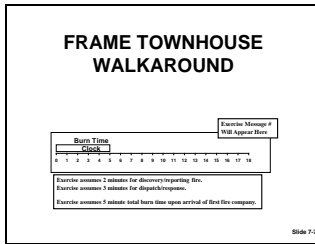
It is January 30, 0730 hours, temperature is 23 °F (-5 °C), wind from west at 10 miles per hour (mph).

Upon arrival, four adults and two children are outside of the townhouses. Occupants report two adults and one child are unaccounted for from Unit 3 and two occupants each from Units 2 and 4 are unaccounted for.

**Exposures:** Each occupancy has attic storage. Attic access is located in middle bedrooms on second floor.

## Initial Exposures--Walkaround

Slide 7-7



Slide 7-8



Slide 7-9



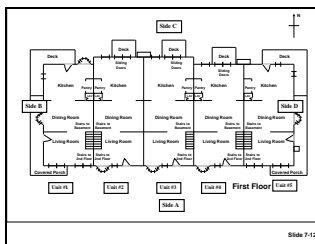
Slide 7-10



Slide 7-11

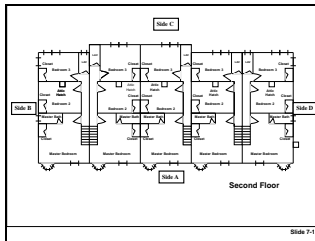


Slide 7-12

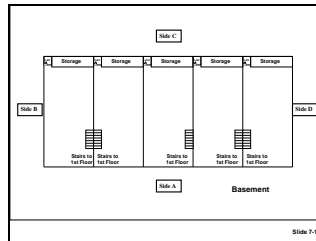


1. Show the plot plans.

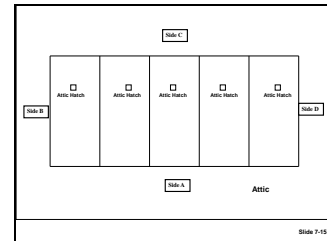
Slide 7-13



Slide 7-14



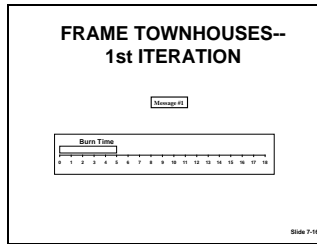
Slide 7-15



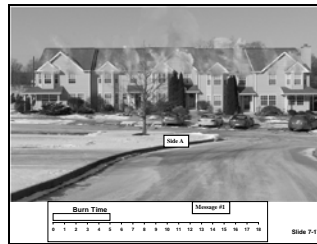
2. Respond to any questions regarding exposures or plot plans.

## Iteration 1--Message 1

Slide 7-16



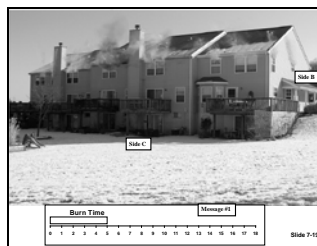
Slide 7-17



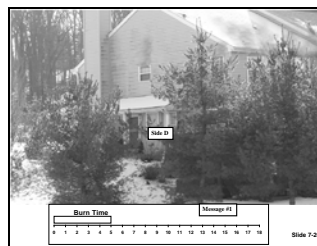
Slide 7-18



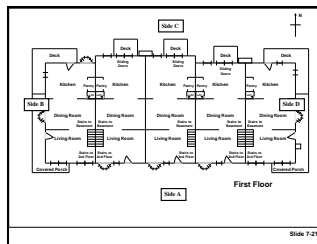
Slide 7-19



Slide 7-20

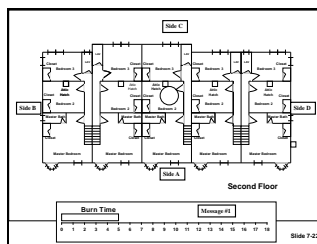


Slide 7-21

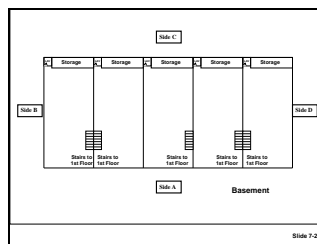


1. Show the plot plans.

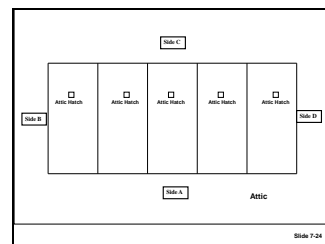
Slide 7-22



Slide 7-23



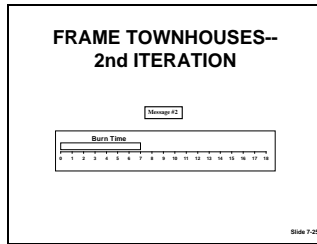
Slide 7-24



2. Respond to any questions regarding exposures or plot plans.

## Iteration 2--Message 2

Slide 7-25



Slide 7-26



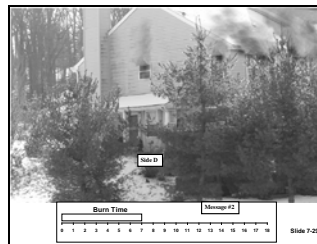
Slide 7-27



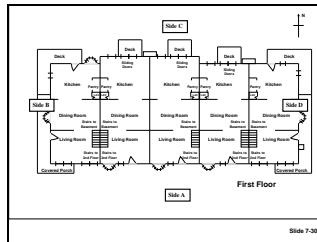
Slide 7-28



Slide 7-29

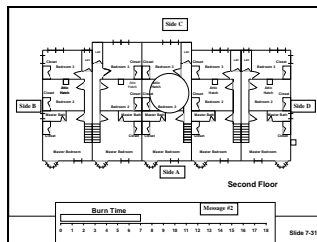


Slide 7-30

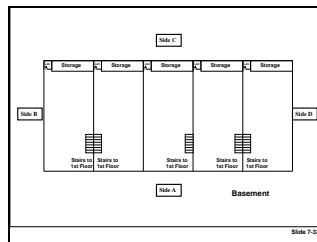


1. Show the plot plans.

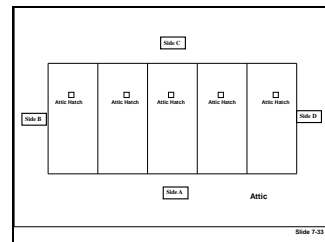
Slide 7-31



Slide 7-32



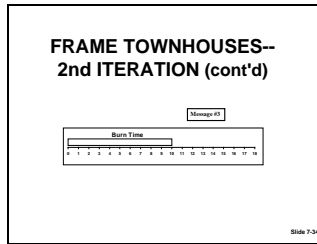
Slide 7-33



2. Respond to any questions regarding exposures or plot plans.

## Iteration--Message 3

Slide 7-34



Slide 7-35



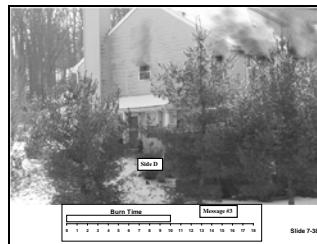
Slide 7-36



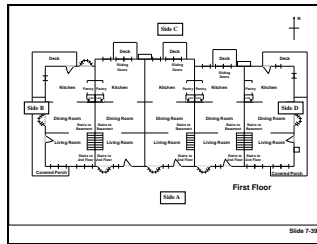
Slide 7-37



Slide 7-38

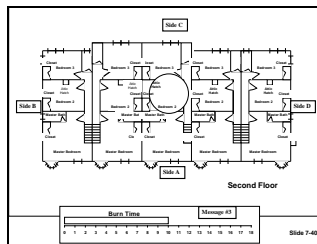


Slide 7-39

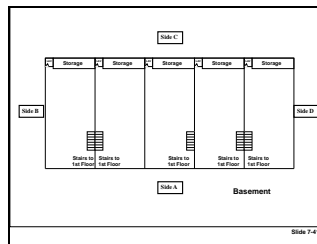


1. Show the plot plans.

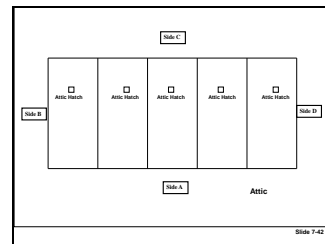
Slide 7-40



Slide 7-41



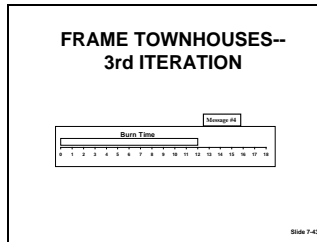
Slide 7-42



2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 4

Slide 7-43



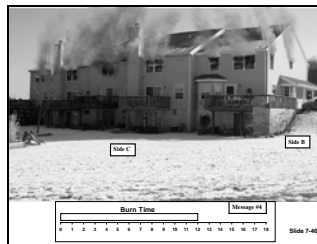
Slide 7-44



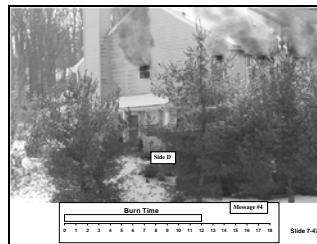
Slide 7-45



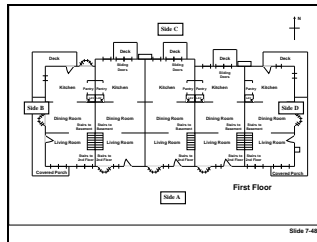
Slide 7-46



Slide 7-47

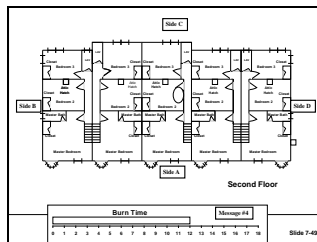


Slide 7-48

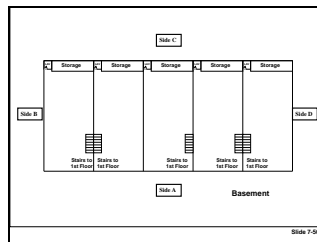


1. Show the plot plans.

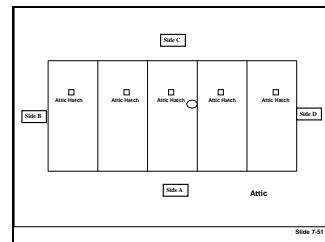
Slide 7-49



Slide 7-50



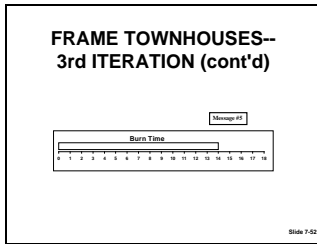
Slide 7-51



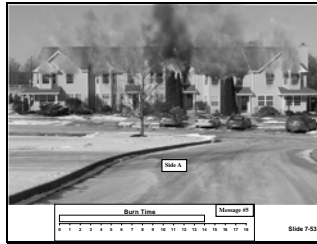
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 5

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Slide 7-53



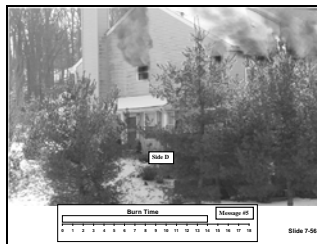
Slide 7-54



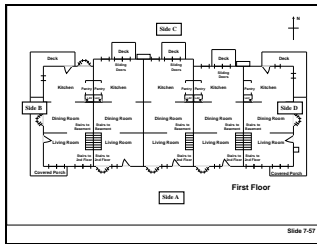
Slide 7-55



Slide 7-56

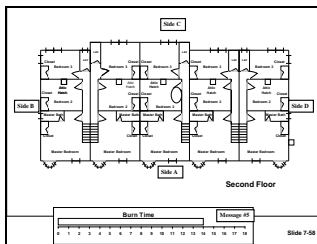


Slide 7-57

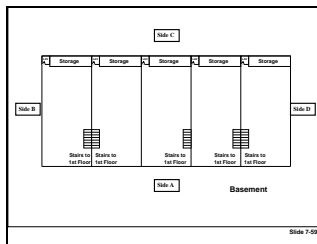


1. Show the plot plans.

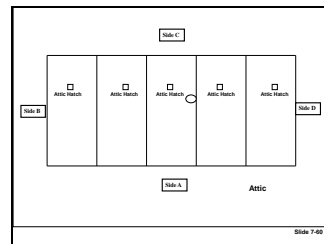
Slide 7-58



Slide 7-59



Slide 7-60

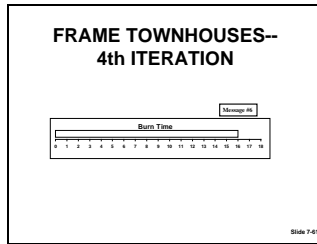


2. Respond to any questions regarding exposures or plot plans.

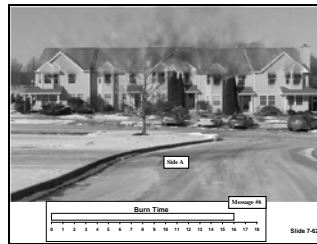


## Iteration 4--Message 6

Slide 7-61



Slide 7-62



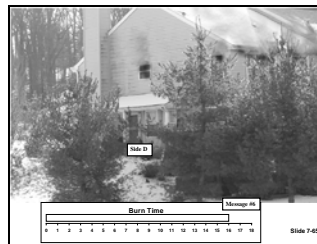
Slide 7-63



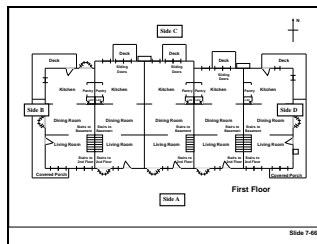
Slide 7-64



Slide 7-65

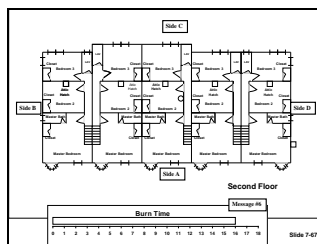


Slide 7-66

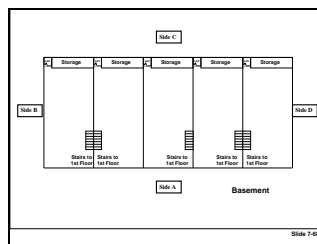


1. Show the plot plans.

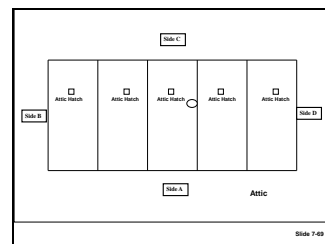
Slide 7-67



Slide 7-68



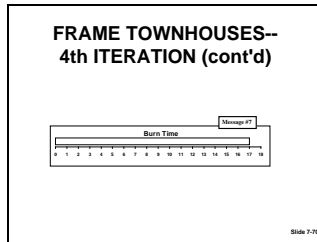
Slide 7-69



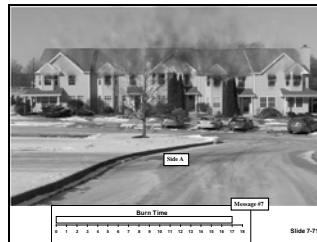
2. Respond to any questions regarding exposures or plot plans.

## Iteration 4--Message 7

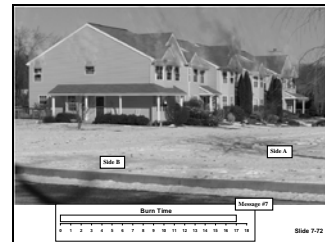
Slide 7-70



Slide 7-71



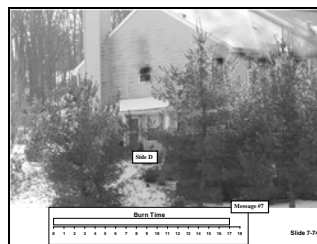
Slide 7-72



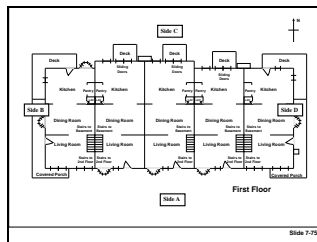
Slide 7-73



Slide 7-74

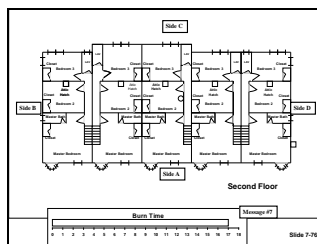


Slide 7-75

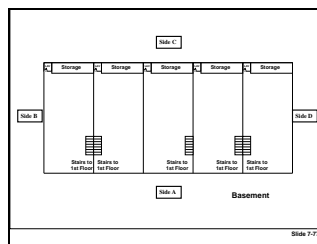


1. Show the plot plans.

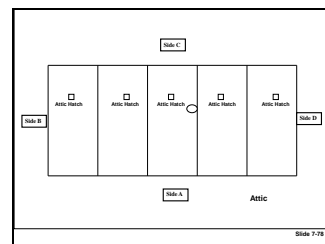
Slide 7-76



Slide 7-77



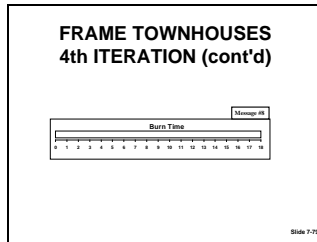
Slide 7-78



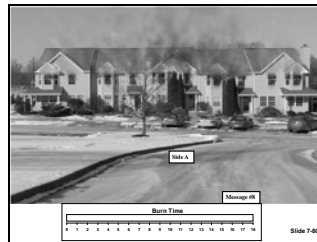
2. Respond to any questions regarding exposures or plot plans.

## Iteration 4--Message 8

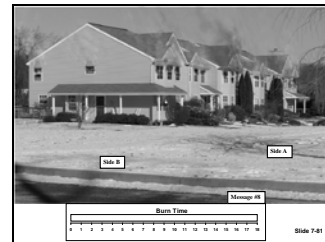
Slide 7-79



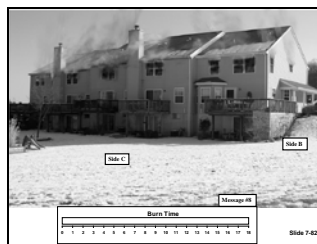
Slide 7-80



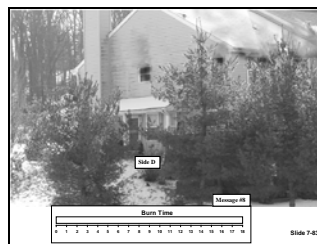
Slide 7-81



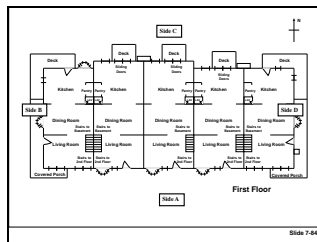
Slide 7-82



Slide 7-83

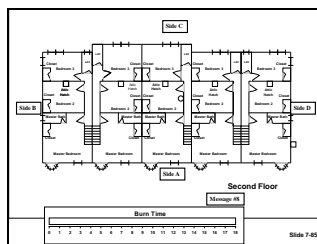


Slide 7-84

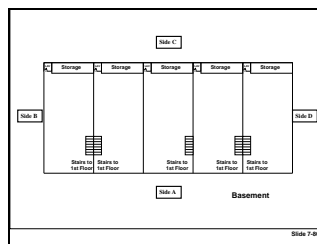


1. Show the plot plans.

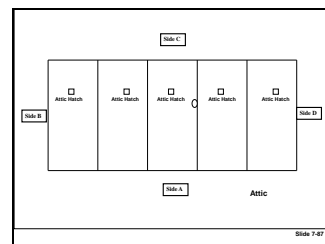
Slide 7-85



Slide 7-86



Slide 7-87



2. Respond to any questions regarding exposures or plot plans.

## Exercise #2: Office Complex

SM p. 7-75

1. Display enlarged Primary Factors Chart at all student working positions.
2. Place students into groups of five students. Students will work at their assigned table position.
3. Exercise is designed to place the ICO as the IC until relieved by the next level of authority arriving at the incident (simulated by instructor).
4. For simulation purposes the **ICO** will have additional students assigned to Command and General Staff positions, which under normal field conditions, would be the sole responsibility of the ICO.
5. Student group assignments for each group:
  - a. ICO.
  - b. ICOA--scribe.
  - c. IISO.
  - d. Initial Planning Section (Situation Unit).
  - e. Initial Logistics Section (service and support).
6. Instructor has the option to assign student groups the same exercise scenario or assign each student group a different exercise scenario. There are seven large exercise scenarios. It is recommended that each student group address a different scenario.

Handout 7-3

**NOTE: When an exercise message is delivered. The slide views should change to reflect burn time clock changes on each message.**

**LARGE EXERCISE #2**  
**Vital Building Information**  
**Situation Report**

COMMERCIAL--TYPE V--BALLOON FRAME

**Structure:** Office complex, 50 by 120 feet  
12 one-story offices  
20 by 25 feet various office tenants  
Special care occupancies

**Building Construction:** Type V--frame

**Roof Construction:** 2- by 6-inch truss roof support system  
Common attic storage

**Floors:** Concrete slab

**Alarm System:** Smoke detectors installed

**Occupants:** Tenant occupancy varies  
4 to 8 employees per occupancy

**Special Concerns:** Units 3 and 4--methadone clinic  
Units 11 and 12--daycare center

**Situation Report:**

**Fire Building:**

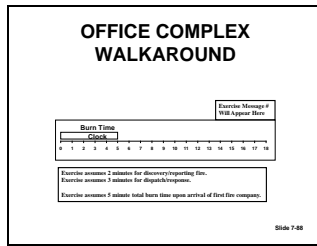
It is March 5, 1030 hours, temperature is 27 °F (-3 °C), wind from east at 8 miles per hour (mph).

Upon arrival, several people are outside the office complex on Sides A and C. Occupants from Offices 3 and 4 report that they are not sure everyone is accounted for. The daycare center is evacuating children from Offices 11 and 12. All offices are reported occupied.

**Exposures:** Each occupancy has attic storage. Attic access is located in near the rear of office.

## Office Complex--Walkaround

Slide 7-88



Slide 7-89



Slide 7-90



Slide 7-91



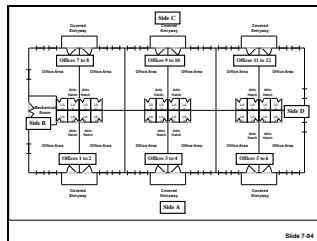
Slide 7-92



Slide 7-93



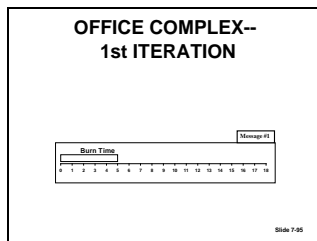
Slide 7-94



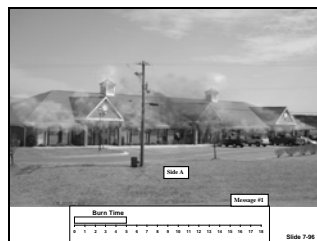
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

## Iteration 1--Message 1

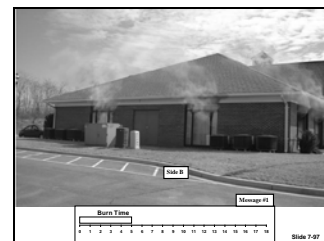
Slide 7-95



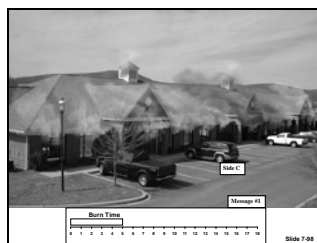
Slide 7-96



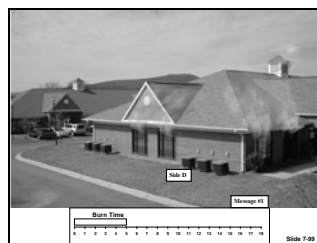
Slide 7-97



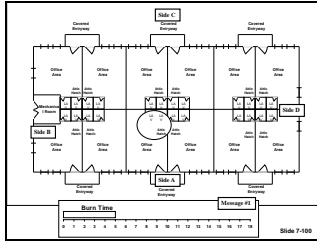
Slide 7-98



Slide 7-99



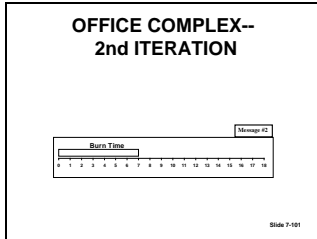
Slide 7-100



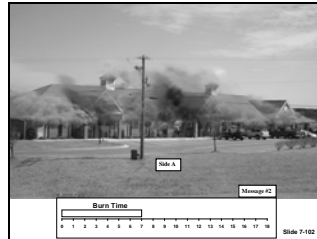
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 2--Message 2

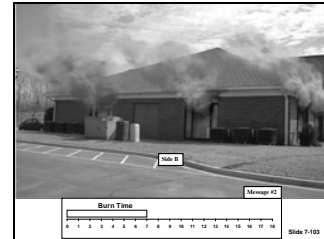
Slide 7-101



Slide 7-102



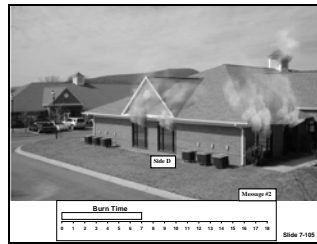
Slide 7-103



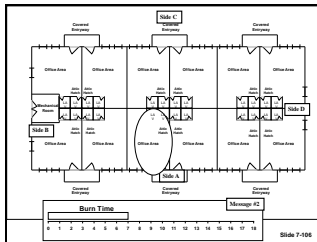
Slide 7-104



Slide 7-105



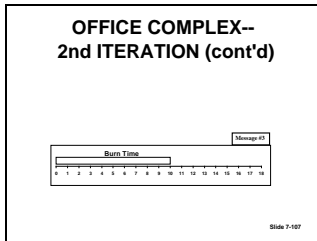
Slide 7-106



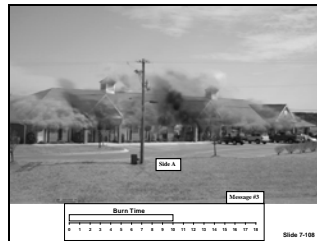
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 3

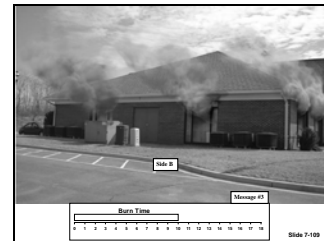
Slide 7-107



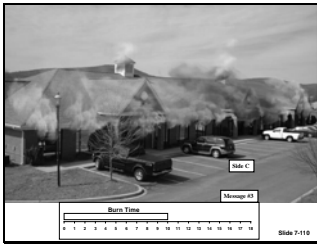
Slide 7-108



Slide 7-109



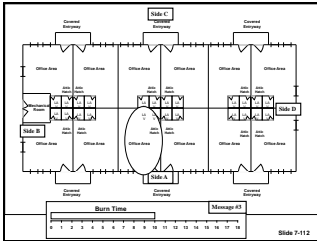
Slide 7-110



Slide 7-111



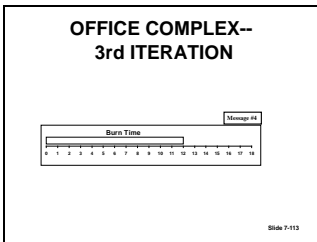
Slide 7-112



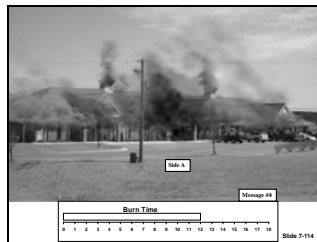
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 4

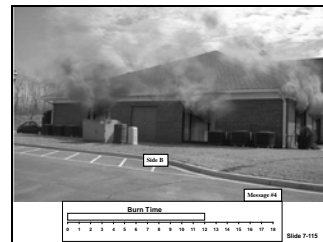
Slide 7-113



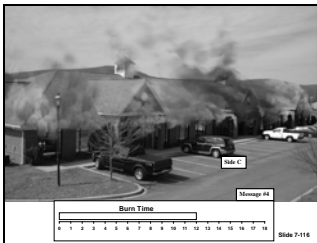
Slide 7-114



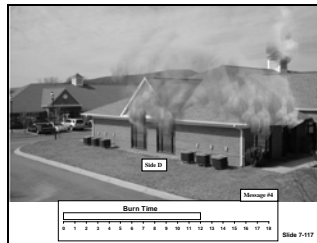
Slide 7-115



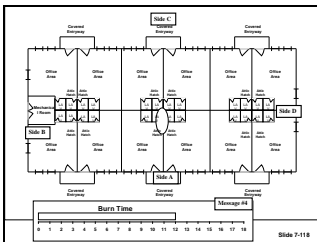
Slide 7-116



Slide 7-117



Slide 7-118

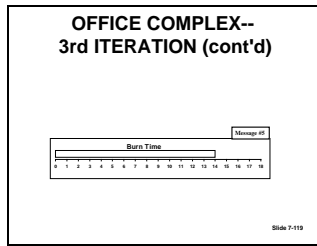


1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

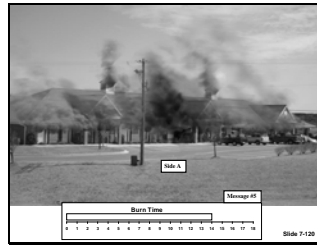


## Iteration 4--Message 5

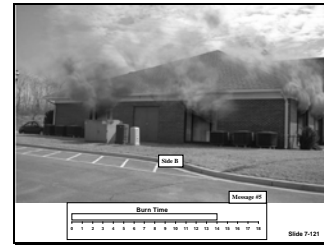
Slide 7-119



Slide 7-120



Slide 7-121



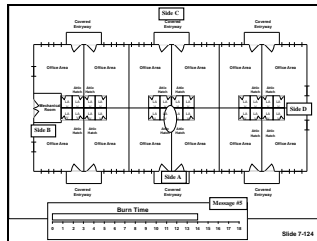
Slide 7-122



Slide 7-123



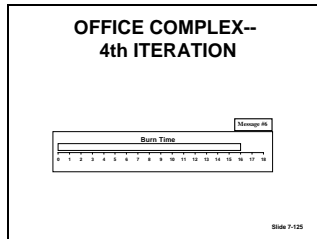
Slide 7-124



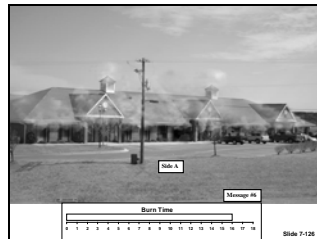
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

## Iteration 4--Message 6

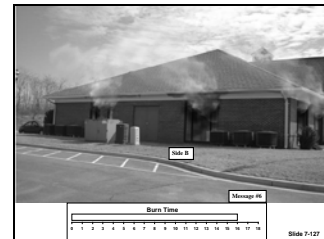
Slide 7-125



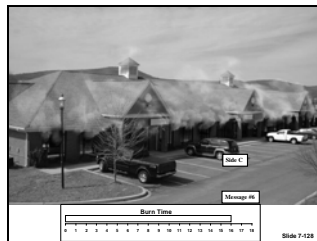
Slide 7-126



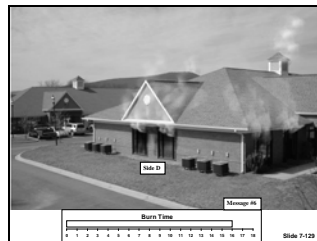
Slide 7-127



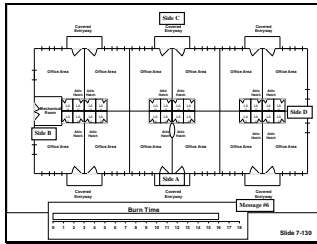
Slide 7-128



Slide 7-129



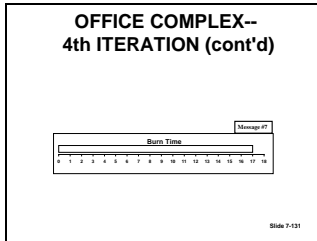
Slide 7-130



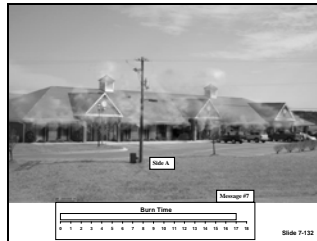
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 7

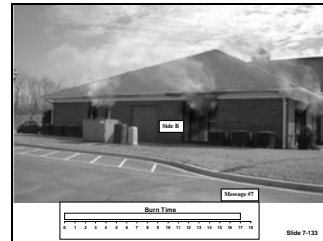
Slide 7-131



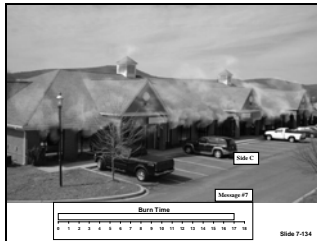
Slide 7-132



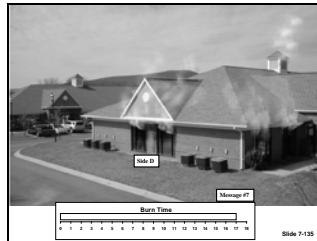
Slide 7-133



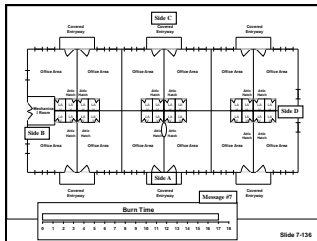
Slide 7-134



Slide 7-135



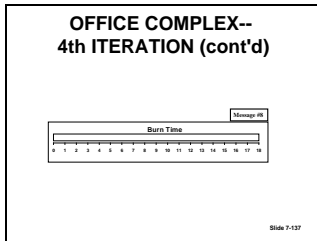
Slide 7-136



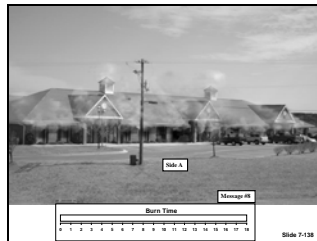
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 8

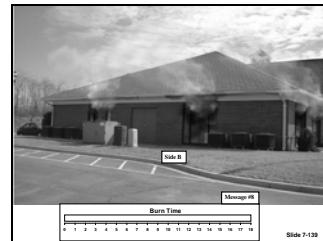
Slide 7-137



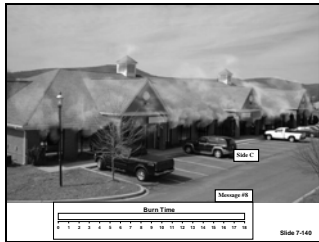
Slide 7-138



Slide 7-139



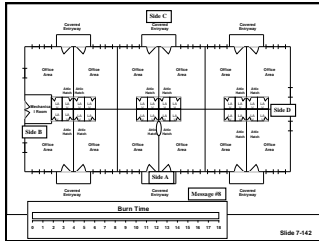
Slide 7-140



Slide 7-141



Slide 7-142



1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Exercise #3: Highrise

SM p. 7-111

1. Display enlarged Primary Factors Chart at all student working positions.
2. Place students into groups of five students. Students will work at their assigned table position.
3. Exercise is designed to place the ICO as the IC until relieved by the next level of authority arriving at the incident (simulated by instructor).
4. For simulation purposes the **ICO** will have additional students assigned to Command and General Staff positions, which under normal field conditions, would be the sole responsibility of the ICO.
5. Student group assignments for each group:
  - a. ICO.
  - b. ICOA--scribe.
  - c. IISO.
  - d. Initial Planning Section (Situation Unit).
  - e. Initial Logistics Section (service and support).
6. Instructor has the option to assign student groups the same exercise scenario or assign each student group a different exercise scenario. There are seven large exercise scenarios. It is recommended that each student group address a different scenario.

Handout 7-4

**NOTE: When an exercise message is delivered. The slide views should change to reflect burn time clock changes on each message.**

**LARGE EXERCISE #3**  
**Vital Building Information**  
**Situation Report**

RESIDENTIAL--TYPE I--FIRE RESISTIVE

**Structure:** Residential highrise, 50 by 100 feet  
22-Story Senior Citizen Occupancy

**Building Construction:** Type I--fire resistive--steel frame

**Roof Construction:** Concrete slab

**Floors:** 2-inch concrete over Q decking

**Alarm System:** Smoke detectors installed

**Stairwell:** Rear of building--Side C

**Standpipe:** 6-inch dry system--stairwell connection  
in rear of building

**Elevators:** Double bank  
Rear of building

**Occupants:** 6 apartments per floor  
2 occupants per apartment

**Special Concerns:** Wheelchair occupant--Apt. 1002  
Nonambulatory occupant--Apt. 1105  
Blind occupant--Apt. 1306

**Situation Report:**

**Fire Building:**

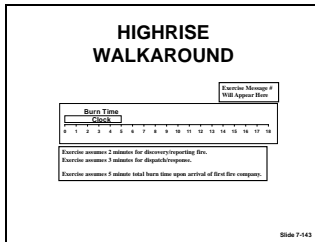
It is July 4, 1430 hours, temperature is 94 °F (34 °C), wind from east at 3 mph.

Upon arrival, several people are outside the highrise, Side C and more are evacuating down the rear stairwell. The alarm system is sounding. Status of occupants in Apartment 801 is unknown.

**Exposures:** No immediate exposures. Internal exposures only.

## Highrise--Walkaround

Slide 7-143



Slide 7-144



Slide 7-145



Slide 7-146



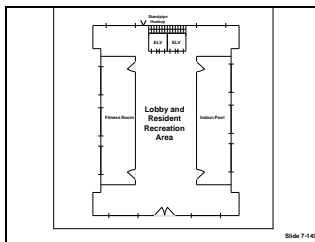
Slide 7-147



Slide 7-148

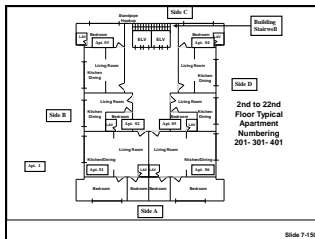


Slide 7-149

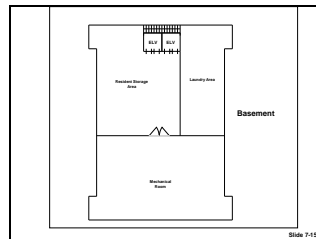


1. Show plot plans.

Slide 7-150



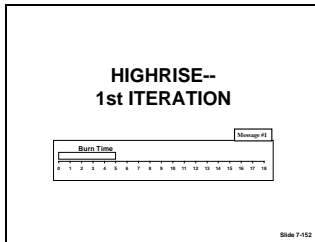
Slide 7-151



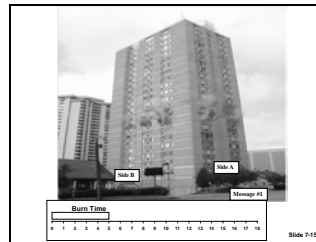
2. Respond to any questions regarding exposures or plot plans.

## Iteration 1--Message 1

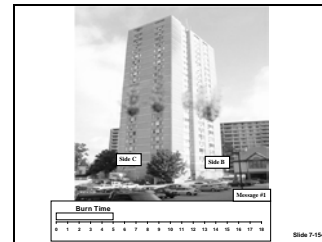
Slide 7-152



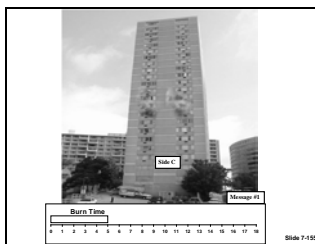
Slide 7-153



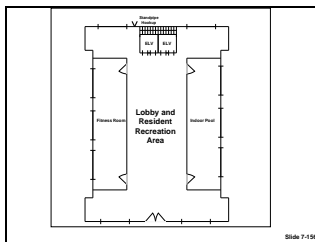
Slide 7-154



Slide 7-155

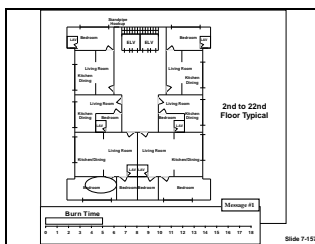


Slide 7-156

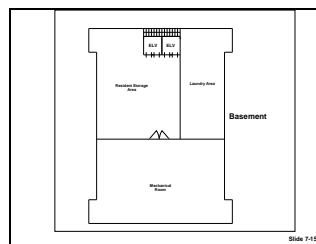


1. Show the plot plans.

Slide 7-157



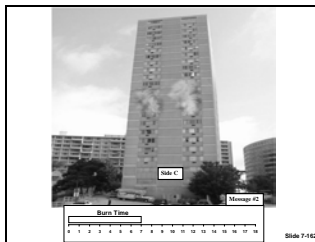
Slide 7-158



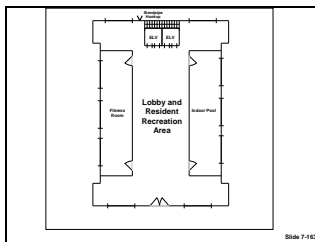
2. Respond to any questions regarding exposures or plot plans.

1. Show the plot plans.

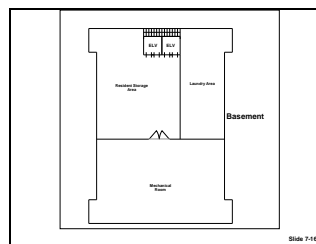
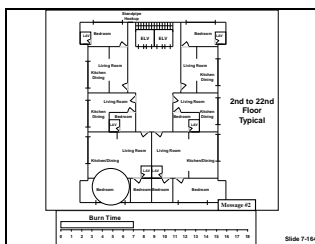
Slide 7-162



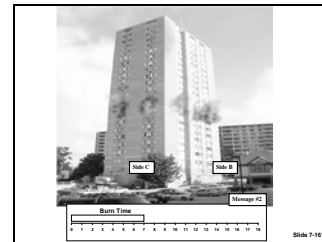
Slide 7-163



Slide 7-165



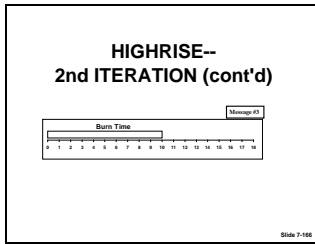
2. Respond to any questions regarding exposures or plot plans.



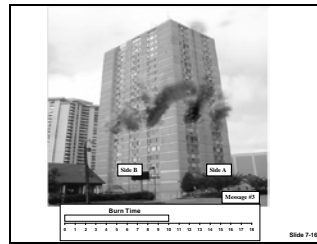


## Iteration 2--Message 3

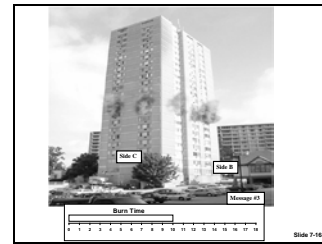
Slide 7-166



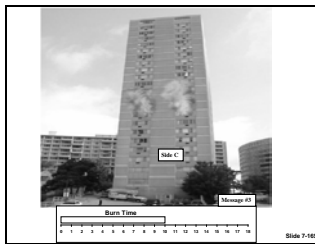
Slide 7-167



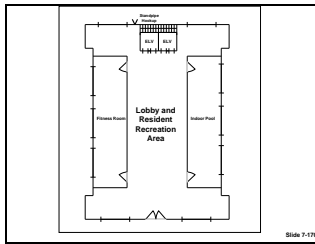
Slide 7-168



Slide 7-169

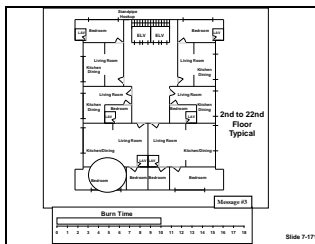


Slide 7-170

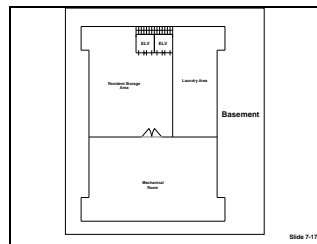


1. Show the plot plans.

Slide 7-171



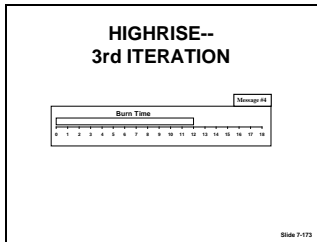
Slide 7-172



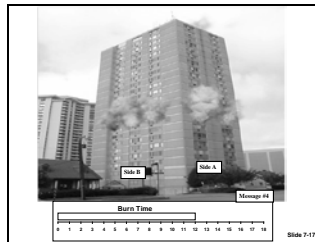
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 4

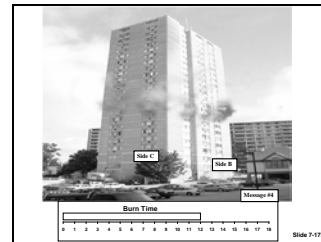
Slide 7-173



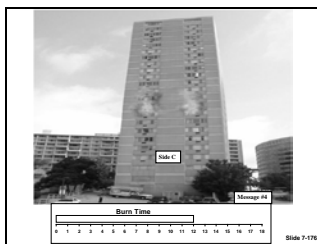
Slide 7-174



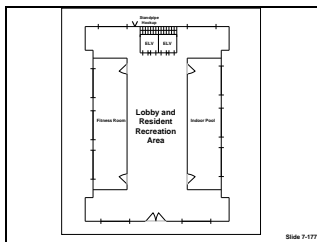
Slide 7-175



Slide 7-176

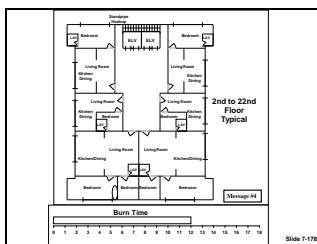


Slide 7-177

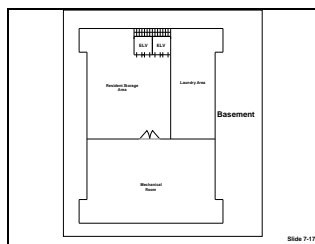


1. Show the plot plans.

Slide 7-178



Slide 7-179

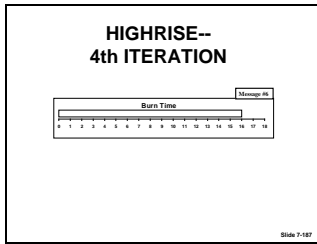


2. Respond to any questions regarding exposures or plot plans.

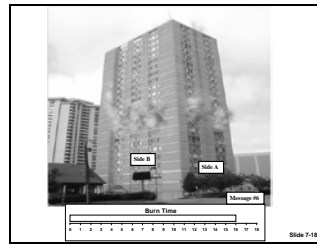


## Iteration 4--Message 6

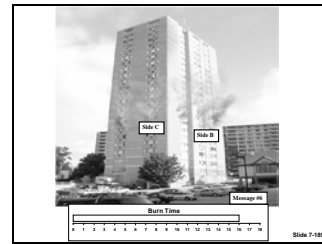
Slide 7-187



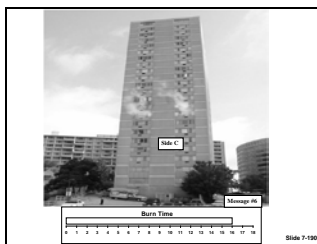
Slide 7-188



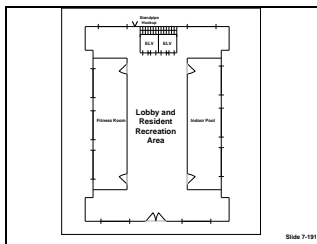
Slide 7-189



Slide 7-190

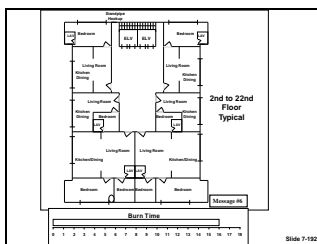


Slide 7-191

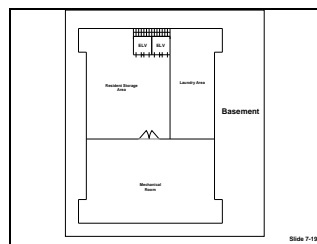


1. Show the plot plans.

Slide 7-192



Slide 7-193

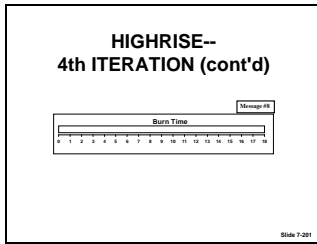


2. Respond to any questions regarding exposures or plot plans.

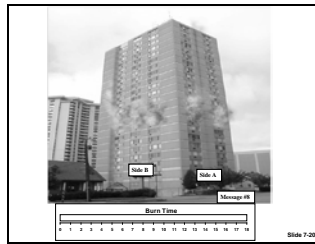


## Iteration 4--Message 8

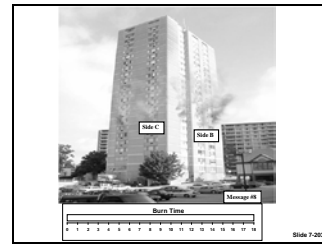
Slide 7-201



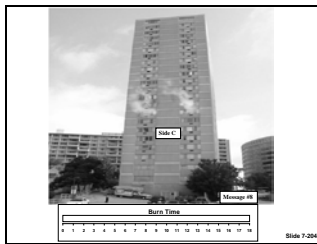
Slide 7-202



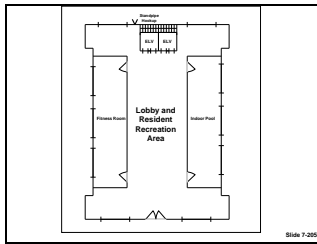
Slide 7-203



Slide 7-204

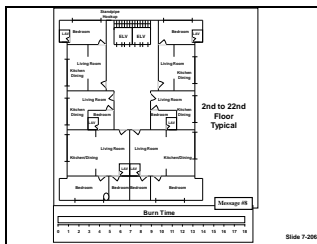


Slide 7-205

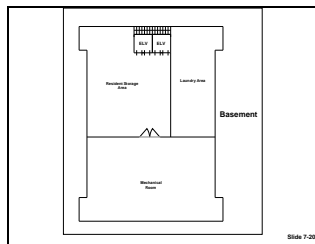


1. Show the plot plans.

Slide 7-206



Slide 7-207



2. Respond to any questions regarding exposures or plot plans.

**Exercise #4: Mill Building**

SM p. 7-147

1. Display enlarged Primary Factors Chart at all student working positions.
2. Place students into groups of five students. Students will work at their assigned table position.
3. Exercise is designed to place the ICO as the IC until relieved by the next level of authority arriving at the incident (simulated by instructor).
4. For simulation purposes the **ICO** will have additional students assigned to Command and General Staff positions, which under normal field conditions, would be the sole responsibility of the ICO.
5. Student group assignments for each group:
  - a. ICO.
  - b. ICOA--scribe.
  - c. IISO.
  - d. Initial Planning Section (Situation Unit).
  - e. Initial Logistics Section (service and support).
6. Instructor has the option to assign student groups the same exercise scenario or assign each student group a different exercise scenario. There are seven large exercise scenarios. It is recommended that each student group address a different scenario.

Handout 7-5

**NOTE: When an exercise message is delivered. The slide views should change to reflect burn time clock changes on each message.**

**LARGE EXERCISE #4**  
**Vital Building Information**  
**Situation Report**

HEAVY TIMBER--TYPE IV--MILL CONSTRUCTION

**Structure:** Two-story--clothing outlet

**Building Construction:** Type IV--mill construction

**Roof Construction:** Beam and rafter, 1-1/4-inch wooden roof decking, metal roof covering

**Floors:** Beam and joist, 2-inch wooden floor decking

**Alarm System:** Smoke detectors installed

**Sprinkler:** Basement, first and second floors

**Occupants:** Office and sales employees

**Special Concerns:** Heavy fuel load

**Situation Report:**

**Fire Building:**

It is May 25, 1330 hours, temperature is 75 °F (24 °C), wind from northeast at 5 mph.

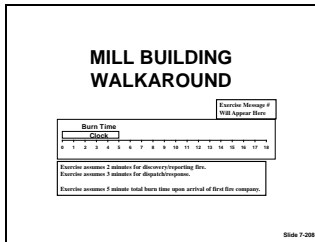
Upon arrival, several employees are outside the building on Sides A. Store manager reports that plumbers were working in the basement repairing a broken water pipe when the fire broke out. The plumbing foreman reported the sprinkler system was shut down for the repairs. One plumber is unaccounted for and was last seen in the basement and one employee working on the second floor is missing.

**Exposures:** Side B--two-story retail clothing store--no other immediate exposures.



## Mill Building--Walkaround

Slide 7-208



Slide 7-209



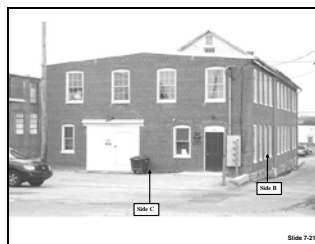
Slide 7-210



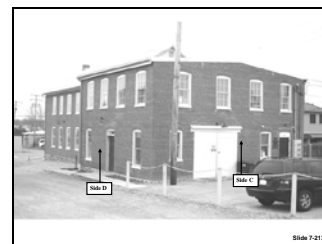
Slide 7-211



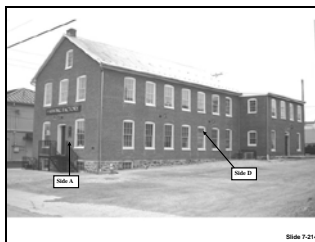
Slide 7-212



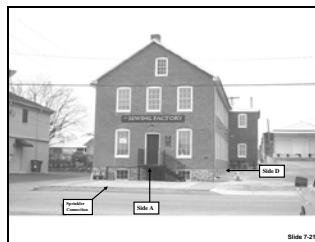
Slide 7-213



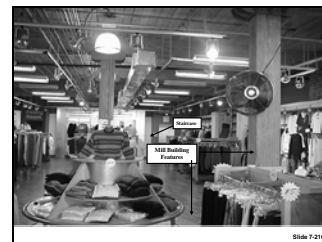
Slide 7-214



Slide 7-215



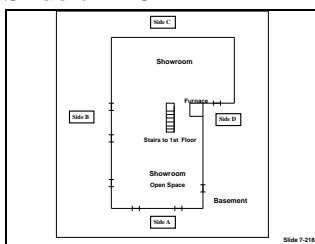
Slide 7-216



Slide 7-217

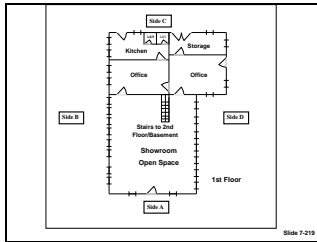


Slide 7-218

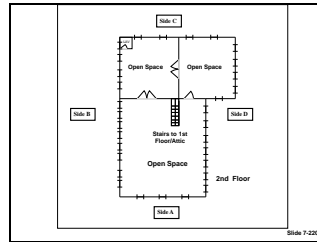


1. Show the plot plans.

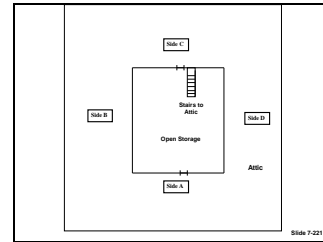
Slide 7-219



Slide 7-220



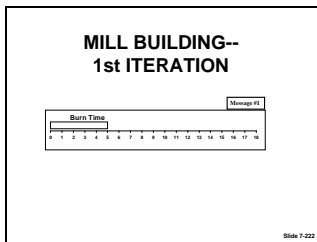
Slide 7-221



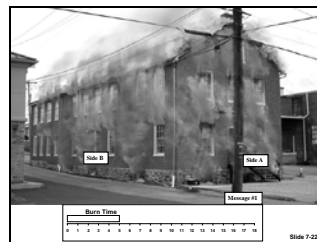
2. Respond to any questions regarding exposures or plot plans.

### Iteration 1--Message 1

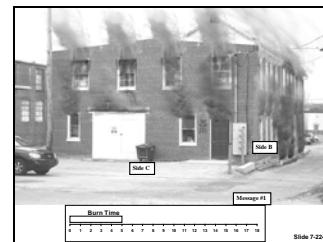
Slide 7-222



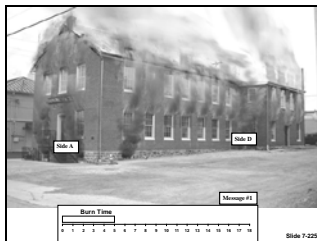
Slide 7-223



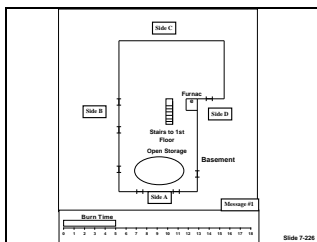
Slide 7-224



Slide 7-225

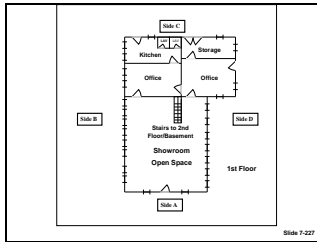


Slide 7-226

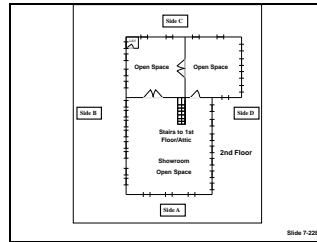


1. Show the plot plans.

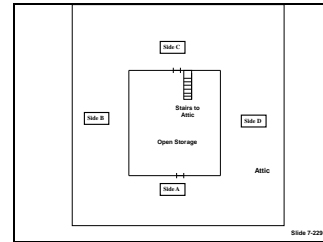
Slide 7-227



Slide 7-228



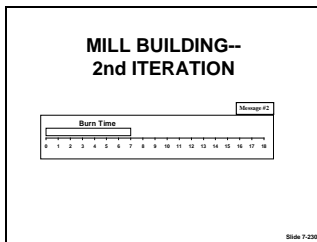
Slide 7-229



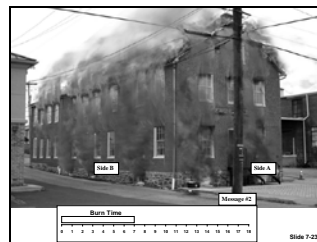
2. Respond to any questions regarding exposures or plot plans.

## Iteration 2--Message 2

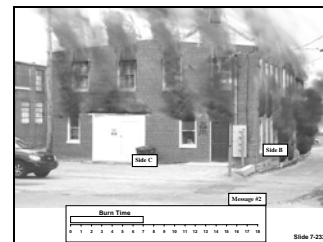
Slide 7-230



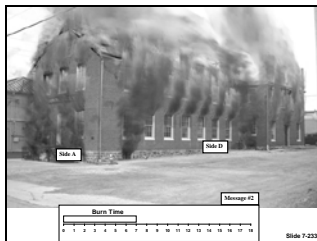
Slide 7-231



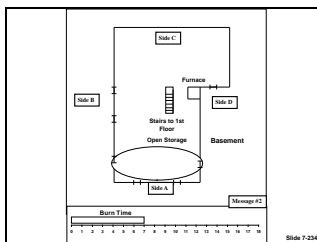
Slide 7-232



Slide 7-233

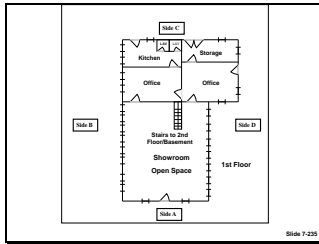


Slide 7-234

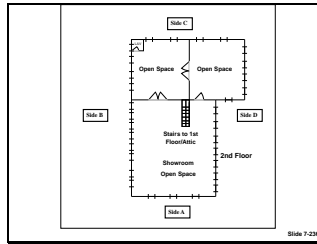


1. Show the plot plans.

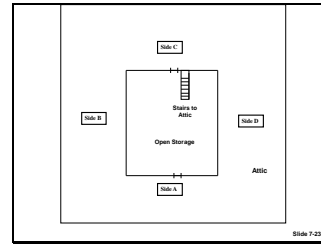
Slide 7-235



Slide 7-236



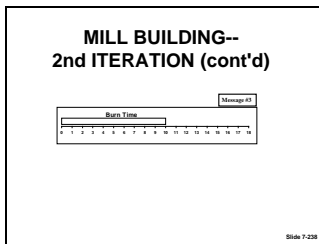
Slide 7-237



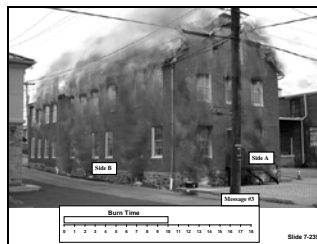
2. Respond to any questions regarding exposures or plot plans.

### Iteration 2--Message 3

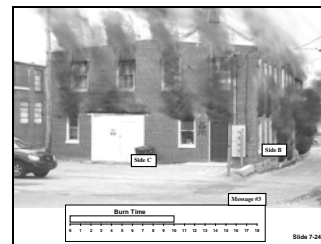
Slide 7-238



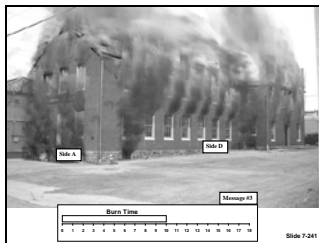
Slide 7-239



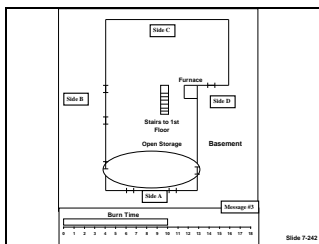
Slide 7-240



Slide 7-241

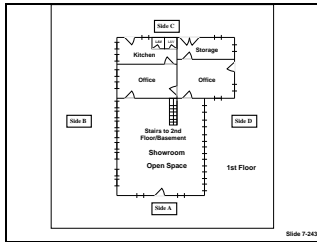


Slide 7-242

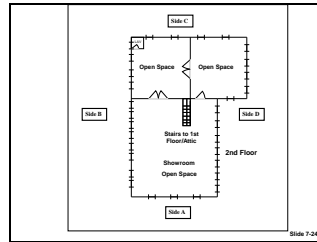


1. Show the plot plans.

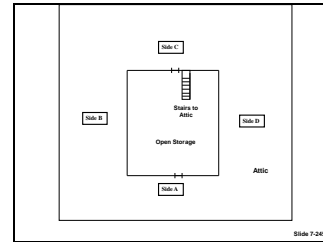
Slide 7-243



Slide 7-244



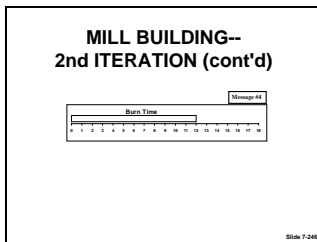
Slide 7-245



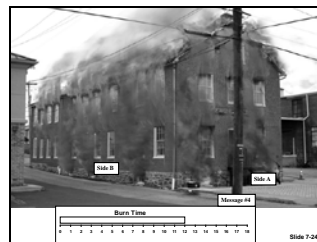
2. Respond to any questions regarding exposures or plot plans.

### Iteration 2--Message 4

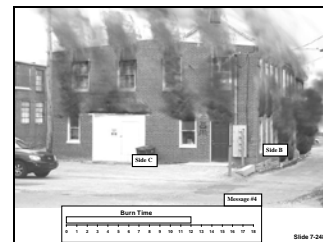
Slide 7-246



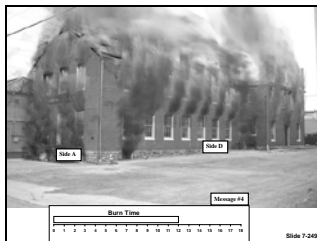
Slide 7-247



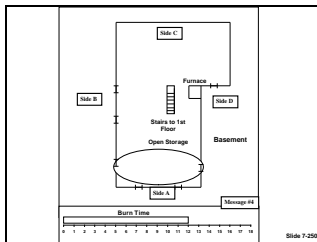
Slide 7-248



Slide 7-249

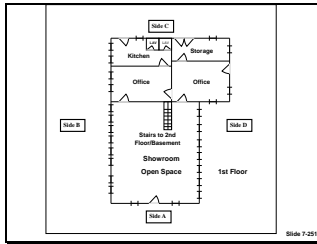


Slide 7-250

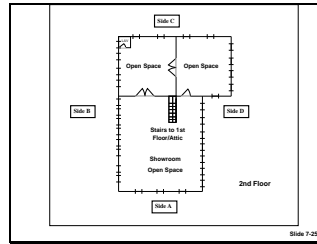


1. Show the plot plans.

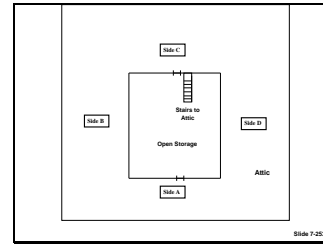
Slide 7-251



Slide 7-252



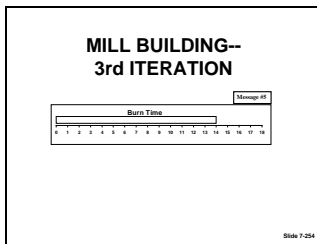
Slide 7-253



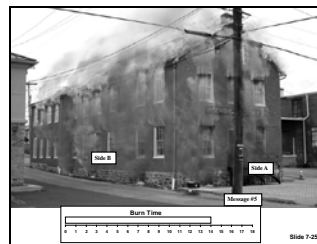
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 5

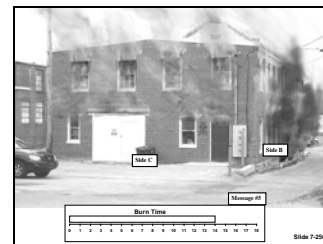
Slide 7-254



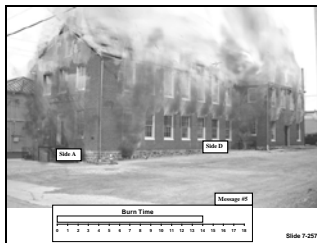
Slide 7-255



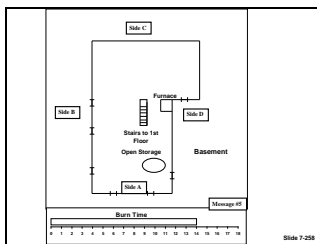
Slide 7-256



Slide 7-257

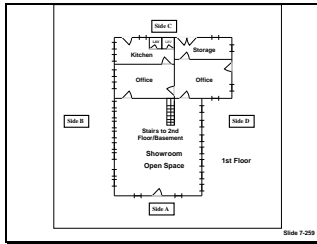


Slide 7-258

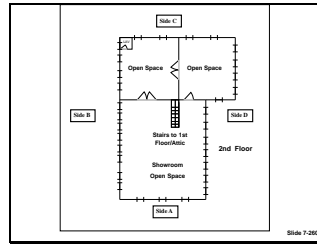


1. Show the plot plans.

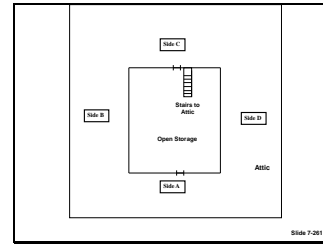
Slide 7-259



Slide 7-260



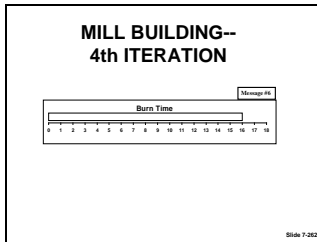
Slide 7-261



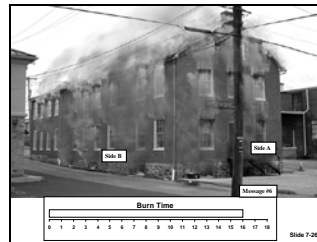
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 6

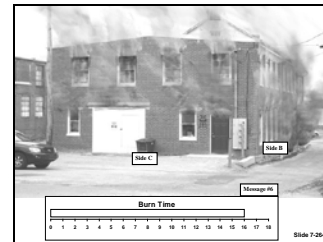
Slide 7-262



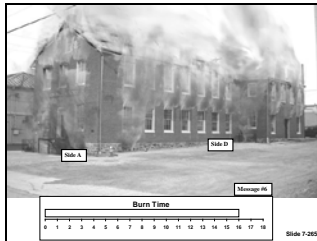
Slide 7-263



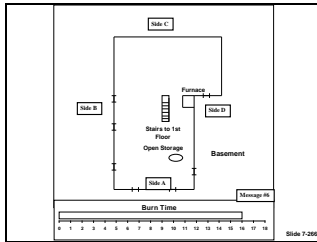
Slide 7-264



Slide 7-265

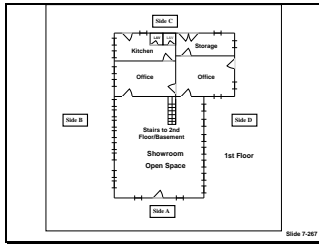


Slide 7-266

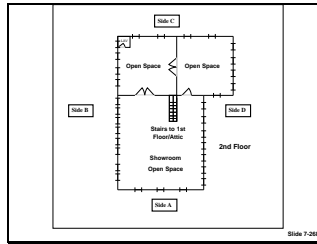


1. Show the plot plans.

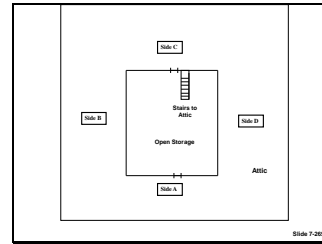
Slide 7-267



Slide 7-268



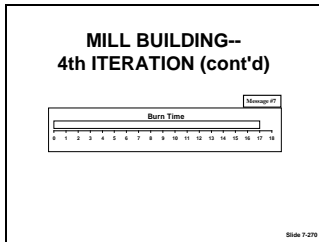
Slide 7-269



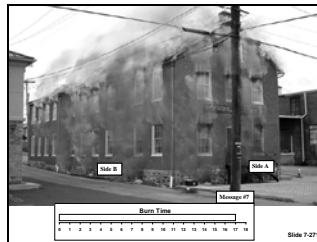
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 7

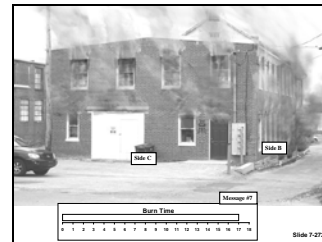
Slide 7-270



Slide 7-271



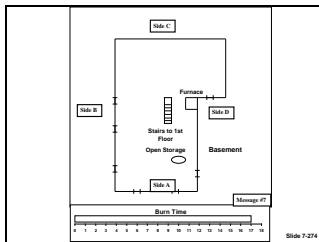
Slide 7-272



Slide 7-273



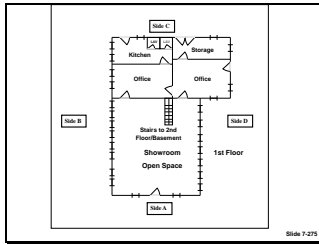
Slide 7-274



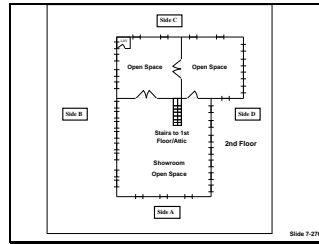
1. Show the plot plans.



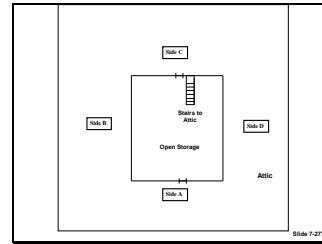
Slide 7-275



Slide 7-276



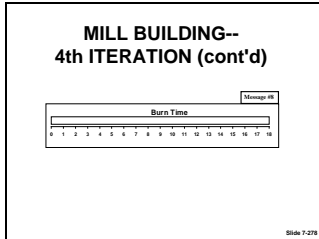
Slide 7-277



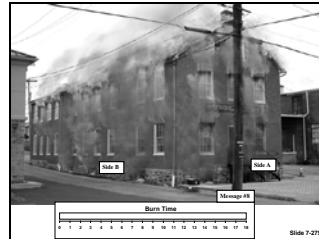
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 8

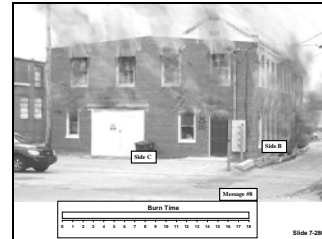
Slide 7-278



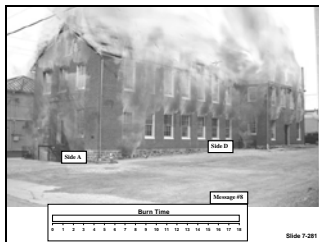
Slide 7-279



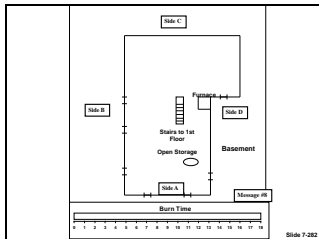
Slide 7-280



Slide 7-281

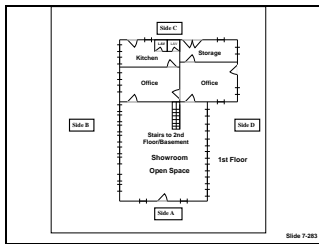


Slide 7-282

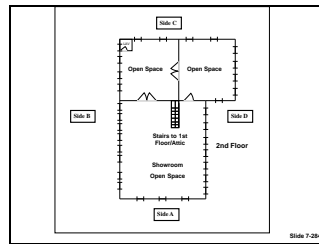


1. Show the plot plans.

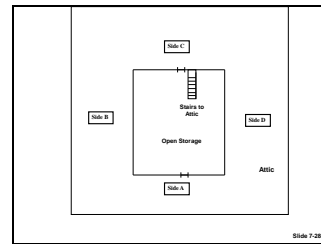
Slide 7-283



Slide 7-284



Slide 7-285



2. Respond to any questions regarding exposures or plot plans.

## Exercise #5: Shopping Center

SM p. 7-197

1. Display enlarged Primary Factors Chart at all student working positions.
2. Place students into groups of five students. Students will work at their assigned table position.
3. Exercise is designed to place the ICO as the IC until relieved by the next level of authority arriving at the incident (simulated by instructor).
4. For simulation purposes the **ICO** will have additional students assigned to Command and General Staff positions, which under normal field conditions, would be the sole responsibility of the ICO.
5. Student group assignments for each group:
  - a. ICO.
  - b. ICOA--scribe.
  - c. IISO.
  - d. Initial Planning Section (Situation Unit).
  - e. Initial Logistics Section (service and support).
6. Instructor has the option to assign student groups the same exercise scenario or assign each student group a different exercise scenario. There are seven large exercise scenarios. It is recommended that each student group address a different scenario.

Handout 7-6

**NOTE: When an exercise message is delivered. The slide views should change to reflect burn time clock changes on each message.**

**LARGE EXERCISE #5**  
**Vital Building Information**  
**Situation Report**

COMMERCIAL--TYPE V--FRAME

**Structure:** Shopping center, 40 by 100 feet  
5 one-story occupancies  
20 by 40 feet--various tenants

**Building Construction:** Type V--frame

**Roof Construction:** 2- by 6-inch truss roof support system  
Common attic storage

**Floors:** Concrete slab

**Alarm System:** Smoke detectors installed

**Occupants:** Restaurants/Offices

**Special Concerns:** Commercial cooking facilities  
High-occupancy restaurant

**Situation Report:**

**Fire Building:**

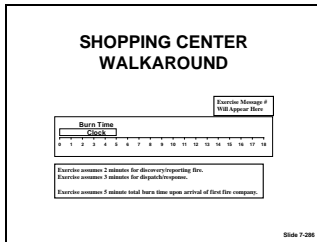
It is October 15, Friday 1230 hours, temperature is 47 °F (8 °C), wind from south at 12 mph.

Upon arrival, several people are outside the building on Side A. The manager of Quizno's Sub reports an explosion occurred in Quizno's. He is suffering from severe burns of his arms, neck, and back. He said just before the explosion that he smelled gas. One employee is missing. Four Quizno customers are outside suffering from smoke inhalation. Occupants of Powell's Insurance and Chris' Steak House are exiting the building.

**Exposures:** Each occupancy has attic storage. Attic access is located near the rear of the building.

## Shopping Center--Walkaround

Slide 7-286



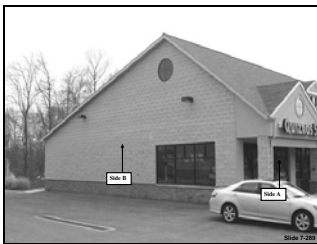
Slide 7-287



Slide 7-288



Slide 7-289



Slide 7-290



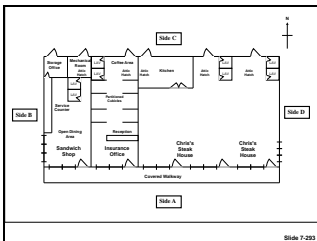
Slide 7-291



Slide 7-292



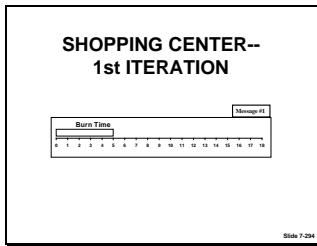
Slide 7-293



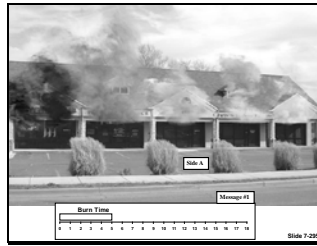
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

## Iteration 1--Message 1

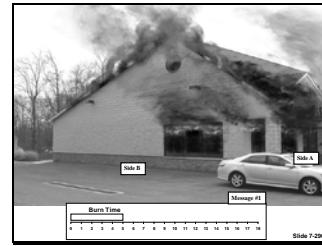
Slide 7-294



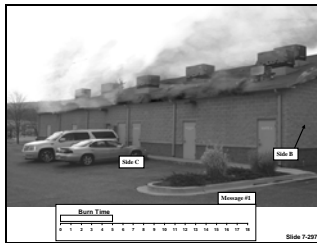
Slide 7-295



Slide 7-296



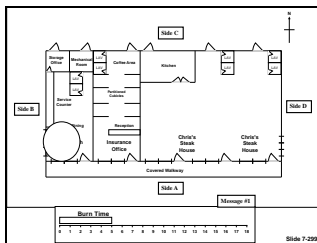
Slide 7-297



Slide 7-298



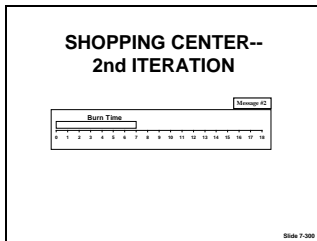
Slide 7-299



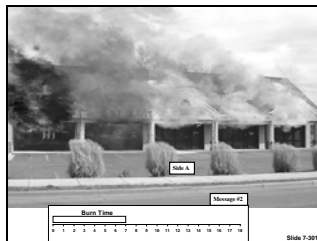
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

## Iteration 2--Message 2

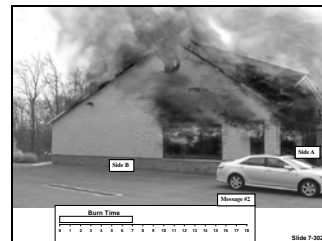
Slide 7-300



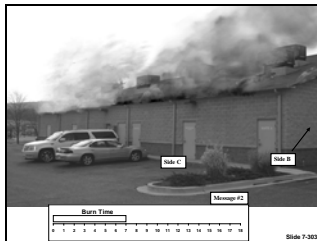
Slide 7-301



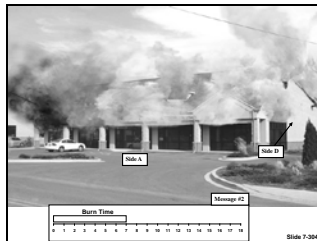
Slide 7-302



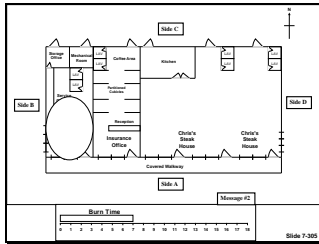
Slide 7-303



Slide 7-304



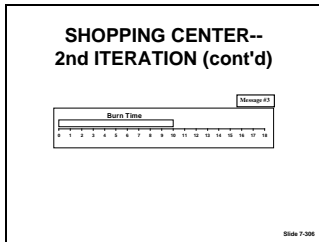
Slide 7-305



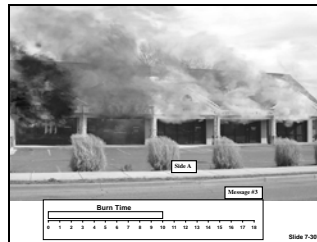
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 3

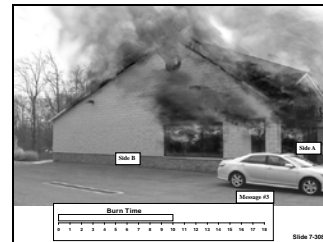
Slide 7-306



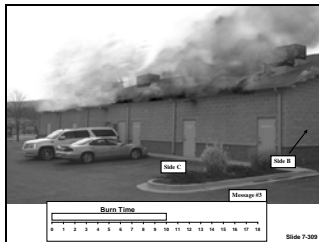
Slide 7-307



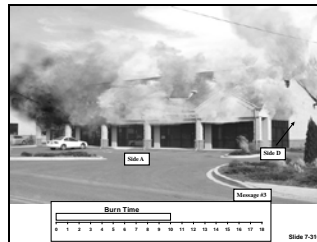
Slide 7-308



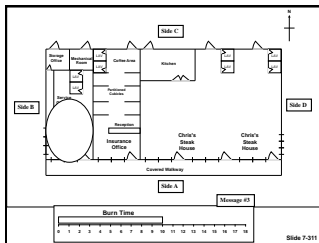
Slide 7-309



Slide 7-310



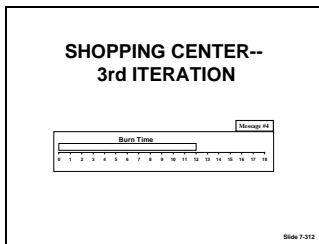
Slide 7-311



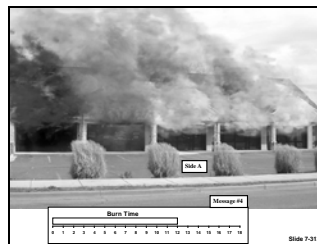
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 4

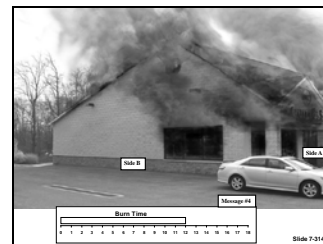
Slide 7-312



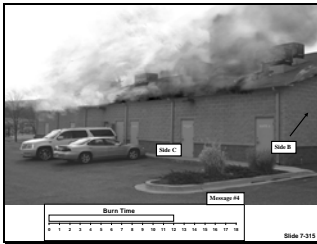
Slide 7-313



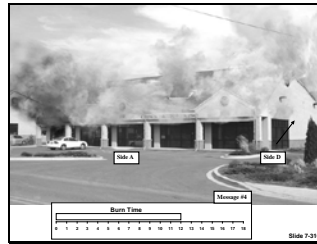
Slide 7-314



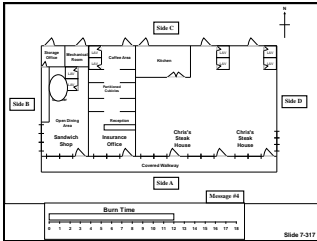
Slide 7-315



Slide 7-316



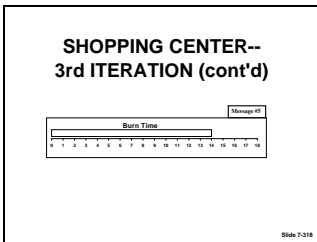
Slide 7-317



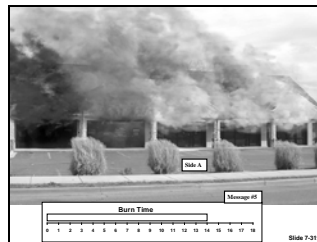
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 5

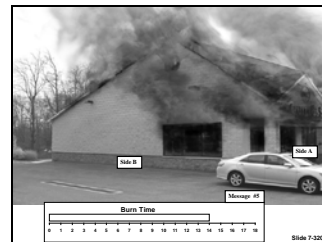
Slide 7-318



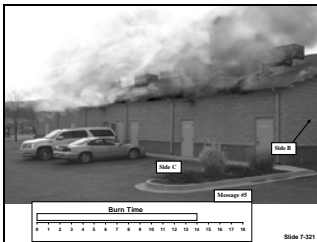
Slide 7-319



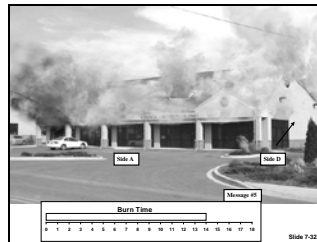
Slide 7-320



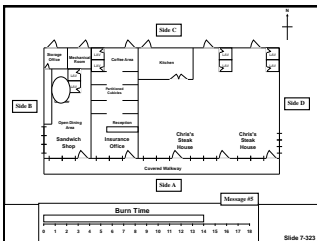
Slide 7-321



Slide 7-322



Slide 7-323

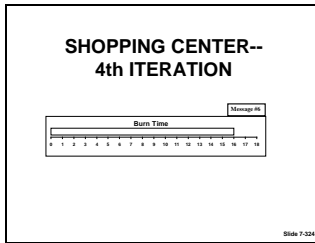


1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

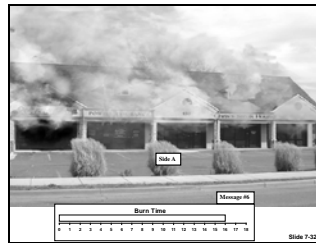


### Iteration 4--Message 6

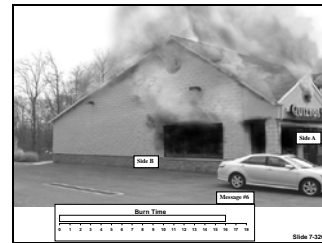
Slide 7-324



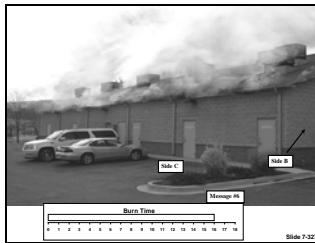
Slide 7-325



Slide 7-326



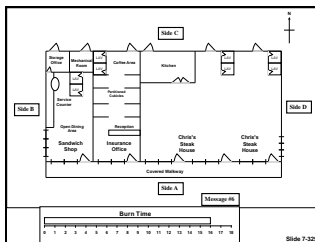
Slide 7-327



Slide 7-328



Slide 7-329



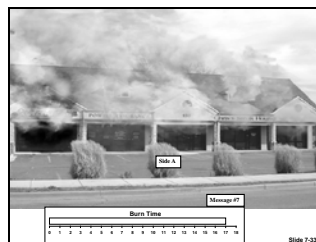
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 7

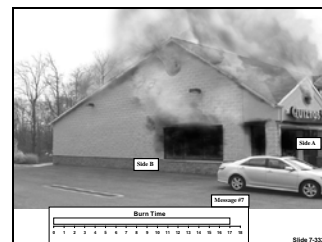
Slide 7-330



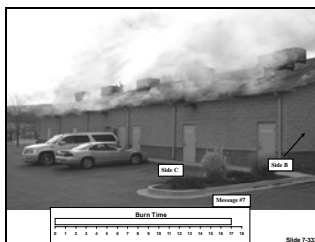
Slide 7-331



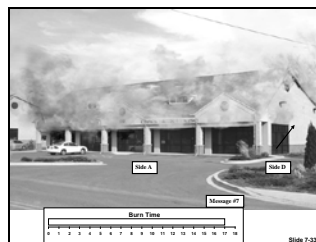
Slide 7-332



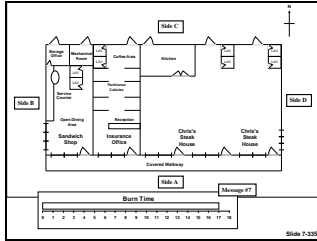
Slide 7-333



Slide 7-334



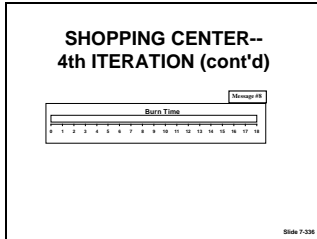
Slide 7-335



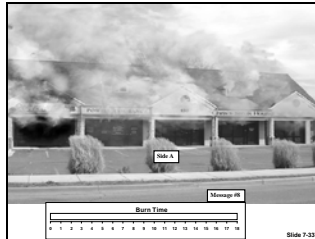
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 8

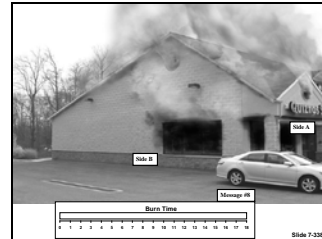
Slide 7-336



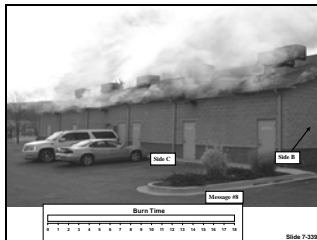
Slide 7-337



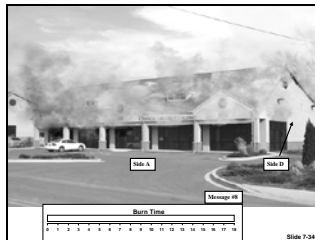
Slide 7-338



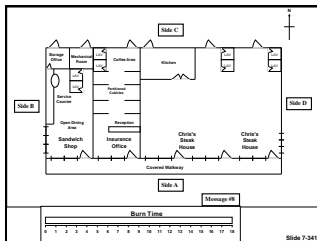
Slide 7-339



Slide 7-340



Slide 7-341



1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

## Exercise #6: Bank Mansard Roof

SM p. 7-233

1. Display enlarged Primary Factors Chart at all student working positions.
2. Place students into groups of five students. Students will work at their assigned table position.
3. Exercise is designed to place the ICO as the IC until relieved by the next level of authority arriving at the incident (simulated by instructor).
4. For simulation purposes the **ICO** will have additional students assigned to Command and General Staff positions, which under normal field conditions, would be the sole responsibility of the ICO.
5. Student group assignments for each group:
  - a. ICO.
  - b. ICOA--scribe.
  - c. IISO.
  - d. Initial Planning Section (Situation Unit).
  - e. Initial Logistics Section (service and support).
6. Instructor has the option to assign student groups the same exercise scenario or assign each student group a different exercise scenario. There are seven large exercise scenarios. It is recommended that each student group address a different scenario.

Handout 7-7

**NOTE: When an exercise message is delivered. The slide views should change to reflect burn time clock changes on each message.**

**LARGE EXERCISE #6  
Vital Building Information  
Situation Report**

COMMERCIAL--TYPE III--ORDINARY

**Structure:** Three-story--40 by 50 feet

**Building Construction:** Type III--ordinary

**Roof Construction:** 2- by 12-inch mansard roof with asphalt shingles

**Floors:** 2- by 6-inch flooring system tongue and groove

**Alarm System:** Smoke detectors installed

**Occupants:** Twenty employees and customers

**Special Concerns:** Bank security locations

**Situation Report:**

**Fire Building:**

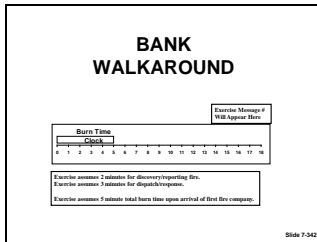
It is Friday, December 23, 1230 hours, temperature 25 °F (-4 °C), wind from north at 9 mph.

Upon arrival, several employees and customers are outside the building. Three employees who attempted to fight the fire are suffering from minor burns and smoke inhalation. The bank manager reports a few employees were eating lunch in the third break/lunch room and they are unaccounted for. He reports that the fire is in the second floor copy/printing room.

**Exposures:** No immediate exposures.

## Bank--Walkaround

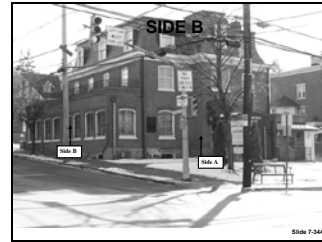
Slide 7-342



Slide 7-343



Slide 7-344



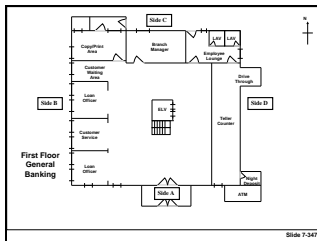
Slide 7-345



Slide 7-346

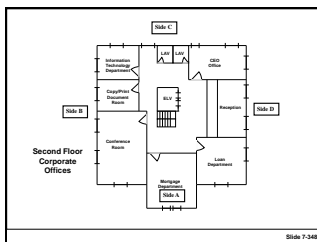


Slide 7-347

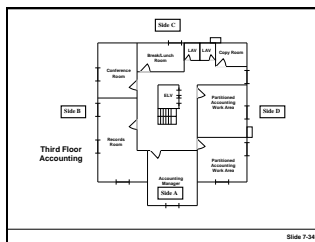


1. Show the plot plans.

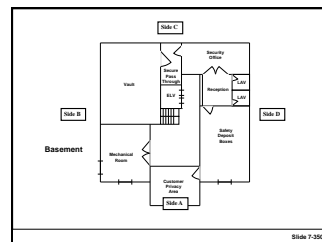
Slide 7-348



Slide 7-349



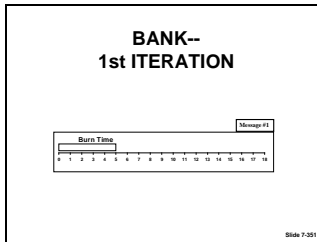
Slide 7-350



2. Respond to any questions regarding exposures or plot plans.

## Iteration 1--Message 1

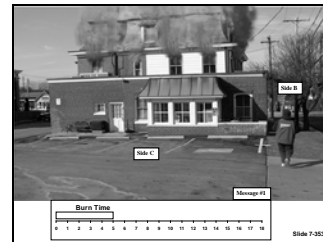
Slide 7-351



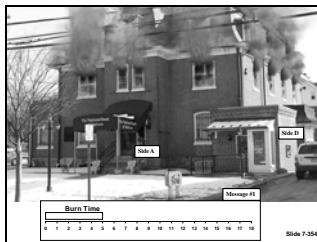
Slide 7-352



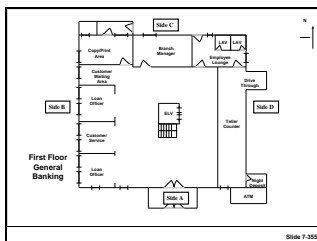
Slide 7-353



Slide 7-354

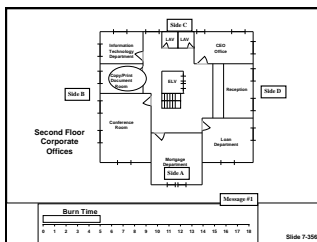


Slide 7-355

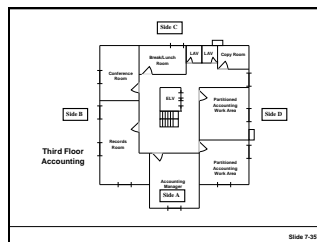


1. Show the plot plans.

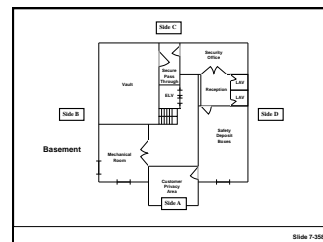
Slide 7-356



Slide 7-357



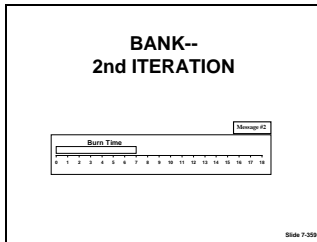
Slide 7-358



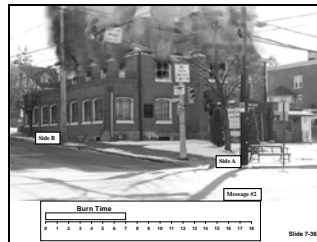
2. Respond to any questions regarding exposures or plot plans.

## Iteration 2--Message 2

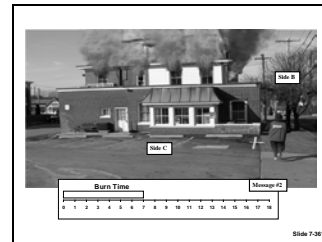
Slide 7-359



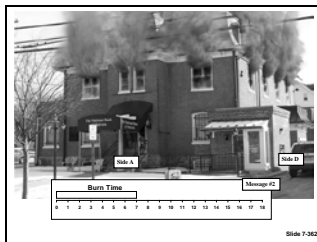
Slide 7-360



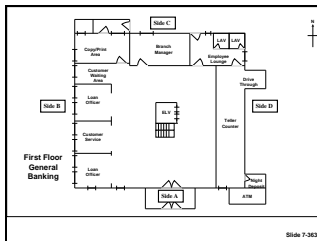
Slide 7-361



Slide 7-362

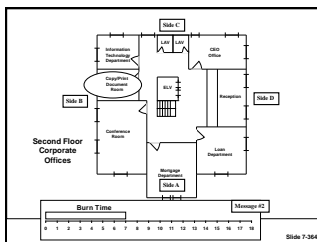


Slide 7-363

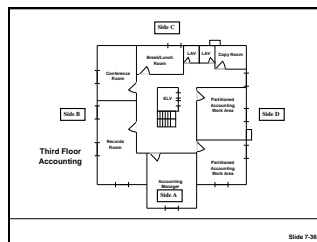


1. Show the plot plans.

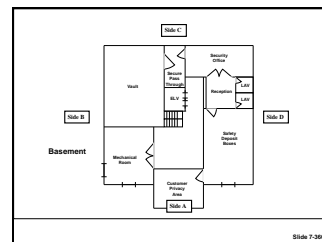
Slide 7-364



Slide 7-365



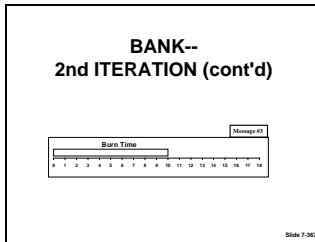
Slide 7-366



2. Respond to any questions regarding exposures or plot plans.

## Iteration 2--Message 3

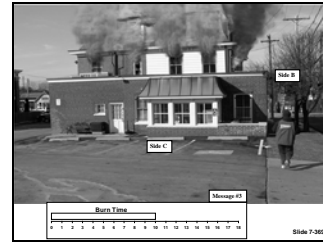
Slide 7-367



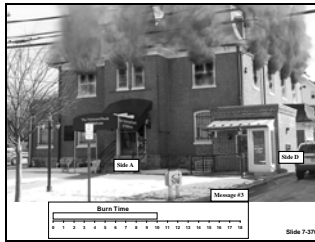
Slide 7-368



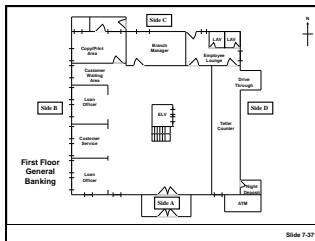
Slide 7-369



Slide 7-370

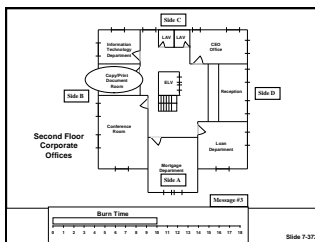


Slide 7-371

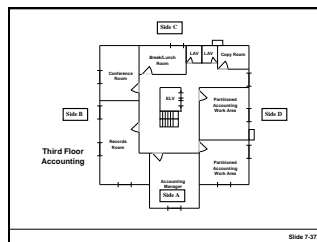


1. Show the plot plans.

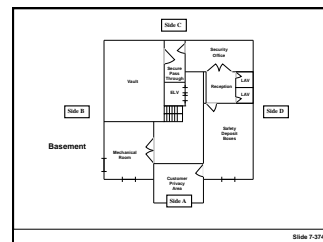
Slide 7-372



Slide 7-373



Slide 7-374

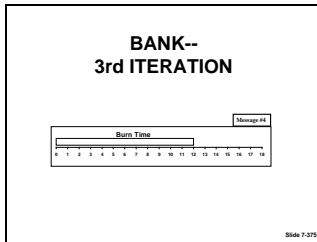


2. Respond to any questions regarding exposures or plot plans.



## Iteration 3--Message 4

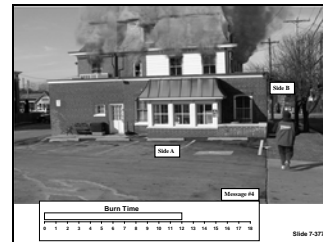
Slide 7-375



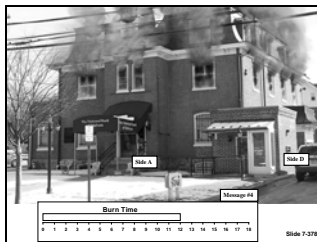
Slide 7-376



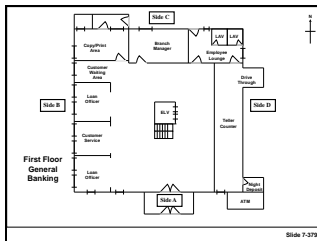
Slide 7-377



Slide 7-378

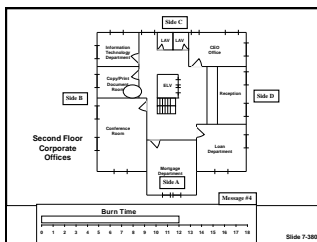


Slide 7-379

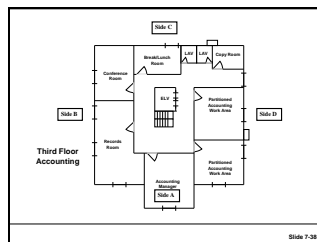


1. Show the plot plans.

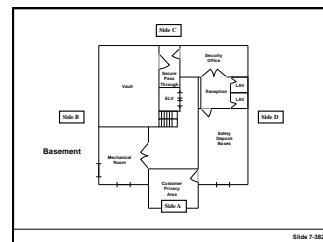
Slide 7-380



Slide 7-381



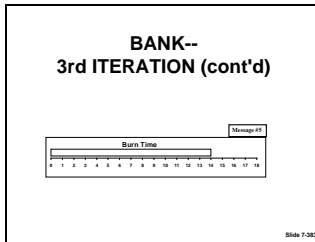
Slide 7-382



2. Respond to any questions regarding exposures or plot plans.

## Iteration 3--Message 5

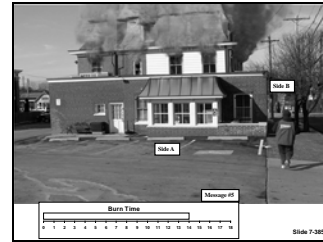
Slide 7-383



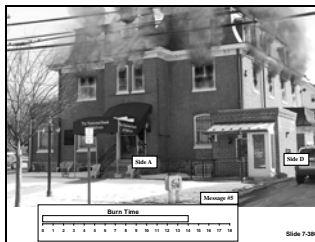
Slide 7-384



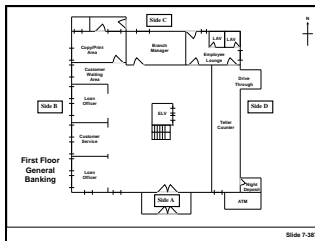
Slide 7-385



Slide 7-386

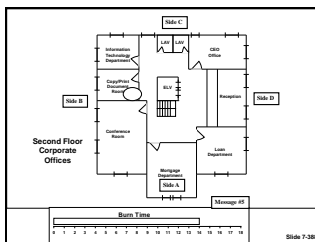


Slide 7-387

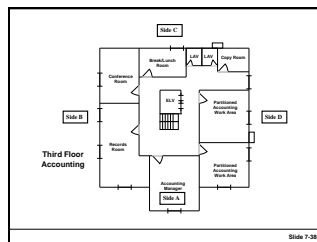


1. Show the plot plans.

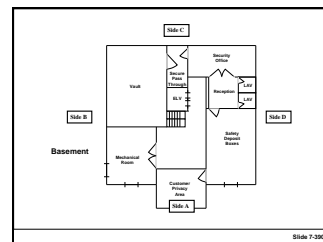
Slide 7-388



Slide 7-389



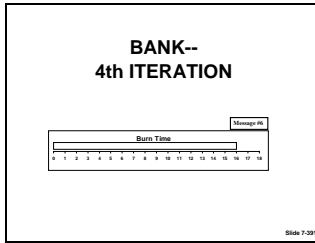
Slide 7-390



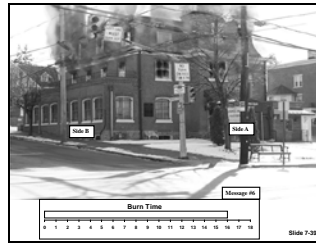
2. Respond to any questions regarding exposures or plot plans.

## Iteration 4--Message 6

Slide 7-391



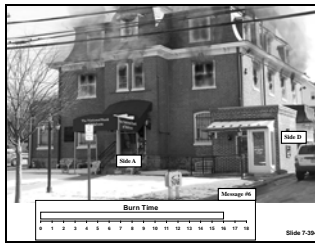
Slide 7-392



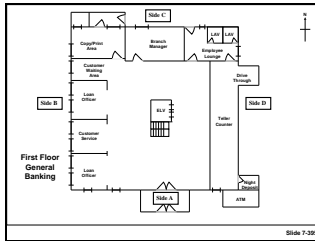
Slide 7-393



Slide 7-394

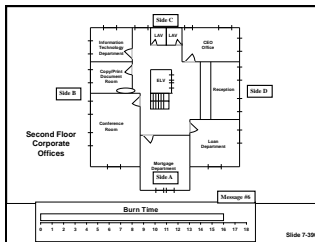


Slide 7-395

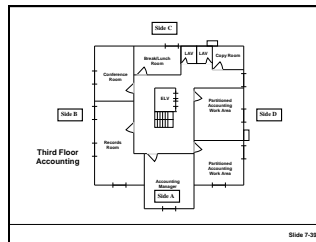


1. Show the plot plans.

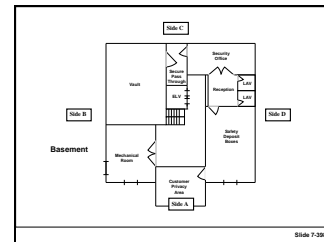
Slide 7-396



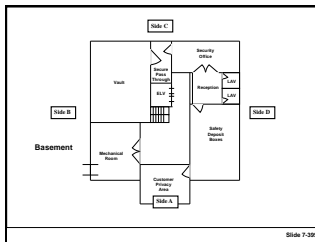
Slide 7-397



Slide 7-398



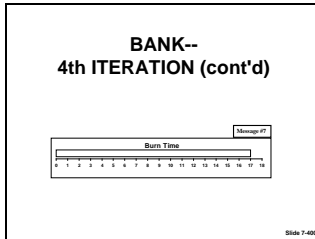
Slide 7-399



2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 7

Slide 7-400



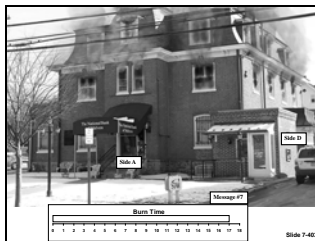
Slide 7-401



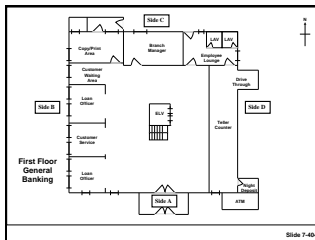
Slide 7-402



Slide 7-403

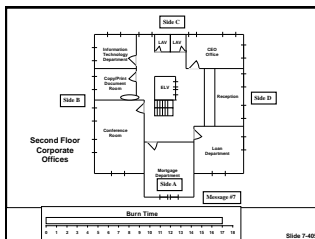


Slide 7-404

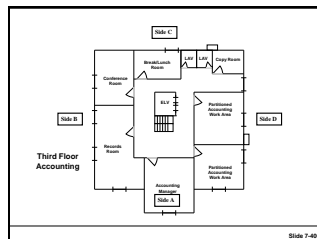


1. Show the plot plans.

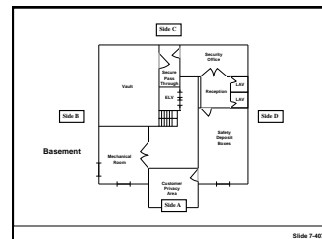
Slide 7-405



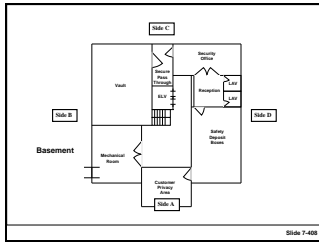
Slide 7-406



Slide 7-407



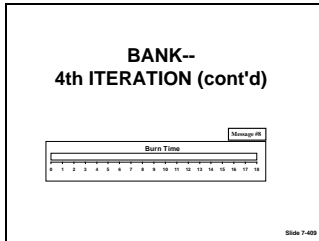
Slide 7-408



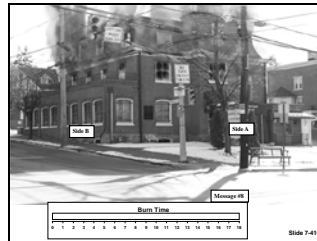
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 8

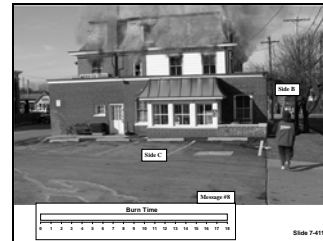
Slide 7-409



Slide 7-410



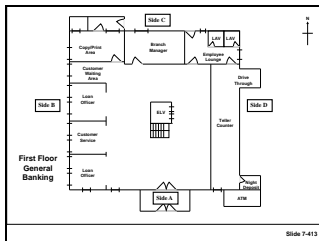
Slide 7-411



Slide 7-412

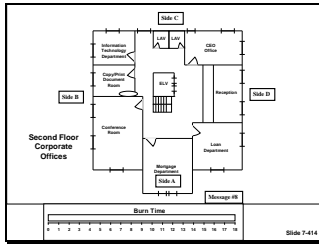


Slide 7-413

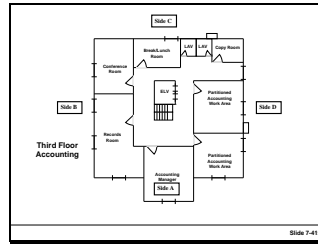


1. Show the plot plans.

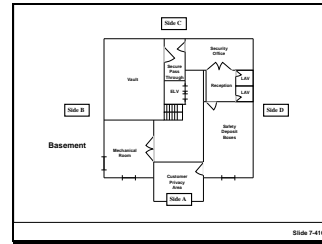
Slide 7-414



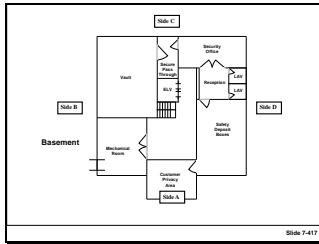
Slide 7-415



Slide 7-416



Slide 4-17



2. Respond to any questions regarding exposures or plot plans.

### Exercise #7: Noncombustible Warehouse

SM p. 7-295

1. Display enlarged Primary Factors Chart at all student working positions.
2. Place students into groups of five students. Students will work at their assigned table position.
3. Exercise is designed to place the ICO as the IC until relieved by the next level of authority arriving at the incident (simulated by instructor).
4. For simulation purposes the **ICO** will have additional students assigned to Command and General Staff positions, which under normal field conditions, would be the sole responsibility of the ICO.
5. Student group assignments for each group:
  - a. ICO.
  - b. ICOA--scribe.
  - c. IISO.
  - d. Initial Planning Section (Situation Unit).
  - e. Initial Logistics Section (service and support).
6. Instructor has the option to assign student groups the same exercise scenario or assign each student group a different exercise scenario. There are seven large exercise scenarios. It is recommended that each student group address a different scenario.

Handout 7-8

**NOTE: When an exercise message is delivered. The slide views should change to reflect burn time clock changes on each message.**

**LARGE EXERCISE #7**  
**Vital Building Information**  
**Situation Report**

COMMERCIAL--TYPE II--NONCOMBUSTIBLE

**Structure:** One-story--metal fabricating and finishing

**Building Construction:** Type II--noncombustible

**Roof Construction:** Structural steel with asphalt covering over metal decking

**Floors:** Concrete slab

**Alarm System:** Smoke detectors installed

**Sprinkler:** Paint spraying refinishing room only

**Special Concerns:** Metal fabricating and spray paint  
Finishing compressed air bottles oxygen and acetylene  
Solvents and paint containers

**Situation Report:**

**Fire Building:**

It is August 14, 1530 hours, temperature is 92 °F (33 °C), wind from north at 3 mph.

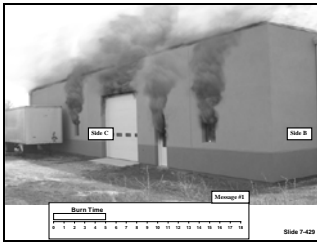
Upon arrival, several employees are outside the building on Side A. Plant foreman reports a small explosion occurred near the paint finishing room and fire broke out after the explosion. Two employees are suffering from arm and neck burns and need further treatment. Three employees are unaccounted for. They worked in the manufacturing finishing area. Four office employees are complaining of smoke inhalation. All office employees are accounted for.

**Exposures:** No immediate exposures.

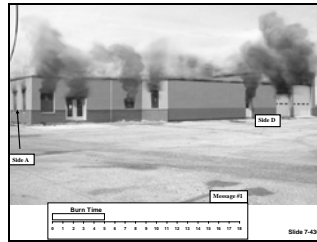




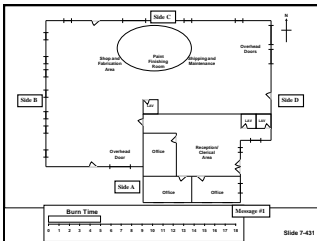
Slide 7-429



Slide 7-430



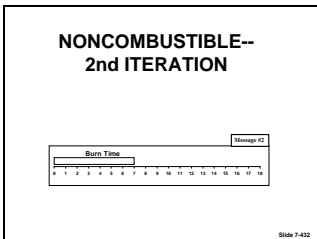
Slide 7-431



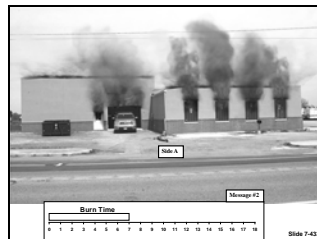
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 2--Message 2

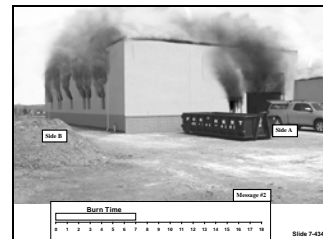
Slide 7-432



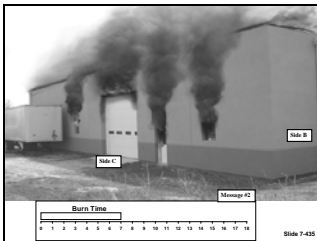
Slide 7-433



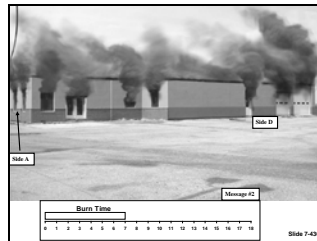
Slide 7-434



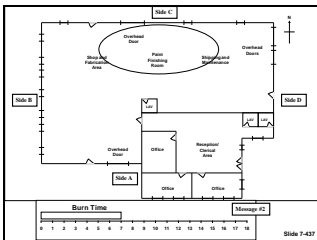
Slide 7-435



Slide 7-436



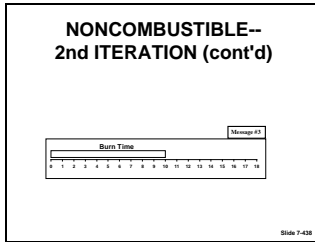
Slide 7-437



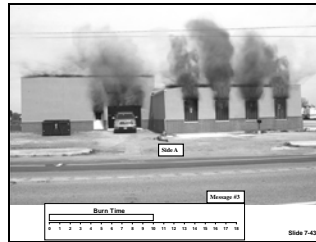
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

## Iteration 2--Message 3

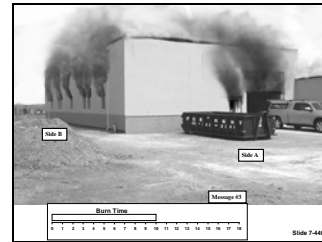
Slide 7-438



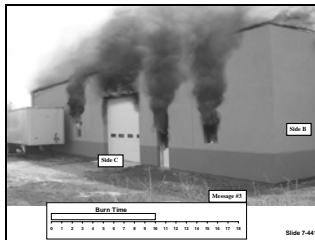
Slide 7-439



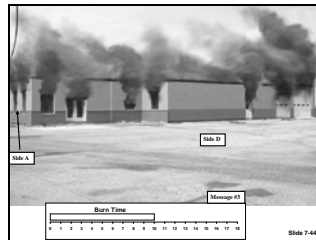
Slide 7-440



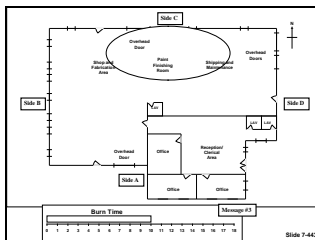
Slide 7-441



Slide 7-442



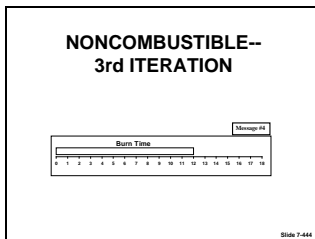
Slide 7-443



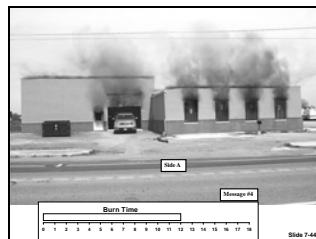
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

## Iteration 3--Message 4

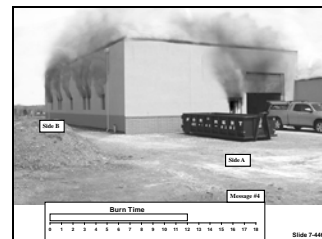
Slide 7-444



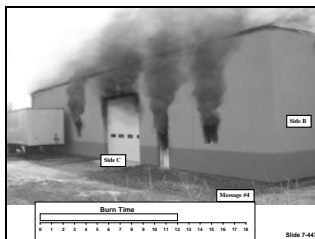
Slide 7-445



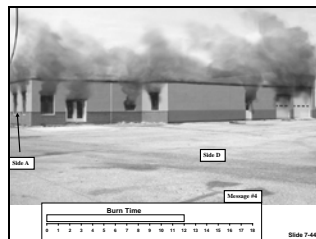
Slide 7-446



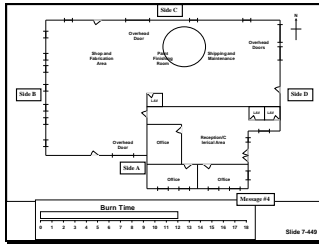
Slide 7-447



Slide 7-448



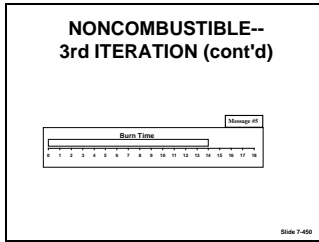
Slide 7-449



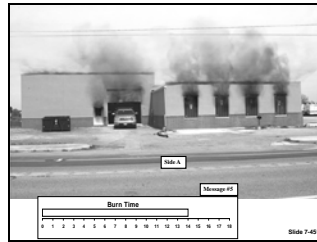
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 3--Message 5

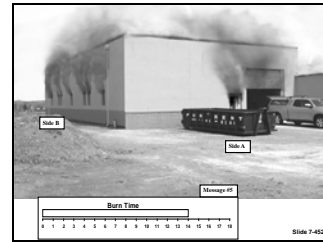
Slide 7-450



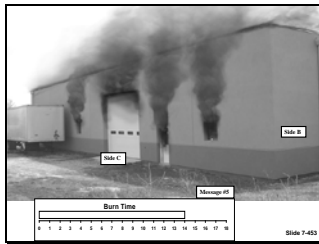
Slide 7-451



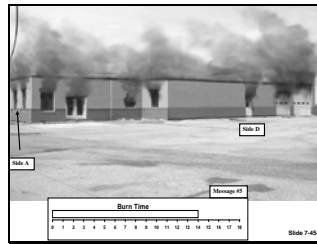
Slide 7-452



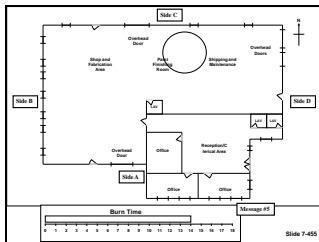
Slide 7-453



Slide 7-454



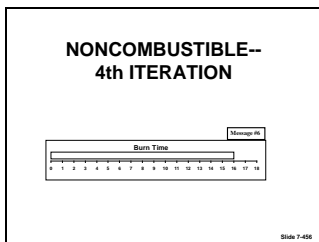
Slide 7-455



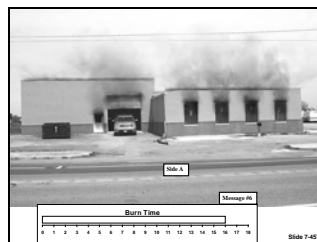
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 6

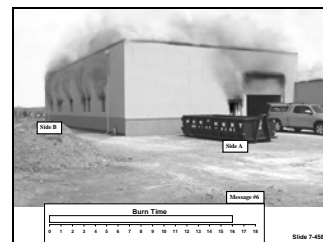
Slide 7-456



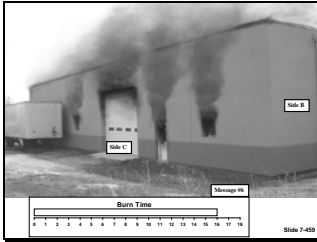
Slide 7-457



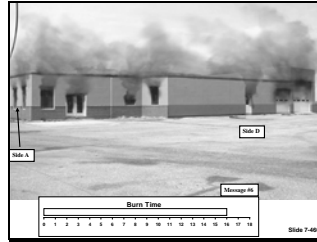
Slide 7-458



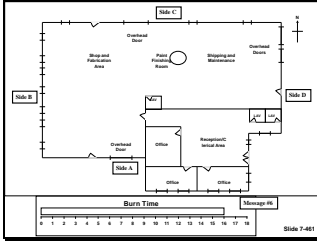
Slide 7-459



Slide 7-460



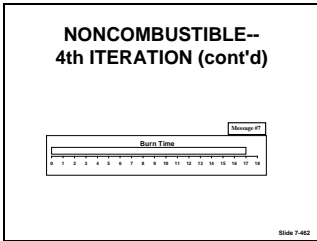
Slide 7-461



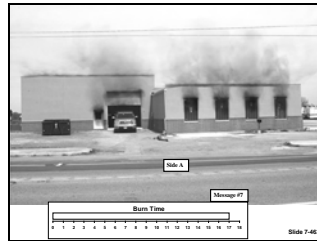
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

### Iteration 4--Message 7

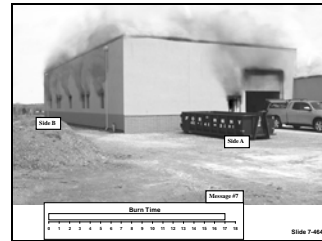
Slide 7-462



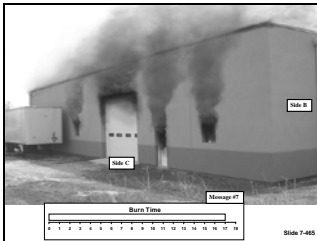
Slide 7-463



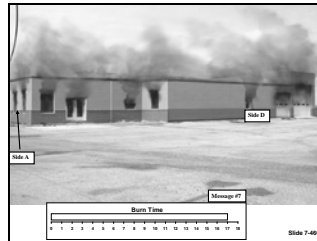
Slide 7-464



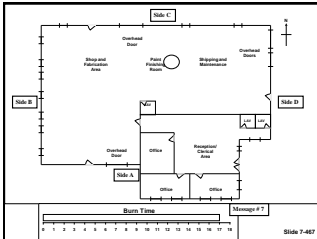
Slide 7-465



Slide 7-466



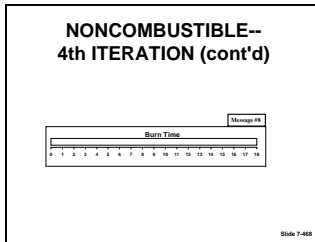
Slide 7-467



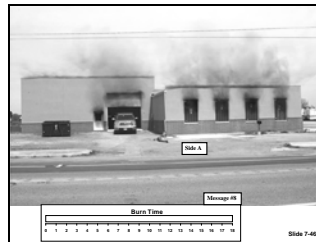
1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

## Iteration 4--Message 8

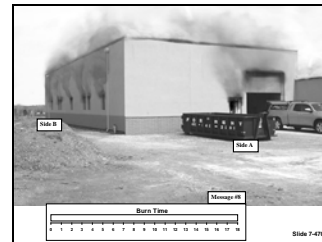
Slide 7-468



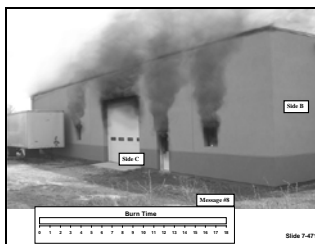
Slide 7-469



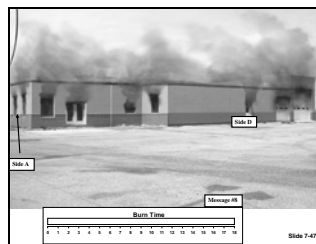
Slide 7-470



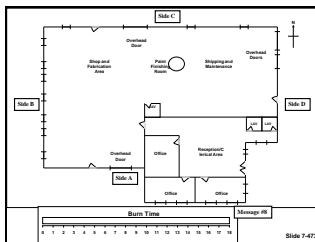
Slide 7-471



Slide 7-472



Slide 7-473



1. Show the plot plans.
2. Respond to any questions regarding exposures or plot plans.

# HANDOUTS





# Handout 7-1

## Pre-exercise Information Forms

## Primary Factors Chart

Primary Factor - Situation Awareness - Chart		Column #1	Column #2	Column #3	Column #4
Primary Factors	Pertinent Sub-Factors (P)	Incident Objectives Attainable/ Measurable/ Flexible	Incident Objectives Attainable/ Measurable/ Flexible	Activities (Strategies)	Evaluate Effect of Activities (Strategies) Every 10 Minutes Effective
Life Hazard	Occupants	<u>Examples of Incident Objectives:</u> <ul style="list-style-type: none"> <li>Safe Removal of All Occupants within 10 minutes.</li> <li>Contain and Control Fire to Room/Building of Origin within 10 minutes</li> <li>Contain, Control and Limit Fire in Exposures within 10 minutes</li> <li>Other.</li> </ul>	<u>Examples of Incident Objectives:</u>	[R] Rescue Interior/Exterior/Both	
	Firefighters			[E] Exposure Protection Exposure Examination	
Location/Fire	Fire Building on Arrival - Burn Time	<u>List Incident Objectives:</u>		[C/E] Confinement/Extinguishment Hose Line Placement	
	Exposures On Arrival - Burn Time				
Construction	Fire Spread Considerations Radiation/Conduction/Convection Fire Building - Type 1-2-3-4-5 (Lightweight Awareness)			[O] Overhaul Expose Hidden Fire	
	Exposures - Type 1-2-3-4-5 (Lightweight Awareness)				
Occupancy (Contents)	Fire Building - (Fuel Load)			[V] Ventilation Removal of Occupants Fire Control	
	Exposures (Fuel Load)				
Height	Fire Building (Front-Rear)			[S] Salvage Water - Run-Off Apply Covers	
	Exposures (Front-Rear)				
Area	Fire Building/Configuration			Forcible Entry Location Method	
	Proximity of Exposures /Configuration After Arrival				
Structural Collapse	Fire Building - Burn Clock After Arrival			Special Equipment Imaging Cameras	
	Exposures - Burn Clock After Arrival				
	Collapse Zone - Safe Corridors				
	Apparatus Placement				
Weather	Visibility			<u>List Incident Strategies</u>	Identify alternative strategies for firefighter safety when occupant safety has been determined not to be a Primary Factor.
	Temperature/Humidity				
Resource Requirement	Wind - Direction/Velocity			For Objective # 1:	
	Apparatus/Personnel/Equipment - RIT				
Auxiliary Appliances	Water Supply/Suppression Agent			For Objective # 2:	
	Fire Building Supplied				
Topography	Exposures Supplied			For Objective # 3:	
	Front-Rear				
Explosions/ Back Draft	Proper Ventilation Flash-Over Time Awareness			For Objective # 4:	
	Time of Day Time of Year				
Time	Duration of Incident			For Objective # 5:	



### Primary Factors Exercise Chart

Pertinent Primary Factor	Pertinent Subfactor	Pertinent Precautions To Be Taken
1.	1. 2.	1. 2.
2.	1. 2. 3.	1. 2. 3.
3.	1. 2.	1. 2.
4.	1. 2.	1. 2.
5.	1. 2.	1. 2.
6.	1. 2.	1. 2.
7.	1. 2. 3. 4.	1. 2. 3. 4.
8.	1. 2. 3.	1. 2. 3.
9.	1. 2.	1. 2.
10.	1. 2.	1. 2.
11.	1.	1.
12.	1. 2.	1. 2.
13.	1. 2.	1. 2.

---



### Objectives-Strategy-Tactics Chart

Objectives	Strategy(ies)	Tactics	Assigned to:
Objective #1	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.
Objective #2	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.
Objective #3	1.	1.	1.
		2.	2.
		3.	3.
	2.	1.	1.
		2.	2.
		3.	3.
	3.	1.	1.
		2.	2.
		3.	3.

---



## ICS Form 214, *Unit Log*

<b>UNIT LOG</b>		1. Incident Name	2. Date Prepared	3. Time Prepared
4. Unit Name/Designators		5. Unit Leader (Name and Position)		6. Operational Period
7. Personnel Roster Assigned				
Name		ICS Position		Home Base
8. Activity Log				
Time		Major Events		
9. Prepared by (Name and Position)				





ICS Form 201, *Incident Debriefing*

INCIDENT BRIEFING	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
4. MAP SKETCH			
ICS 201 PAGE 1 OF 4	5. PREPARED BY (NAME AND POSITION)		

6. SUMMARY OF CURRENT ACTIONS
-------------------------------

7. CURRENT ORGANIZATION

## 8. RESOURCES SUMMARY

[illegible]

## Handout 7-2

### Exercise #1: Townhouse Messages

Time: 0730 hours

#### Message #1

Slide Iteration #1

First alarm assignment dispatched at 0727 hours.

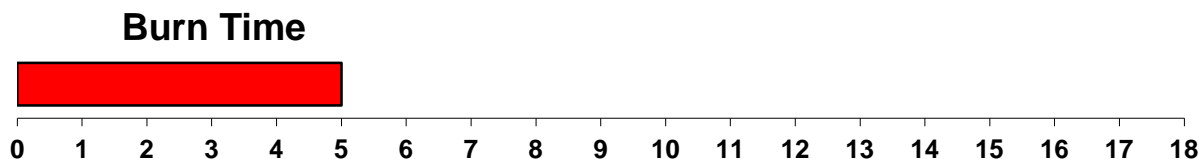
Engine 1 has arrived on location at 0730 hours. Upon arrival, four adults and two children are outside of the townhouses. Occupants report two adults and one child are unaccounted for from Unit #3, and two occupants each from Units #2 and #4 are unaccountable.

#### 1st alarm assignment:

- Engine 1;
  - Engine 2;
  - Engine 3;
  - Ladder 1; and
  - BLS 1.
1. Identify the pertinent primary factors and subfactors.
  2. Enter factors on the Primary Factors Chart and identify pertinent precautions.

**Response time = 3 minutes**

**Estimated burn time = 5 minutes**



Time: 0732 hours

**Message #2**

Slide Iteration #2

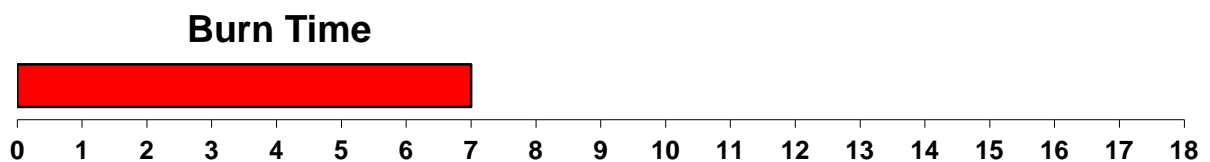
Establish the Incident Objectives-Strategies-Tactics for the first operational period.

Enter on the Objectives-Strategy-Tactics Chart.

Tactics must be designated on the Objectives-Strategy-Tactics Chart for deployed resources.

When all first alarm resources are deployed, then a **working fire** will be declared and additional companies will be deployed.

**Estimated burn time = 7 minutes**



Time: 0735 hours

**Message #3**

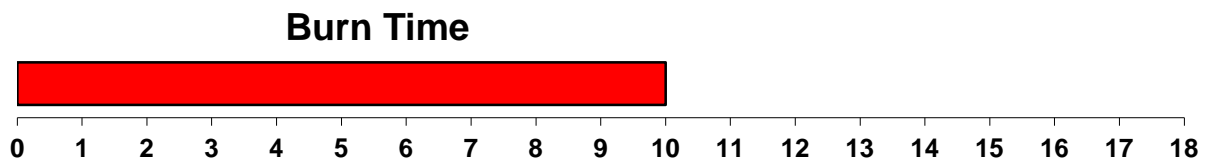
Slide Iteration #2

Engine 1 reports heavy fire in second floor middle bedroom. Request another company to support firefighting operations.

Ladder company reports primary search and rescue operations underway in Unit #3.

One male and one female, both occupants from Unit #4 have been located and they are exiting the building. Both are suffering from moderate smoke inhalation. Light to medium smoke conditions in Unit #4 on second floor, no visible fire at this time.

**Estimated burn time = 10 minutes**



Time: 0737 hours

**Message #4**

Slide Iteration #3

Missing occupants from Unit #3 have been located. All unconscious in second floor master bedroom. Need medical support.

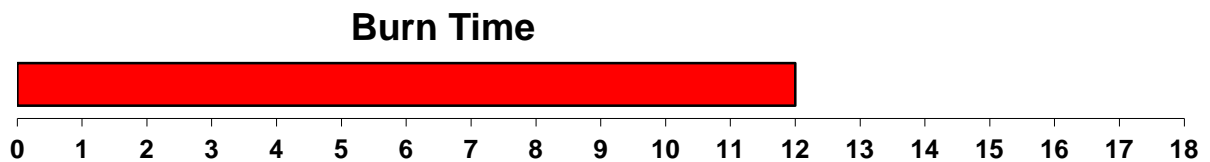
Engine 1 reports fire knocked down in second floor middle bedroom. Still have medium to heavy smoke conditions on second floor and attic space. Need to check for attic extension.

Unit #2 has light to medium smoke conditions on second floor and attic. No visible fire. Still conducting primary search for reported missing occupants.

**Working fire companies have arrived on scene:**

- Engine 5;
- Engine 6 (RIC);
- Squad 1;
- Air Cascade;
- Safety Officer; and
- **Battalion Chief still responding and has not yet arrived on scene.**

**Estimated burn time = 12 minutes**





Time: 0739 hours

**Message #5**

Slide Iteration #3

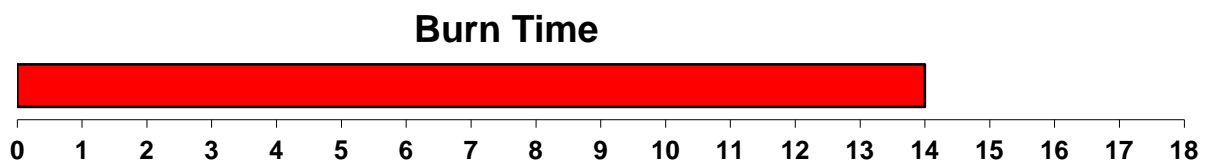
Attic space inspection in Unit #4 reveals no fire extension.

Engine 1 reports minor extension into attic space in Unit #3. There has been some minor fire extension into second floor hallway sidewall.

Part of the ceiling has collapsed in middle bedroom in Unit #3. One firefighter has suffered a minor back injury.

Emergency medical services (EMS) is requesting additional Medical Units for transportation for evacuated occupants. One is a 4-year-old boy.

**Estimated burn time = 14 minutes**



Time: 0741 hours

**Message #6**

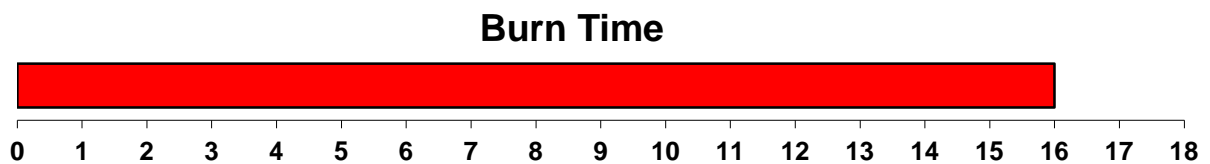
Slide Iteration #4

Primary search in Unit #2 has been completed. Still have light smoke conditions on second floor and attic space, no fire extension.

Engine 1 reports small fire extension into Unit #3 attic space. Fire has been knocked down in attic space. Still have light to medium smoke conditions on second floor and attic space. Building structural support conditions appear to be good.

Continuing to check for further extension.

**Estimated burn time = 16 minutes**



Time: 0742 hours

**Message #7**

Slide Iteration #4

Engine 1 reports second floor hallway sidewall fire has been extinguished. Still have light smoke conditions on second floor and attic space.

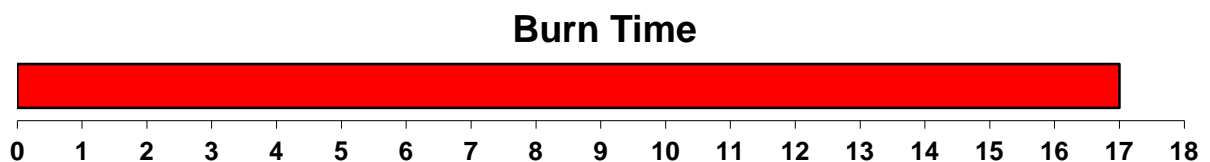
Continuing to check for any further extension.

**Units #1 and #2 and #4 and #5 have been fully ventilated and primary search completed.**

**No spread of fire into Units #1 and 2 or #4 and #5.**

Battalion Chief has arrived on scene.

**Estimated burn time = 17 minutes**



Time: 0743 hours

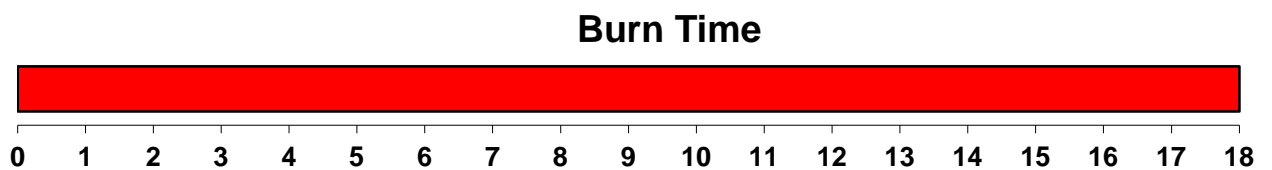
**Message #8**

Slide Iteration #4

Engine 1 reports no further extension of fire in Unit #3.

Prepare for transfer of Command on ICS Form 201.

**Estimated burn time = 18 minutes**



## Handout 7-3

### Exercise #2: Office Complex Messages

Time: 1030 hours

#### Message #1

Slide Iteration #1

First alarm assignment dispatched at 1027 hours.

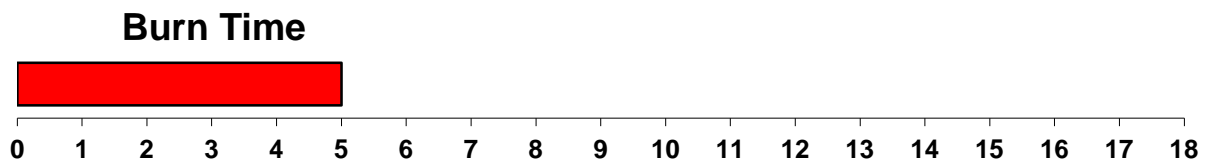
Engine 1 has arrived on location at 1030 Hours. Upon arrival, several employees are outside the office complex on Sides A and C. Occupants from Offices 3 and 4 report that they are not sure everyone is accounted for. The daycare center is evacuating children from Offices 11 and 12.

#### 1st alarm assignment:

- Engine 1;
  - Engine 2;
  - Engine 3;
  - Ladder 1; and
  - BLS 1.
1. Identify the pertinent primary factors and subfactors.
  2. Enter factors on the Primary Factors Chart and identify pertinent precautions.

**Response time = 3 minutes**

**Estimated burn time = 5 minutes**



Time: 1032 hours

**Message #2**

Slide Iteration #2

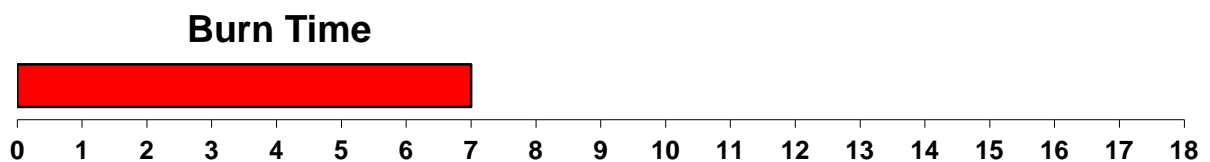
Establish the Incident Objectives-Strategies-Tactics for first operational period.

Enter on Objectives-Strategy-Tactics Chart.

Tactics must be designated on the Objectives-Strategy-Tactics Chart for deployed resources.

When all first alarm resources are deployed, then a **working fire** will be declared and additional companies will be deployed.

**Estimated burn time = 7 minutes**



Time: 1035 hours

**Message #3**

Slide Iteration #2

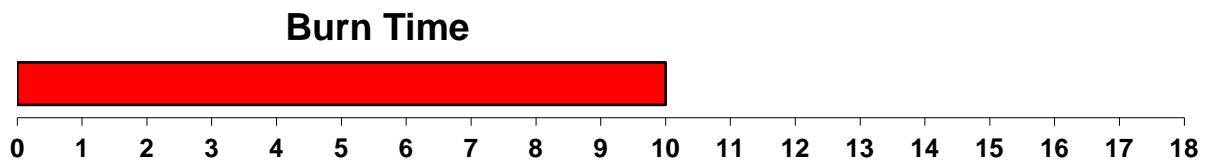
Engine 1 reports heavy fire in Office 3. Request another company to support firefighting operations.

Ladder company reports that primary search-and-rescue operations are underway in Offices 2 and 4. Heavy smoke conditions are reported in Offices 2 to 8.

Methadone clinic manager reports that 10 people, including employees, were in Offices 3 and 4 when the fire broke out.

Occupants from all other offices in the complex are evacuating.

**Estimated burn time = 10 minutes**



Time: 1037 hours

**Message #4**

Slide Iteration #3

Daycare Center manager reports that they had 15 children in Offices 11 and 12. They have evacuated them, but many children inhaled smoke which spread very quickly into their area.

Engine 1 reports fire knocked down in Office 3, but still encountering heavy smoke and heat conditions. Need to check for extension.

Primary search has been completed for Offices 1 and 2 and 5 and 6; light to medium smoke conditions remain.

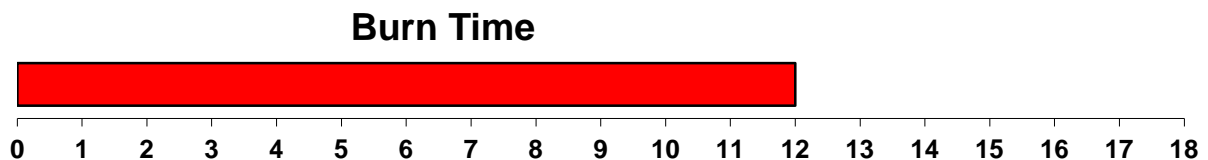
Offices 7 and 8 have been evacuated, but three occupants are suffering from smoke inhalation. Need medical support.

There are moderate heat conditions in Offices 7 and 8. Need to check for extension.

**Working fire companies have arrived on scene:**

- Engine 5;
- Engine 6 (RIC);
- Squad 1;
- Air Cascade;
- Safety Officer; and
- **Battalion Chief still responding and has not yet arrived on scene.**

**Estimated burn time = 12 minutes**





Time: 1039 hours

**Message #5**

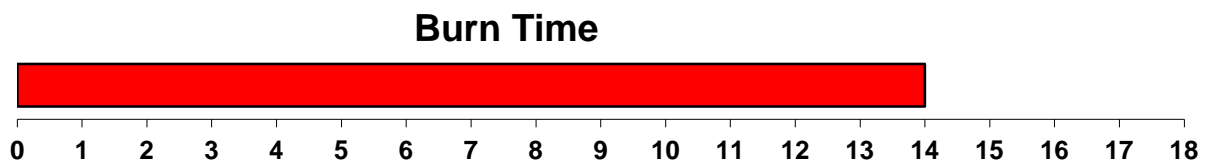
Slide Iteration #3

Attic space inspection in Office 4 reveals no visible fire extension.

Engine 1 reports minor fire extension into attic space in Office 3. There has also been fire extension into the Office 4 adjoining sidewall.

Emergency medical services (EMS) is requesting additional Medical Units for transportation. They now have 10 daycare children who require further treatment and evaluation and 7 adults.

**Estimated burn time = 14 minutes**



Time: 1041 hours

**Message #6**

Slide Iteration #4

Primary search in Office 3 has been completed. One unconscious occupant has been found, in the Office 3 bathroom, suffering from severe burns.

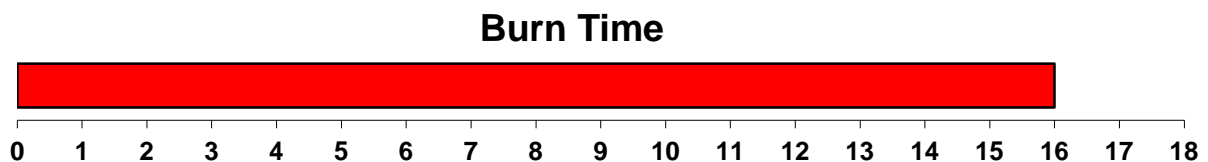
Engine 1 reports small fire extension into Office 3 attic space, but fire has been knocked down in attic space. Still have some hidden fire in Office 4 sidewall.

One firefighter from Engine 1 was accessing the attic space and has fallen off a 12-foot ladder in Office 3. Need assistance.

Building structural support conditions appear to be in good condition. Continuing to check for further extension.

Primary search has been completed in Offices 7 to 12.

**Estimated burn time = 16 minutes**



Time: 1042 hours

**Message #7**

Slide Iteration #4

Engine 1 reports all fire extension into Office 4 has been extinguished. Still have light to medium smoke conditions in Offices 3 and 4.

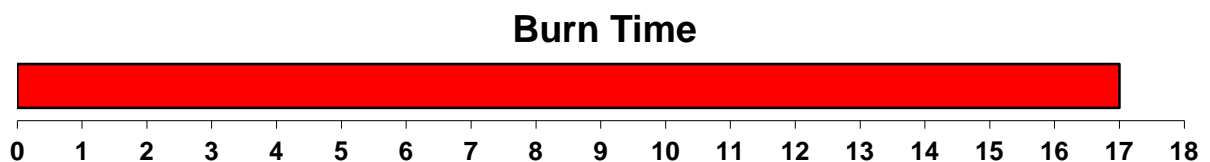
Continuing to check for any further extension.

Offices 1 and 2 and 5 and 6 have been fully ventilated and primary search completed

No spread of fire into Offices 1 and 2 and 5 and 6

**Battalion Chief has arrived on scene.**

**Estimated burn time = 17 minutes**



Time: 1043 hours

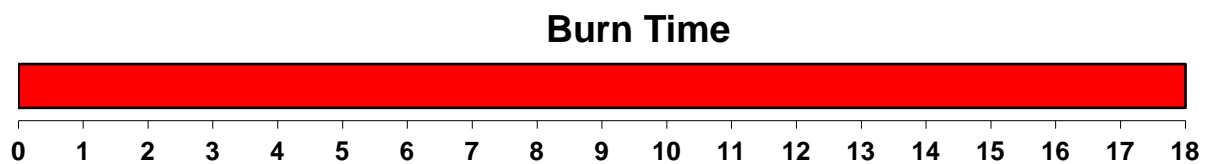
**Message #8**

Slide Iteration #4

Engine 1 reports no further extension of fire in Office 3 and 4 and all occupants have been accounted for.

Prepare for transfer of Command on ICS Form 201.

**Estimated burn time = 18 minutes**



**Handout 7-4**

**Exercise #3: Highrise Messages**

Time: 1430 hours

**Message #1**

Slide Iteration #1

First alarm assignment dispatched at 1427 hours.

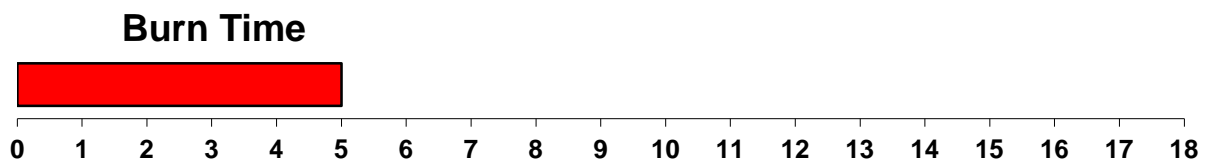
Engine 1 has arrived on location at 1430 hours. Upon arrival, several people are outside the highrise on Side C and more are evacuating down the rear stairwell. The alarm system is sounding. Status of occupants in Apartment 801 is unknown.

**1st alarm assignment:**

- Engine 1;
  - Engine 2;
  - Engine 3;
  - Ladder 1; and
  - BLS 1.
1. Identify the pertinent primary factors and subfactors.
  2. Enter factors on the Primary Factors Chart and identify pertinent precautions.

**Response time = 3 minutes**

**Estimated burn time = 5 minutes**



Time: 1432 hours

**Message #2**

Slide Iteration #2

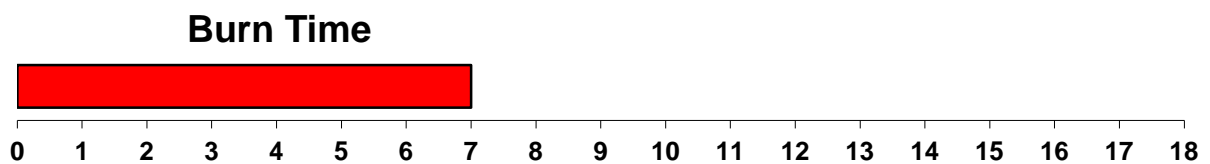
Establish the Incident Objectives-Strategies-Tactics for first operational period.

Enter on the Objectives-Strategy-Tactics Chart.

Tactics must be designated on the Objectives-Strategy-Tactics for deployed resources.

When all first alarm resources are deployed, then a **working fire** will be declared and additional companies will be deployed.

**Estimated burn time = 7 minutes**



Time: 1435 hours

**Message #3**

Slide Iteration #2

Engine 1 is stretching a hoseline from the rear core standpipe in stairwell.

Engine 1 reports heavy fire in Apartment 801. Need additional firefighting support.

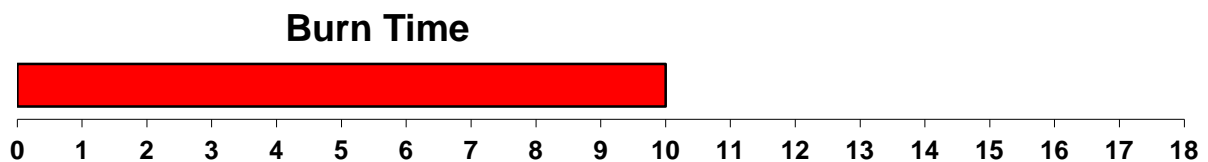
Ladder company reports that primary search-and-rescue operations are underway on eighth floor. All occupants have not yet evacuated from the eighth floor.

Occupants from the upper floors are evacuating down the rear stairway, many are showing signs of smoke inhalation.

This building is rear core construction.

Building manager reports building occupancy is senior citizens. There are six apartments on each floor. Most apartments have two residents.

**Estimated burn time = 10 minutes**



Time: 1437 hours

**Message #4**

Slide Iteration #3

Engine 1 reports all visible fire knocked down, but still have heavy smoke and heat conditions in Apartment 801. Status of occupants unknown.

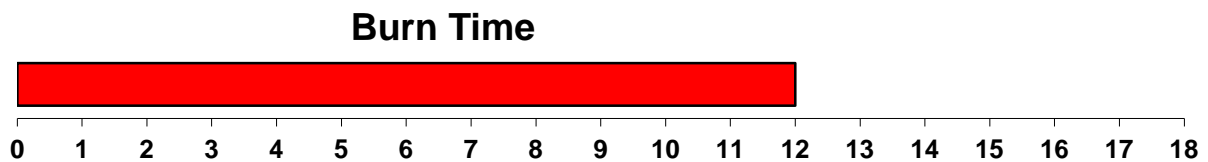
Ladder company reports six occupants from Apartments 801, 805, and 806 are suffering from smoke inhalation. They need medical attention. They have been taken to sixth floor for further treatment.

The ninth floor needs to be checked for occupants and spread of fire.

**Working fire companies have arrived on scene:**

- Engine 5;
- Engine 6 (RIC);
- Squad 1;
- Air Cascade;
- Safety Officer; and
- **Battalion Chief still responding and has not yet arrived on scene.**

**Estimated burn time = 12 minutes**





Time: 1439 hours

**Message #5**

Slide Iteration #3

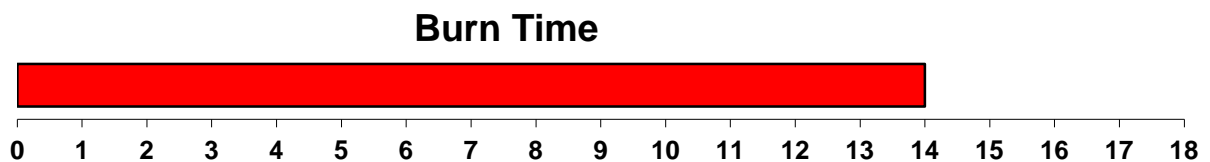
Engine 1 reports fire confined to Apartment 801, but it appears some fire has spread up the curtain wall to Apartment 901.

Engine 1 is also reporting an odor of gas in Apartment 801.

Emergency medical services (EMS) is requesting additional Medical Units for treatment and transportation for the sixth floor. They now have 12 occupants that require further smoke inhalation treatment and evaluation. Most occupants are from floors 8 to 10.

Occupants continue to evacuate down rear stairwell.

**Estimated burn time = 14 minutes**



Time: 1441 hours

**Message #6**

Slide Iteration #4

Engine 1 reports limited fire spread to Apartment 901 via curtain wall.

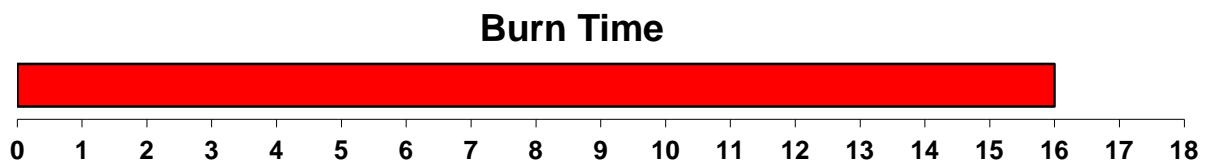
Engine 1 has found one occupant of Apartment 801 in rear bedroom, unconscious and not breathing.

One firefighter from Engine has fainted in Apartment 801. Need assistance. Firefighter appears to be suffering from heat exhaustion.

Primary search is still continuing on upper floors. Smoke conditions above the 10th floor are light to very light.

Evacuated residents are complaining about the heat conditions outside the building.

**Estimated burn time = 16 minutes**



Time: 1442 hours

**Message #7**

Slide Iteration #4

Further inspection shows no fire extension above the ninth floor.

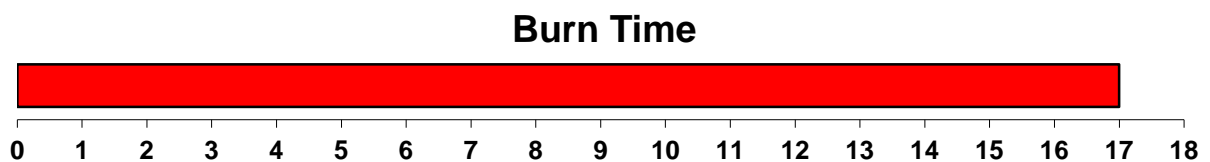
Smoke conditions are now light on the eighth and ninth floors.

Odor of gas is beginning to dissipate.

Approximately 250 residents occupy the building.

**Battalion Chief has arrived on scene.**

**Estimated burn time = 17 minutes**



Time: 1443 hours

**Message #8**

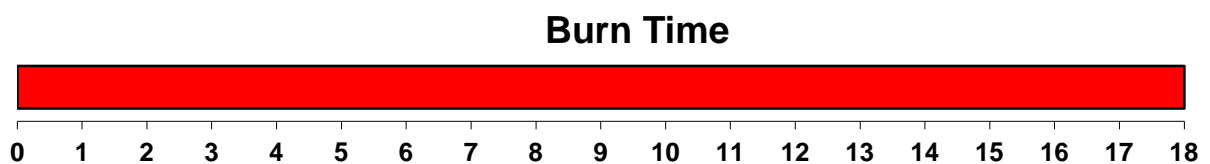
Slide Iteration #4

EMS confirms reports that the injured firefighter from Engine 1 is suffering from heat exhaustion.

Many other firefighters are suffering from some heat issues.

Prepare for transfer of Command on ICS Form 201.

**Estimated burn time = 18 minutes**



**Handout 7-5**

**Exercise #4: Mill Building Messages**

Time: 1330 hours

**Message #1**

Slide Iteration #1

First alarm assignment dispatched at 1327 hours.

Engine 1 has arrived on location at 1330 hours. Upon arrival, several customers and employees are outside the building on Side A. Store manager reports that plumbers were working in the basement repairing a broken water pipe when the fire broke out. The plumbing foreman reported the sprinkler system was shut down for the repairs. One plumber is unaccounted last seen in basement and for and one employee working on the second floor is missing.

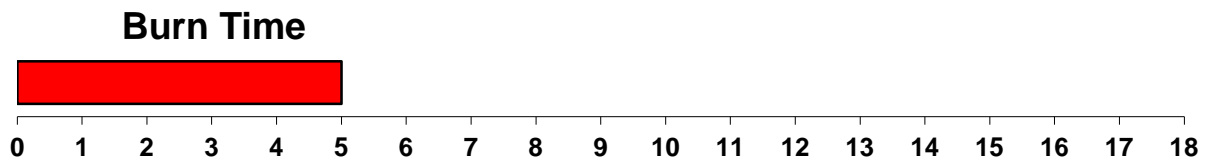
Engine 1 has arrived on location at 1330 hours.

**1st alarm assignment:**

- Engine 1;
  - Engine 2;
  - Engine 3;
  - Ladder 1; and
  - BLS 1.
1. Identify the pertinent primary factors and subfactors.
  2. Enter factors on Primary Factors Chart and identify pertinent precautions.

**Response time = 3 minutes**

**Estimated burn time = 5 minutes**



Time: 1332 hours

**Message #2**

Slide Iteration #2

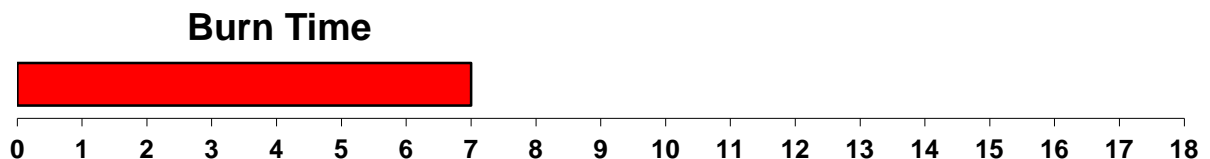
Establish the Incident Objectives-Strategies-Tactics for first operational period.

Enter on the Objectives-Strategy-Tactics Chart.

Tactics must be designated on the Objectives-Strategy-Tactics for deployed resources.

When all first alarm resources are deployed, then a **working fire** will be declared and additional companies will be deployed.

**Estimated burn time = 7 minutes**



Time: 1335 hours

**Message #3**

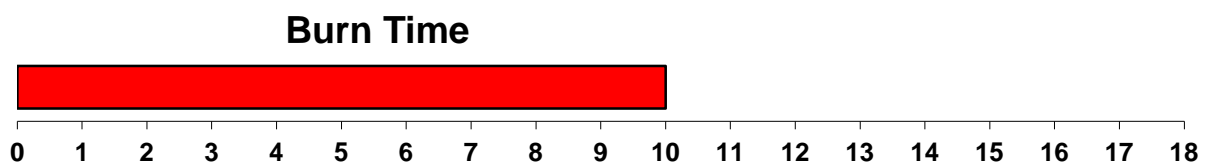
Slide Iteration #2

Engine 1 reports heavy fire showing from two windows, front part of basement.

Ladder company reports primary search and rescue operations are underway on second floor for missing employee.

Medium smoke conditions are reported on second floor.

**Estimated burn time = 10 minutes**



Time: 1337 hours

**Message #4**

Slide Iteration #2

Engine 1 reports the need for large waterlines. Fuel load is heavy in basement.

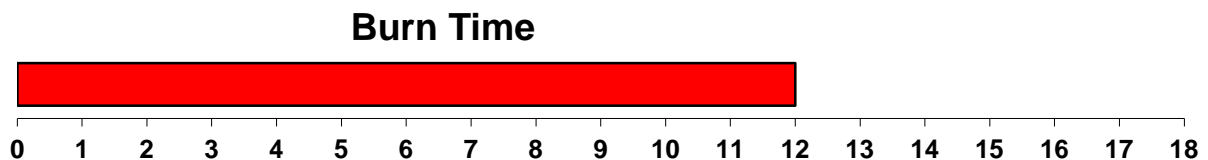
Ladder company still conducting primary search on second floor and attic area searching for missing employee. Light to medium smoke reported in attic area.

Store manager reports that he just received a cell call from the plumber and he said he is located in the basement furnace room Side D. He needs help fast, cannot breath.

**Working fire companies have arrived on scene:**

- Engine 5;
- Engine 6 (RIC);
- Squad 1;
- Air Cascade;
- Safety Officer; and
- **Battalion Chief still responding and has not yet arrived on scene.**

**Estimated burn time = 12 minutes**





Time: 1339 hours

**Message #5**

Slide Iteration #3

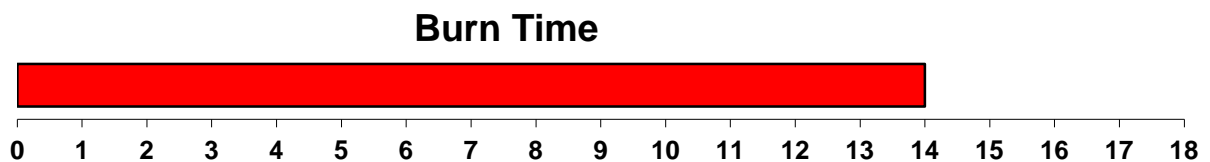
Engine 1 reports fire knocked down in basement.

They are now attempting to enter basement from interior steps.

Ladder company has located the missing employee in rear attic area. He is semiconscious and needs medical support.

One firefighter slipped on second floor stairs and hurt his knee very badly. Needs assistance.

**Estimated burn time = 14 minutes**



Time: 1341 hours

**Message #6**

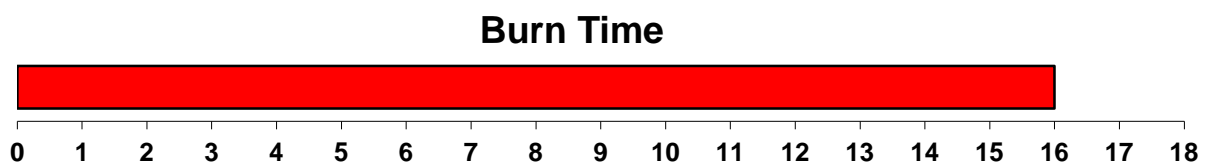
Slide Iteration #4

Engine 1 reports it has entered the basement and all visible fire has been knocked down. Medium smoke conditions are present in basement.

Missing plumber has been located in basement furnace room. He is suffering from extreme smoke inhalation. Need medical support.

First floor reports no extension of fire into first floor. Light to medium smoke conditions bow present on first floor.

**Estimated burn time = 16 minutes**



Time: 1342 hours

**Message #7**

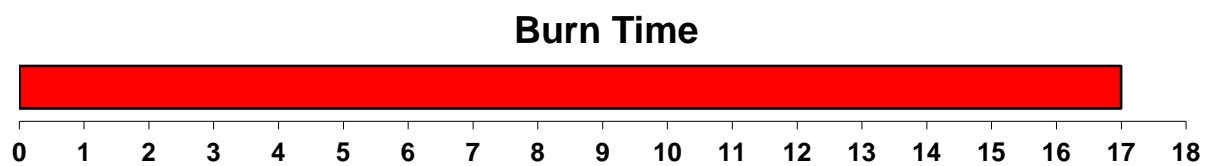
Slide Iteration #4

Engine 1 reports no further extension of fire in basement.

Primary search of building is now complete.

**Battalion Chief has arrived on scene.**

**Estimated burn time = 17 minutes**



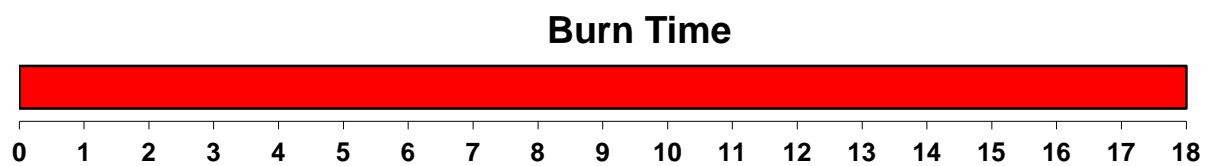
Time: 1343 hours

**Message #8**

Slide Iteration #4

Prepare for transfer of Command on ICS Form 201.

**Estimated burn time = 18 minutes**



**Handout 7-6**

**Exercise #5: Shopping Center Messages**

Time: 1230 hours

**Message #1**

Slide Iteration #1

First alarm assignment dispatched at 1227 hours.

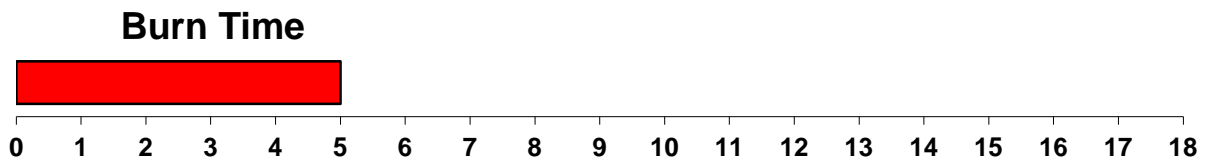
Engine 1 has arrived on location at 1230 hours. Upon arrival, several people are outside the building on Side A. The manager of Quizno's reports an explosion occurred in Quizno's. The manager is suffering from severe burns of his arms, neck, and back. He said just before the explosion he smelled gas. One employee is missing. Four Quizno's customers are outside suffering from smoke inhalation. Occupants of Powell Insurance and Chris's Steak House are exiting.

**1st alarm assignment:**

- Engine 1;
  - Engine 2;
  - Engine 3;
  - Ladder 1; and
  - BLS 1.
1. Identify the pertinent primary factors and subfactors.
  2. Enter factors on Primary Factors Chart and identify pertinent precautions.

**Response time = 3 minutes**

**Estimated burn time = 5 minutes**



Time: 1232 hours

**Message #2**

Slide Iteration #2

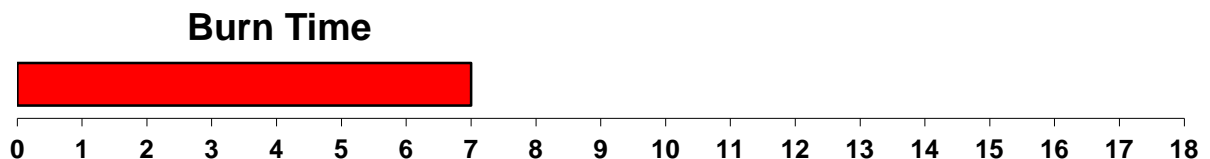
Establish the Incident Objectives-Strategies-Tactics for first operational period.

Enter on the Objectives-Strategy-Tactics Chart.

Tactics must be designated on the Objectives-Strategy-Tactics Chart for deployed resources.

When all first alarm resources are deployed, then a **working fire** will be declared and additional companies will be deployed.

**Estimated burn time = 7 minutes**



Time: 1235 hours

**Message #3**

Slide Iteration #2

Engine 1 reports heavy fire in Quizno's Restaurant. Request another company to support firefighting operations.

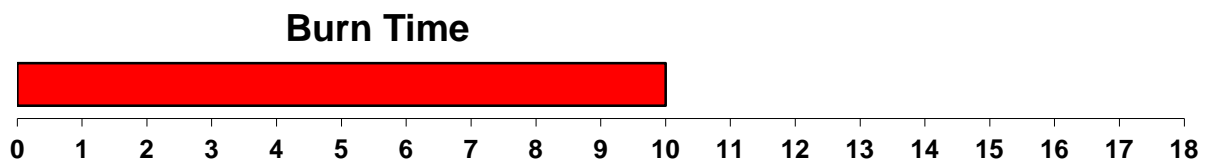
Ladder company reports primary search-and-rescue operations are underway in Powell Insurance and Chris's Steak House. Heavy smoke conditions are reported in all occupancies.

Powell Insurance office manager reports all employees accounted for, but three have suffered smoke inhalation and need further evaluation.

Chris's Steak House manager reports 25 customers and 7 employees were in the restaurant when the fire broke out. He also reports that there was a strong smell of gas in the restaurant kitchen right before the fire broke out.

Several customers and employees are outside Chris's Steak House. He does not have full accountability.

**Estimated burn time = 10 minutes**



Time: 1237 hours

**Message #4**

Slide Iteration #3

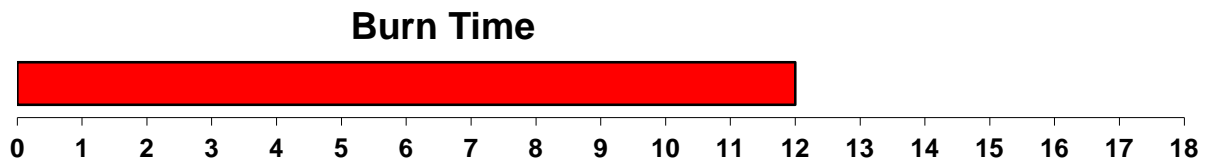
Engine 1 reports all visible fire knocked down, but still smelling the presence of gas. Fire appears to have some upward extension.

Primary search has been completed for Powell Insurance, but medium heat and smoke conditions remain. All employees are now accounted for.

**Working fire companies have arrived on scene:**

- Engine 5;
- Engine 6 (RIC);
- Squad 1;
- Air Cascade;
- Safety Officer; and
- **Battalion Chief still responding and has not yet arrived on scene.**

**Estimated burn time = 12 minutes**





Time: 1239 hours

**Message #5**

Slide Iteration #3

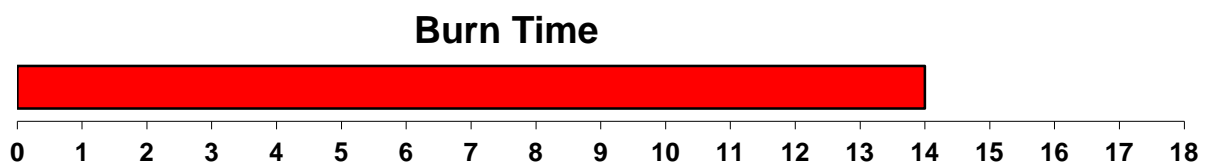
Engine 1 reports attic space inspection in Quizno's indicates some fire extension into attic space. One firefighter is complaining of chest pains. Need assistance.

Attic inspection in Powell Insurance and Chris's Steak House reveal medium smoke, but no visible fire at this time.

Strong odor of gas also detected in attic space.

Emergency medical services (EMS) is requesting additional Medical Units for transportation. They now have eight employees and customers that require further treatment and evaluation.

**Estimated burn time = 14 minutes**



Time: 1241 hours

**Message #6**

Slide Iteration #4

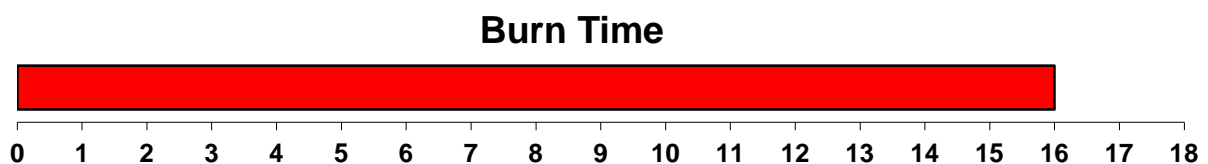
Engine 1 reports fire in attic space has been extinguished. One unconscious employee has been found in Quizno's suffering from severe burns. Need medical assistance.

Primary search in has been completed in Chris's Steak House. All employees and customers now accounted for.

Building structural support conditions appear to be in fair condition in Quizno's. They have suffered some fire damage.

Continuing to check for further extension.

**Estimated burn time = 16 minutes**



Time: 1242 hours

**Message #7**

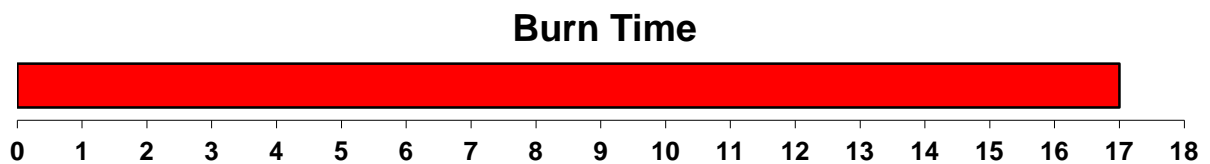
Slide Iteration #4

Further inspection into Powell Insurance and Chris's Steak House attic reveal no fire or structural damage.

Odor of gas is dissipating.

**Battalion Chief has arrived on scene.**

**Estimated burn time = 17 minutes**



Time: 1243 hours

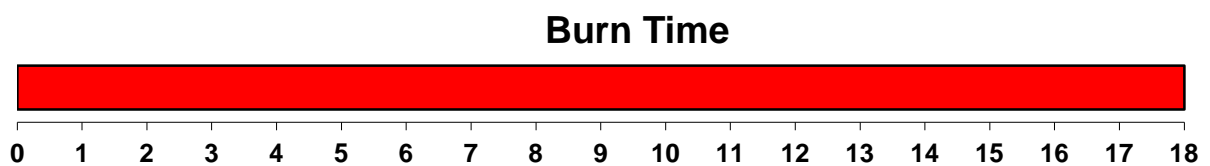
**Message #8**

Slide Iteration #4

Engine 1 reports no further extension of fire.

Prepare for transfer of Command on ICS Form 201.

**Estimated burn time = 18 minutes**



**Handout 7-7**

**Exercise #6: Bank Mansard Roof Messages**

Time: 1230 hours

**Message #1**

Slide Iteration #1

First alarm assignment dispatched at 1227 hours.

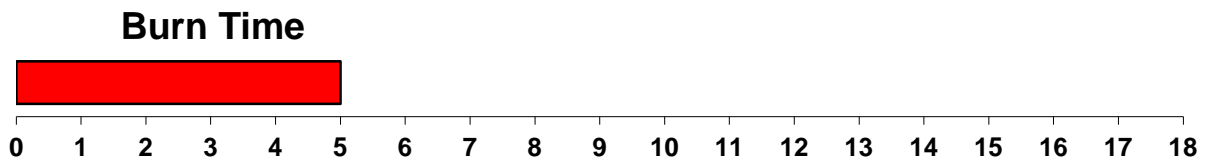
Engine 1 has arrived on location at 1230 hours. Upon arrival, several employees and customers are outside the bank building. Three employees who attempted to fight the fire are suffering from minor burns and smoke inhalation. The bank manager reports that a few employees were eating lunch in the third floor break/lunch room and they are unaccounted for. He thinks everyone else has left the building. He reports that the fire is in the second floor copy/printing room on the second floor.

**1st alarm assignment:**

- Engine 1;
  - Engine 2;
  - Engine 3;
  - Ladder 1; and
  - BLS 1.
1. Identify the pertinent primary factors and subfactors.
  2. Enter factors on Primary Factors Chart and identify pertinent precautions.

**Response time = 3 minutes**

**Estimated burn time = 5 minutes**



Time: 1232 hours

**Message #2**

Slide Iteration #2

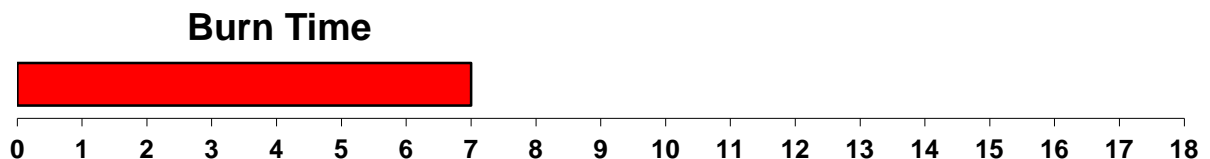
Establish the Incident Objectives-Strategies-Tactics for first operational period.

Enter on the Objectives-Strategy-Tactics Chart.

Tactics must be designated on the Objectives-Strategy-Tactics Chart for deployed resources.

When all first alarm resources are deployed, then a **working fire** will be declared and additional companies will be deployed.

**Estimated burn time = 7 minutes**



Time: 1235 hours

**Message #3**

Slide Iteration #2

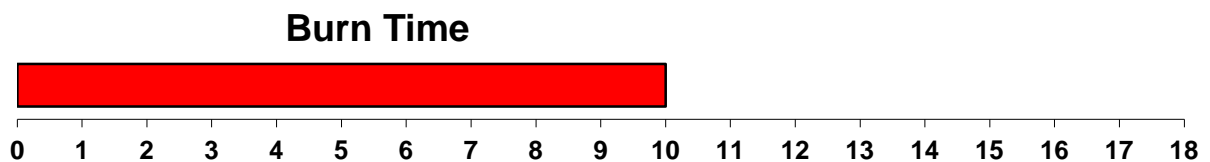
Engine 1 reports heavy fire from one window second floor Side B of building.

Ladder company reports primary search-and-rescue operations are underway on second and third floors. Reports heavy smoke conditions on second and third floors.

Bank manager reports 25 customers and 7 employees were in building when fire broke out and 3 employees are unaccounted for.

Several customers and employees are outside the bank. The bank manager does not have full accountability.

**Estimated burn time = 10 minutes**



Time: 1237 hours

**Message #4**

Slide Iteration #3

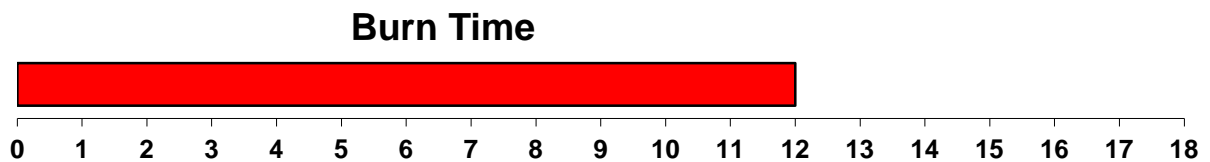
Engine 1 reports all visible fire knocked down in second floor copying room, but still experiencing heavy heat conditions. Fire appears to have some upward extension to third floor in wall space.

Primary search has not been completed. Two semi-unconscious employees have been found in second conference room. They are being removed from the building.

**Working fire companies have arrived on scene:**

- Engine 5;
- Engine 6 (RIC);
- Squad 1;
- Air Cascade;
- Safety Officer; and
- **Battalion Chief still responding and has not yet arrived on scene.**

**Estimated burn time = 12 minutes**





Time: 1239 hours

**Message #5**

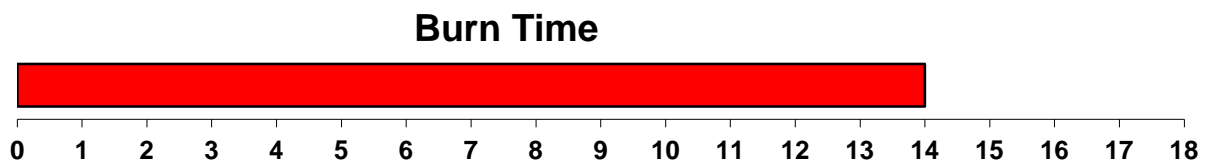
Slide Iteration #3

Engine 1 reports possible extension to third floor via exterior wall. Need to check mansard roof sidewall for extension.

One firefighter from Engine 1 has collapsed. Need assistance.

Emergency medical services (EMS) is requesting additional Medical Units for transportation. They now have 12 employees and customers that require further treatment and evaluation.

**Estimated burn time = 14 minutes**



Time: 1241 hours

**Message #6**

Slide Iteration #4

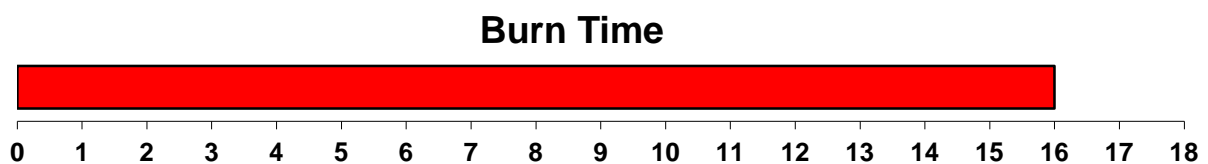
Engine 1 reports fire in second floor wall space has been extinguished.

Ladder 1 reports another unconscious employee has been found in second floor Loan Office. Need medical assistance.

Building structural support conditions in third mansard roof appear to be in fair condition, but they have suffered some light fire damage.

Continuing to check for further extension.

**Estimated burn time = 16 minutes**



Time: 1242 hours

**Message #7**

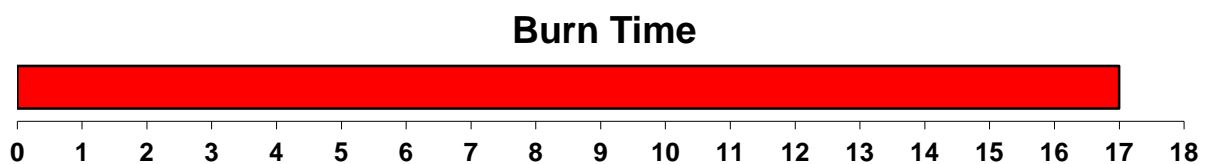
Slide Iteration #4

Further inspection into mansard roof area indicates no major fire or structural damage.

Primary search of second and third floors has been completed. No further casualties identified.

**Battalion Chief has arrived on scene.**

**Estimated burn time = 17 minutes**



Time: 1243 hours

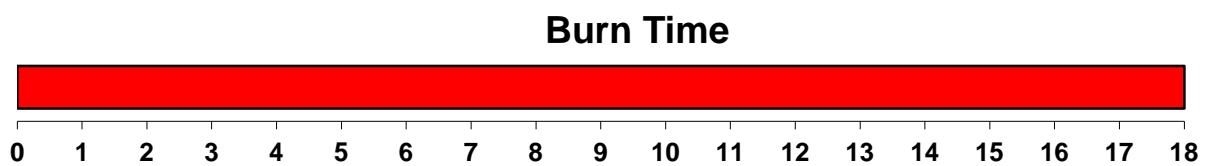
**Message #8**

Slide Iteration #4

Engine 1 reports no further extension of fire.

Prepare for transfer of Command on ICS Form 201.

**Estimated burn time = 18 minutes**



## Handout 7-8

### Exercise #7: Noncombustible Warehouse Messages

Time: 1530 hours

#### Message #1

Slide Iteration #1

First alarm assignment dispatched at 1527 hours.

Engine 1 has arrived on location at 1530 hours. Upon arrival, several employees are outside the building on Side A. Plant foreman reports a small explosion occurred near the paint finishing room and fire broke out after the explosion.

Two employees are suffering from arm and neck burns and need further treatment. Three employees are unaccounted for. They worked in the manufacturing finishing area. Four office employees are complaining of smoke inhalation. However, all office employees are accounted for.

#### 1st alarm assignment:

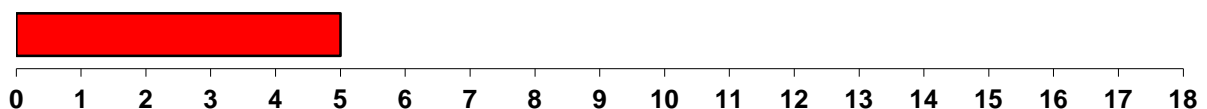
- Engine 1;
- Engine 2;
- Engine 3;
- Ladder 1; and
- BLS 1.

1. Identify the pertinent primary factors and subfactors.
2. Enter factors on Primary Factors Chart and identify pertinent precautions.

**Response time = 3 minutes**

**Estimated burn time = 5 minutes**

#### Burn Time



Time: 1532 hours

**Message #2**

Slide Iteration #2

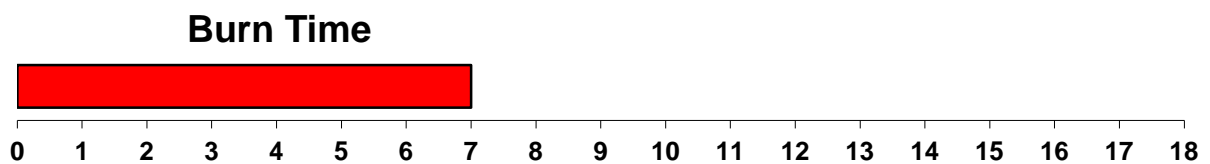
Establish the Incident Objectives-Strategies-Tactics for first operational period.

Enter on the Objectives-Strategy-Tactics Chart.

Tactics must be designated on the Objectives-Strategy-Tactics Chart for deployed resources.

When all first alarm resources are deployed, then a **working fire** will be declared and additional companies will be deployed.

**Estimated burn time = 7 minutes**



Time: 1535 hours

**Message #3**

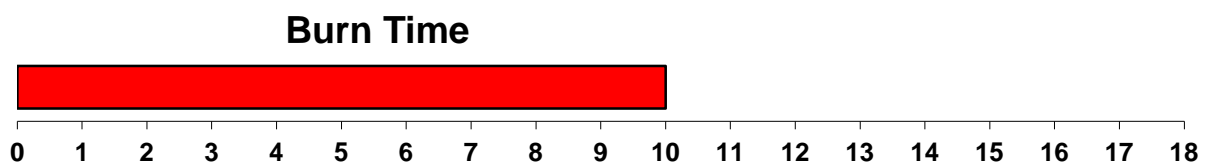
Slide Iteration #2

Engine 1 reports heavy fire Side C of building from overhead doors and one window.

Ladder company reports primary search and rescue operations are underway. Reports encountering heavy smoke and heat conditions.

Plant manager reports all employees accounted for except for three whom were working in the refinishing area.

**Estimated burn time = 10 minutes**



Time: 1537 hours

**Message #4**

Slide Iteration #3

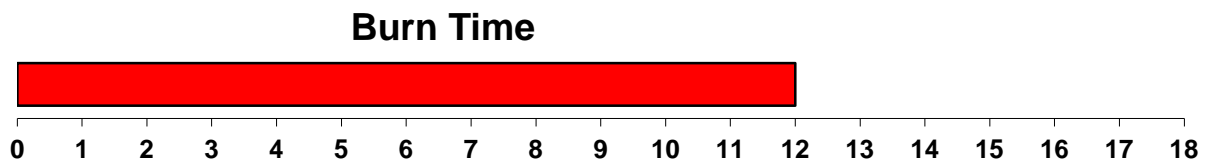
Engine 1 reports all visible fire knocked down, but still experiencing heavy heat conditions. Fire may have some upward extension into ceiling area.

Primary search has not been completed. Two semi-unconscious employees have been found in the lavatory on first floor. They are being removed from the building. Need emergency medical services (EMS) support. Both are suffering from severe smoke inhalation.

**Working fire companies have arrived on scene:**

- Engine 5;
- Engine 6 (RIC);
- Squad 1;
- Air Cascade;
- Safety Officer; and
- **Battalion Chief still responding and has not yet arrived on scene.**

**Estimated burn time = 12 minutes**





Time: 1539 hours

**Message #5**

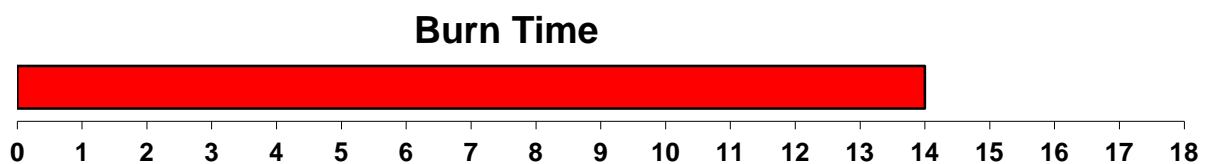
Slide Iteration #3

Engine 1 reports fire extension has been controlled in refinishing area. Need to check roof area for extension.

One firefighter from Engine 1 has slipped on garage floor surface. Appears to have suffered be a serious back injury. Need assistance.

EMS is requesting additional Medical Units for transportation. They now have 10 employees that require further medical treatment and evaluation.

**Estimated burn time = 14 minutes**



Time: 1541 hours

**Message #6**

Slide Iteration #4

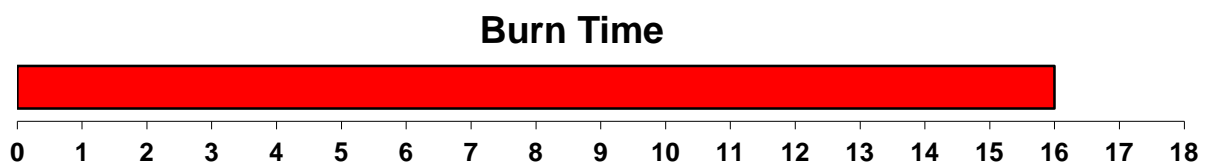
Engine 1 reports no further extension of fire. Need to check structural integrity of roof.

Ladder 1 reports unconscious employee has been found in fabrication area. Suffering from severe burns. Need medical assistance.

Fire appears to have involved several acetylene and oxygen bottles used for cutting purposes. They are 100-pound cylinders.

Continuing to check for further extension.

**Estimated burn time = 16 minutes**



Time: 1542 hours

**Message #7**

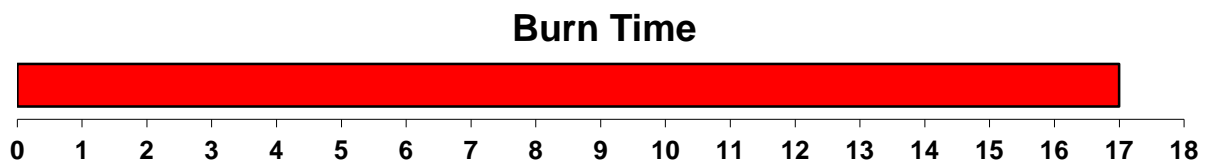
Slide Iteration #4

Further inspection into roof area indicates no major fire or structural damage.

Primary search of first floor has been completed. No further casualties identified.

**Battalion Chief has arrived on scene.**

**Estimated burn time = 17 minutes**



Time: 1543 hours

**Message #8**

Slide Iteration #4

Engine 1 reports no further extension of fire.

Prepare for transfer of Command on ICS Form 201.

**Estimated burn time = 18 minutes**

