



International  
Association  
of Fire Chiefs



National  
Fire Protection  
Association

# Fundamentals of Fire Fighter Skills

SECOND EDITION

## Chapter 13

### Search and Rescue

# Objectives (1 of 2)

- Define search and rescue.
- Describe the importance of scene size-up in search and rescue.
- Describe risk-benefit analysis.
- Describe search techniques.
- Describe the primary search.

# Objectives (2 of 2)

- Describe search patterns.
- Describe the purpose of a thermal imaging device.
- Describe the secondary search.
- Describe how to ensure fire fighter safety during a search.
- Describe ladder rescue techniques.

# Introduction

- Saving lives is the fire department's highest priority.
- Search:
  - Looking for victims who need assistance
- Rescue:
  - Physical removal from confinement or danger



## Coordinating Search and Rescue

- Fire fighters must plan and coordinate all activities to support search and rescue.
- The fire may need to be controlled before search and rescue can begin.



# Search and Rescue Size-Up

(1 of 4)

- Evaluate the critical factors.
- Develop search and rescue plan based on conclusions.

# Search and Rescue Size-Up

(2 of 4)

- Risk-benefit analysis
  - Consider the risks and benefits of the operation.



# Search and Rescue Size-Up

(3 of 4)

- Occupancy factors
  - Rescue occupants who are in most immediate danger.
  - Consider where occupants are likely to be located.
- Observations
  - Look for clues that indicate whether or not a building is occupied.



# Search and Rescue Size-Up

(4 of 4)

- Occupant information
  - Obtain accurate information from occupants who have escaped.
- Building size and arrangement
  - A floor plan can be very helpful when planning and assigning teams.
  - Preincident plans contain valuable layout information.

# Search Coordination

- Notify the IC:
  - When search is complete
  - If a victim is found
- Consider those who have escaped but still need assistance.

# Search Priorities

- First: Immediate fire area, then the rest of the fire floor
- Second: Area directly above the fire
- Third: Top floor, then down to the floor above the fire
- Last: Areas below the fire

## Search Techniques

- Search in teams of two.
- Remain in contact.
- At least one team member must have a radio.
- Notify the IC when search of each area is complete.





# Types of Searches

- Primary
  - Quick attempt to locate any potential victims who are in danger
- Secondary
  - Thorough search conducted after the situation is under control

## Primary Search

- Time is critical.
- Check all areas where victims might be.
- Rely on sight, sound, and touch.
- Use hand tools to extend your reach.



## Search Patterns (1 of 3)

- Clockwise search (left-handed search)
  - Turn left at entry point.
  - Keep left hand in contact with wall.
  - Turn right at each corner until at entry point.





# Search Patterns (2 of 3)

- Counterclockwise search (right-handed search)
  - Reverse of clockwise search





## Search Patterns (3 of 3)

- Check the door temperature to determine.
- Enter and exit through the same door.
- Mark rooms to show they have been searched.



# Thermal Imaging Devices

- Used to show heat images
- Can “see” image of a person and room contents through smoke
- May be used to determine if a door is hot



# Search Ropes

- Used to search large areas
- Used to search interconnected rooms
- Used to search areas with multiple aisles
- Provide a reliable return path
- Should be anchored at the entry point



## Secondary Search

- Locates victims missed in primary search
- Completed when conditions improve
- Slow and methodical
- Include all areas of the building





# Search Safety

- Fire fighters are exposed to the same risks that endanger the lives of victims.
- Despite protective clothing and equipment, fire fighters can still be injured.

# Risk Management

- Balance the risks involved with potential benefits.
  - High risk to fire fighters to save lives
  - Limited risk to fire fighters to save valuable property
  - No risk to fire fighters for no chance to save lives or property

# IC Considerations

- The IC must consider the stage of the fire, the condition of the building, and the presence of other hazards.
- The IC may decide not to conduct a primary search if:
  - Risk to fire fighters is too great
  - Successful rescue is very unlikely.

# Search and Rescue Equipment (1 of 2)

- Personal protective equipment
- Portable radio
- Hand light or flashlight
- Forcible entry tools
- Hose lines
- Thermal imaging devices



# Search and Rescue Equipment (2 of 2)

- Ladders
- Long rope(s)
- Tubular webbing or short rope
- Fire fighters must also have adequate air to make a safe exit.

# Determining if an Area is Tenable (safe)

- Evaluate structural stability.
- Evaluate for backdraft or flashover conditions.
- Determine life safety risk.
- Continue to reevaluate the operation's safety.

## Rescue Techniques

- Rescue techniques include:
  - Assists
  - Carries
  - Drags
- Always use the safest and most practical means of egress.



## Methods of Rescue (1 of 4)

- Shelter-in-place
  - Consider when occupants are conscious and in an area that is protected.
- Exit assist
  - Used when victim is responsive and able to walk with little or no assistance





## Methods of Rescue (2 of 4)

- Simple victim carries
  - Used to move a victim who is conscious and responsive, but unable to stand or walk



## Methods of Rescue (3 of 4)

- Emergency drags
  - Most efficient method of removing an unconscious or unresponsive victim



## Methods of Rescue (4 of 4)

- Ladder rescues
  - Considerable risk
  - Proper technique and physical strength and stamina
  - Should be used only when it is not possible to use interior stairways or fire escapes



# Summary (1 of 3)

- Search and rescue is the highest priority.
- Search and rescue must be integrated with other firefighting activities.
- A search size-up is critical.



# Summary (2 of 3)

- Primary search
  - Locate occupants in the greatest danger.
- Secondary search
  - Ensure that all occupants are accounted for.

# Summary (3 of 3)

- Risks and benefits need to be evaluated.
- Methods of rescue include:
  - Shelter-in-place
  - Exit assists
  - Simple victim carries
  - Emergency drags
  - Ladder rescues