International Association of Fire Chiefs

National Fire Protection Association

Fundamentals of Fire Fighter Skills

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 search techniques.
- Describe the primary search.

Objectives (2 of 2)

- Describe search patterns.
- Describe the secondary search.
- Describe how to ensure fire fighter safety during a search.
- Describe ladder rescue techniques.

Introduction (1 of 2)

- Saving lives is our highest priority
- Search:
  - Looking for victims who need assistance
- Rescue:
  - Physical removal of a person from danger

Introduction (2 of 2)

- Many departments assign search-and-rescue to ladder and rescue companies.
- Fire fighters must plan and coordinate all activities to support search-and-rescue.

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

1. Immediate fire area, then the rest of the fire floor

2. Area directly above the fire

3. Top floor, then down to the floor above the fire

4. Areas below the fire

Search Techniques

- Search in teams of two.
- Remain in visual, voice, or physical contact.
- At least one team member must have a radio and be in contact with the IC.
- 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.

- Follow walls and note turns.

Search Patterns (1 of 3)

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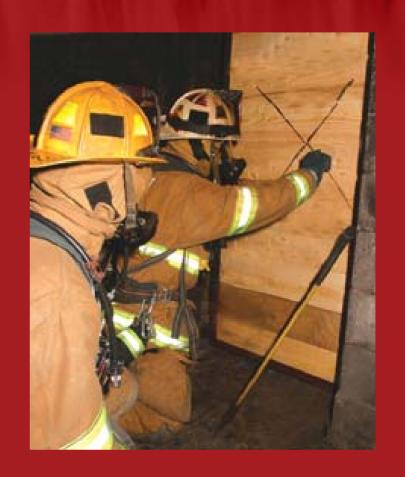 - Turn right at each corner until at entry point.

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 if there is active fire on the other side.

- 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 isles
- Provides a reliable return path
- Should be anchored at the entry point

Secondary Search

- Locates victims missed in primary search
- Completed when conditions improve but may still present hazards
- Slow and methodical
- Use different fire fighters
- 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

Two-in/Two-out Rule

- ## NFPA 1500

  - Two fire fighters must remain outside danger area to rescue the team of fire fighters in danger area

  - Exception is made when immediate action can prevent loss of life or serious injury

Search-and-Rescue Equipment
(1 of 2)

- Personal protective equipment
- Portable radio
- Handlight 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

- Evaluate structural stability.

- Evaluate for backdraft or flashover conditions.

- Continue to reevaluate the operation's safety.

- Determine structure type, possibility of collapse, and life safety risk.

Rescue Techniques

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

Methods of Rescue (1 of 3)

- Shelter-in-place
  - Consider when occupants are conscious and in an area that is protected from the fire.

- Exit assist
  - Used when victim is responsive and able to walk with little or no assistance

Methods of Rescue (2 of 3)

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

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

Methods of Rescue (3 of 3)

- Ladder rescues
  - Involve considerable risk of injury
  - Require 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 no victims are still trapped inside.

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

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