



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.

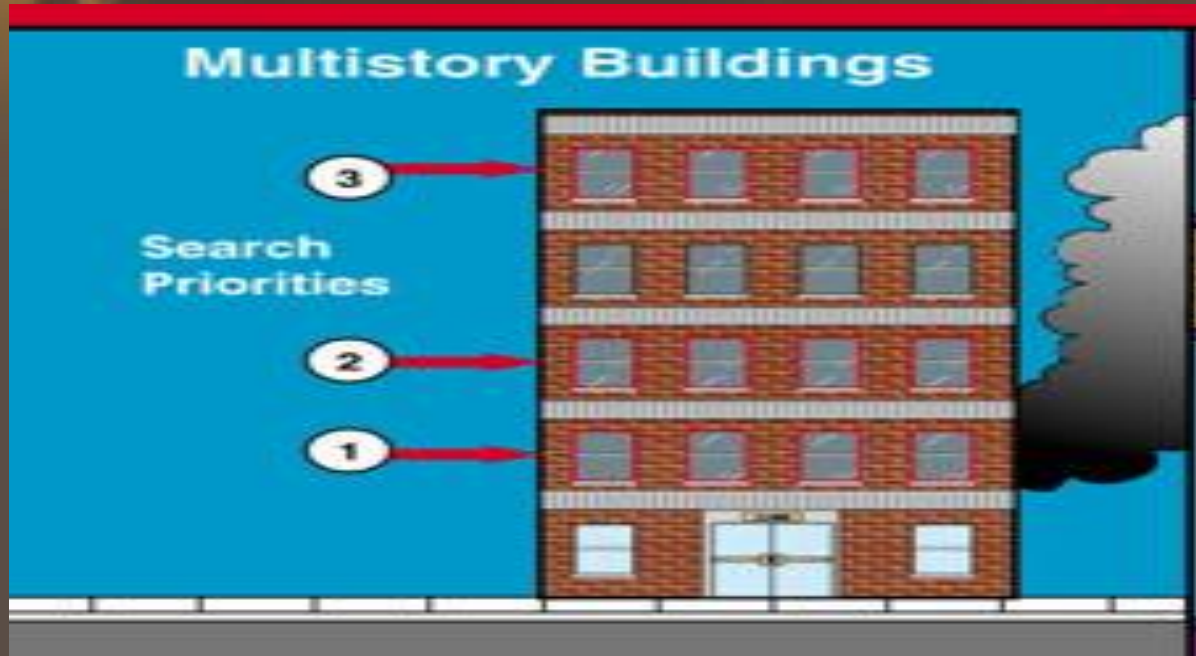
Search Coordination

- 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 Priorities



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



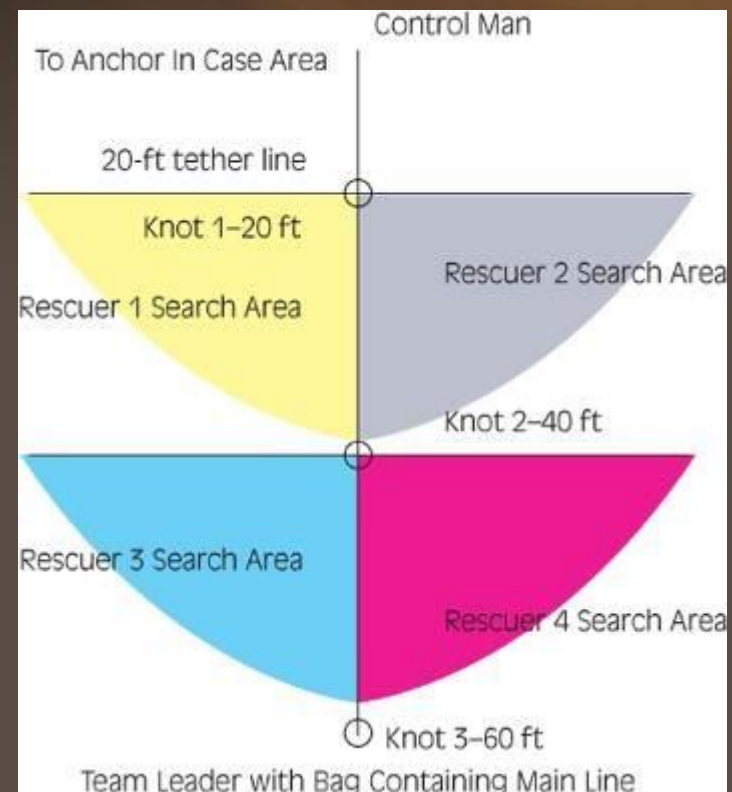
Thermal Imaging Devices

- 6-Sided Scan
- Advantages of TIC Assisted Searches
 - Speed/Area Covered
 - Energy Conservation
- Limitations of TIC's
 - Visibility through solid items
 - Visibility through water/glass



Rope Assisted Search

- Search large rooms/areas
- Use rope tied to an anchor
- Where in town would we possibly use this method?



Vent-Enter-Isolate-Search

- **Ventilate**
 - Open up a small area of the structure i.e. window
- **Enter**
 - Go through that opening to make entry into room
- **Isolate**
 - Once to the rooms door if its open, close it to minimize damage in that room
- **Search**
 - The room as quickly as possible then exit through your original entrance

V-E-I-S Safety

- Always work with a partner
- Communicate with the IC so they know your location
- Be alert for fire spread
- Check floor integrity prior to entry
- Have a hose line available
- Do not enter in path of fire spread

Leap Frog Search Method

- Minimum of 2 FFers
- Allows for greater usage of resources
- Commonly used in conjunction with TIC-assisted search
- Used when there is several small rooms off a hallway

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

- 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