CHAPTER OVERVIEW

Fire fighters may be called on to assist special rescue teams with various tasks. It is important that fire fighters have awareness knowledge of the special rescue teams’ operations and how they may assist in these operations. Engine and truck companies usually arrive on a special rescue incident before the rescue team. Identifying the hazards and properly approaching the scene is important for the safety of victims and fire fighters.

After students complete this chapter and the related course work, they will have basic knowledge of the eight types of rescue operations and the fire fighter’s role in approaching incidents and assisting special rescue teams. They will learn how to establish a barrier at a scene and identify and retrieve appropriate rescue tools.

OBJECTIVES AND RESOURCES

Fire Fighter I

Knowledge Objectives
There are no knowledge objectives for Fire Fighter I candidates. NFPA 1001 contains no Fire Fighter I Job Performance Requirements for this chapter.

Skills Objectives
There are no skill objectives for Fire Fighter I candidates. NFPA 1001 contains no Fire Fighter I Job Performance Requirements for this chapter.

Fire Fighter II

Knowledge Objectives
After studying this chapter, you will be able to:

• Define the types of special rescues encountered by fire fighters. (NFPA 6.4.2.A, pp 840–841)
• Describe the steps of a special rescue. (NFPA 6.4.2, 6.4.2.A, pp 841–846)
• Describe the general procedures at a special rescue scene. (NFPA 6.4.2, 6.4.2.A, pp 846–848)
• Describe how to safely approach and assist at a vehicle or machinery rescue incident. (NFPA 6.4.2, 6.4.2.A, pp 850–851)
• Describe how to safely approach and assist at a confined-space rescue incident. (NFPA 6.4.2, 6.4.2.A, pp 851–852)
• Describe how to safely approach and assist at a rope rescue incident. (NFPA 6.4.2, 6.4.2.A, pp 852–853)
• Describe how to safely approach and assist at a trench and excavation rescue incident. (NFPA 6.4.2, 6.4.2.A, pp 853–854)
• Describe how to safely approach and assist at a structural collapse rescue incident. (NFPA 6.4.2, 6.4.2.A, pp 854–855)
• Describe how to safely approach and assist at a water or ice rescue incident. (NFPA 6.4.2, 6.4.2.A, pp 855–857)
• Describe how to safely approach and assist at a wilderness search and rescue (SAR) incident. (NFPA 6.4.2, 6.4.2.A, pp 857–858)
• Describe how to safely approach and assist at a hazardous materials rescue incident. (NFPA 6.4.2, 6.4.2.A, pp 858–860)
• Describe how to safely respond to an elevator or escalator rescue. (NFPA 6.4.2, 6.4.2.A, pp 859–860)

Skills Objectives
After studying this chapter, you will be able to perform the following skills:

• Establish a barrier. (NFPA 6.4, 6.4.2.B, p 847)
• Identify and retrieve rescue tools. (NFPA 6.4, 6.4.2.B, p 850)
Additional NFPA Standards

- NFPA 1006, Standard for Technical Rescuer Professional Qualifications
- NFPA 1500, Standard on Fire Department Occupational Safety and Health Program
- NFPA 1670, Standard on Operations and Training for Technical Search and Rescue Incidents
- NFPA 1951, Standard on Protective Ensembles for Technical Rescue Incidents

Reading and Preparation

- Review all instructional materials, including *Fundamentals of Fire Fighter Skills*, Chapter 27, and all related presentation support materials.
- Review local firefighting protocols for Chapter 27.

Support Materials

- Dry erase board and markers or chalkboard and chalk
- LCD projector, slide projector, overhead projector, and projection screen
- PowerPoint presentation, overhead transparencies, or slides

Enhancements

- Direct the students to visit the Internet at www.FireFighter.jbpub.com for online activities.
- Direct the students to relevant sections in the Student Workbook for application of the content introduced in this chapter.
- Direct the students to take the practice/final examinations in the Navigate Test Prep to prepare for examinations.

TEACHING TIPS AND ACTIVITIES

- Invite fire fighters trained at the awareness, operations, and technician levels to speak to the class about some of their experiences with technical rescue incidents.
- Most communities have occupancies or areas in which a technical rescue incident might occur, such as construction sites, rivers, or industrial parks. Inventory these occupancies and areas present in your community and use real-life examples to demonstrate to students that technical rescue incidents can occur in many different places, so every community has the potential for a technical rescue incident.
## PRESENTATION OVERVIEW

<table>
<thead>
<tr>
<th>Total time: 2 hours, 53 minutes (with enhancements)</th>
<th>Activity Type</th>
<th>Time</th>
<th>Level</th>
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<tbody>
<tr>
<td><strong>Pre-Lecture</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>You Are the Fire Fighter</td>
<td>Small Group Activity/Discussion</td>
<td>5 minutes</td>
<td>Fire Fighter II</td>
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<tr>
<td><strong>Lecture</strong></td>
<td></td>
<td></td>
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<tr>
<td>I. Introduction</td>
<td>Lecture/Discussion</td>
<td>12 minutes</td>
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<td>II. Types of Rescues Encountered by Fire Fighters</td>
<td>Lecture/Discussion</td>
<td>3 minutes</td>
<td>Fire Fighter II</td>
</tr>
<tr>
<td>III. Guidelines for Operations</td>
<td>Lecture/Discussion</td>
<td>9 minutes</td>
<td>Fire Fighter II</td>
</tr>
<tr>
<td>IV. Steps of Special Rescue</td>
<td>Lecture/Discussion</td>
<td>22.5 minutes</td>
<td>Fire Fighter II</td>
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<tr>
<td>V. Postincident Duties</td>
<td>Lecture/Discussion</td>
<td>1.5 minutes</td>
<td>Fire Fighter II</td>
</tr>
<tr>
<td>VI. General Rescue Scene Procedures</td>
<td>Lecture/Discussion/Demonstration</td>
<td>22.5 minutes</td>
<td>Fire Fighter II</td>
</tr>
<tr>
<td>VII. Assisting Rescue Crews</td>
<td>Lecture/Discussion/Demonstration</td>
<td>28.5 minutes</td>
<td>Fire Fighter II</td>
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<td>VIII. Summary</td>
<td>Lecture/Discussion</td>
<td>9 minutes</td>
<td>Fire Fighter II</td>
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<td><strong>Post-Lecture</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I. Wrap-Up Activities</td>
<td>Individual Activity/Small Group Activity/Discussion</td>
<td>40 minutes</td>
<td>Fire Fighter I and II</td>
</tr>
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<td>A. Fire Fighter in Action</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>B. Technology Resources</td>
<td></td>
<td></td>
<td></td>
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<td>II. Lesson Review</td>
<td>Discussion</td>
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<td>III. Assignments</td>
<td>Lecture</td>
<td>5 minutes</td>
<td>Fire Fighter I and II</td>
</tr>
</tbody>
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PRE-LECTURE

I. You Are the Fire Fighter

Time: 5 Minutes  
Level: Fire Fighter II  
Small Group Activity/Discussion

Use this activity to motivate students to learn the knowledge and skills needed to assist special rescue teams.

Purpose
To allow students an opportunity to explore the significance and concerns associated with assisting special rescue teams.

Instructor Directions
1. Direct students to read the “You Are the Fire Fighter” scenario found in the beginning of Chapter 27.
2. You may assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions.
3. You may also assign this as an individual activity and ask students to turn in their comments on a separate piece of paper.
I. Introduction

1. In recent years the number of fires and amount of loss from fire in the United States has decreased.
2. At the same time, the mission of fire departments has expanded. Fire departments take on added roles, such as:
   a. Emergency medical services (EMS)
   b. Hazardous materials response
   c. Technical rescue responses
3. A technical rescue incident (TRI) is a complex rescue incident involving:
   a. Vehicles or machinery
   b. Water or ice
   c. Rope techniques
   d. Trench or excavation collapse
   e. Confined spaces
   f. Structural collapse
   g. Wilderness SAR
   h. Hazardous materials
4. Training in technical rescue areas is conducted at three levels: awareness, operations, and technician.
   a. Awareness: This training is an introduction to the topic with an emphasis on recognizing the hazards, securing the scene, and calling for appropriate assistance. There is no actual use of rescue skills at the awareness level.
   b. Operations: This level is geared toward working in the “warm zone” of an incident (the area directly around the hazard area). This will allow you to directly assist those conducting the rescue operation and use certain skills and procedures to conduct the rescue.
   c. Technician: This level allows you to be directly involved in the rescue operation itself. Training includes use of specialized equipment, care of victims during the rescue, and management of the incident and of all personnel at the scene.
5. Most of the training for beginning fire fighters is aimed at the awareness level.

II. Types of Rescues Encountered by Fire Fighters

A. Variety of Special Rescue Situations

1. Machinery and vehicle rescue
2. Confined-space rescue
3. Rope rescue
4. Trench and excavation rescue
5. Structural collapse rescue
6. Water and ice rescue
7. Wilderness rescue
8. Hazardous materials incidents
9. Energized electrical line emergencies

B. To become proficient in handling these situations, you must take a formal course to gain specialized knowledge and skills.
   1. NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents*, covers these knowledge and skills areas.
   2. It is important for awareness level responders to have an understanding of these special types of rescues.
      a. Often, the first emergency unit to arrive at a rescue incident is a fire department engine or truck company.
      b. The initial actions taken by that company may determine the safety of the victims and the safety of the rescuers.
      c. Initial actions will also determine how efficiently the rescue is completed.
      d. It is also important for you to understand and recognize many of the tools needed for rescue situations.

III. Guidelines for Operations

Time: 9 Minutes
Slides: 11–16
Level: Fire Fighter II
Lecture/Discussion

A. When assisting rescue team members, keep in mind the five guidelines that you follow during other firefighting operations:
   1. Be safe.
   2. Follow orders.
   3. Work as a team.
   4. Think.
   5. Follow the Golden Rule of public service.

B. Be safe.
   1. Rescue situations have many hidden hazards.
      a. Oxygen-deficient atmospheres
      b. Weakened floors
      c. Strong water currents
   2. Knowledge and training are required to recognize the signs that indicate a hazardous rescue situation exists.
   3. Once the hazards are recognized, determine what actions are necessary to ensure your own safety, as well as the safety of your team members, the victims of the incident, and bystanders.

C. Follow orders.
   1. When you begin your firefighting career, you will have limited training and experience.
      a. Your officers and the rescue teams with whom you will work on special rescue incidents have received extensive specialized training.
      b. They have been chosen for their duties because they have experience and skills in a particular area of rescue.
      c. It is critical to follow the orders of those who understand exactly what needs to be done to ensure safety and to mitigate the dangers involved in the rescue situation.
      d. Orders should be followed exactly as given.
      e. If you do not understand what is expected of you, ask. Have the orders clarified so you will be able to complete your assigned task safely.
   2. Grasping the paramilitary attitudes will enable you to understand the command and control concept of fire departments.
      a. The fire officer’s knowledge base and experience are greater than yours.
      b. Orders come from superiors. Legitimate orders are only those given by a superior fire officer or other designated person.
      c. Follow rules and procedures. A fire fighter is required to follow rules, procedures, and guidelines regardless of personal opinions.
Chapter 27  •  Assisting Special Rescue Teams

Work as a Team
- Team members must work together to complete the goal.
- Rescue is a different goal but requires the same team effort.
- Your role in the team rescue effort is essential.

Think
- Constantly assess and reassess the scene.
- Observations a fire fighter should bring to a superior officer’s attention include:
  - Changing weather conditions
  - Suspicious packages or other items
  - Broken equipment

Follow the Golden Rule of Public Service
- Remember that the victim needs your emotional support and encouragement.
- It is helpful to tell the victim what actions will be performed during the rescue process.

There are basic steps that all rescuers take to perform special rescues in a safe, effective, and efficient manner.
1. Preparation
2. Response
3. Arrival and size-up
4. Stabilization
5. Access
6. Disentanglement
7. Removal
8. Transport
9. Security of the scene and preparation for the next call
10. Postincident analysis

Preparation
- Know the terms used in the field.
- Know the hazards in your response area.
- Before responding, address:
  - Whether department is equipped to do so
  - Whether department meets NFPA and OSHA standards for TRI calls
  - How department will respond

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C. Response
1. A TRI should have a dispatch protocol.
   a. If your agency has its own technical rescue team, it will usually respond with a rescue unit supported by a medic unit, engine company, and chief.
   b. The makeup of the response is based on the ability of the agency or department to provide resources for the response.
   c. The authority having jurisdiction should make provisions for additional resources and trained personnel to assist in handling incidents when the TRI is beyond the local technical rescue team’s capabilities.
2. Often, it is necessary to notify power and utility companies during a TRI for possible assistance.
   a. Some technical rescues involve electricity, sewer pipes, or factors that may otherwise create the need for additional heavy equipment to which utility companies have ready access.

D. Arrival and Size-Up
1. Immediately on arrival, the first company officer will assume command.
   a. A rapid and accurate size-up is needed to avoid placing rescuers in danger and to determine what additional resources may be needed.
   b. How many victims are involved and what is the extent of injuries? This will help to determine how many medic units and other resources are needed.
2. When responding to a worksite or industrial facility, the officer should make contact with the responsible party.
   a. These individuals can often provide valuable information about the worksite and the emergency situation.
   b. The most important part of any rescue is the identification of any hazards and the decision of recovery versus rescue.
   c. With this information, a decision is made to call for any additional resources, and actions are taken to stabilize the incident.
3. Do not rush into the incident scene until an assessment can be made of the situation.
4. Be alert for invisible dangers, such as electrical hazards and oxygen-deficient or poisonous atmospheres.

E. Stabilization
1. Once the resources are on the way and the scene is safe to enter, it is time to stabilize the incident.
   a. An outer perimeter is established to keep the public and media out of the staging area, and a smaller perimeter is set up around the rescue (warm and hot zones).
   b. A rescue area surrounds the incident site.
2. Three controlled zones should be established:
   a. Hot zone: This area is for entry teams and rescue teams only. This zone immediately surrounds the dangers of the site to protect personnel outside the zone.
   b. Warm zone: This area is for properly trained and equipped personnel. This zone is where personnel and equipment decontamination and hot zone support take place.
   c. Cold zone: This area is for staging vehicles and equipment. This zone contains the command post. The public and the media should be clear of the cold zone at all times.
Transporting victims who have been injured in a hazardous materials incident may pose many challenges. The overriding objective for each rescue, transfer, and removal is to complete the process as safely and efficiently as possible. The zones should be established by identifying and evaluating the hazards that are discovered at the scene.

### Slide 25
**Stabilization**
- Zones should be established by identifying and evaluating hazards at the scene:
  - Observe the geographical area.
  - Note the routes of access and exit.
  - Observe weather and wind conditions.
  - Consider evacuation problems and transport distances.

### Slide 26
**Stabilization**
- Lockout/tagout systems should be used to secure a safe environment.
  - Ensures that electricity has been shut down and electrical switches are "locked" so they cannot be switched on.

### Slide 27
**Stabilization**
- Be alert for electrical hazards.
- Atmospheric monitoring should also be started to identify situations immediately dangerous to life and health (IDLH) of rescuers and victims.

### Slide 28
**Access**
- Communicate with victim at all times during rescue.
- Initiate emergency medical care as soon as access is made to the victim.

### Slide 29
**Disentanglement**
- Free victim as safely as possible.
- A team member should remain with the victim to direct rescuers who are performing the disentanglement.

### Slide 30
**Removal**
- Prepare the victim for removal by packaging the victim.
- Consider rapid extrication.
- Maintain safety throughout removal.

### Slide 31
**Transport**
- Remove victim from hazard area.
- Transport to proper medical facility.
- Type of transport will depend on the severity of the injuries and the distance to the nearest medical facility.
- Address rehabilitation needs of rescue personnel.

3. The zones should be established by identifying and evaluating the hazards that are discovered at the scene.
   - a. Observing the geographical area
   - b. Noting the routes of access and exit
   - c. Observing weather and wind conditions
   - d. Considering evacuation problems and transport distances

4. The most common method of establishing the controlled zones for an emergency incident site is the use of police or fire line tape.

5. Once the controlled zones have been established by the fire department, responders should ensure that the zones of the emergency scene are enforced.

6. Lockout/tagout systems should be used at this time to secure a safe environment.
   - a. Lockout and tagout systems are methods of ensuring that the electricity has been shut down and that electrical switches are "locked" so that they cannot be switched on.
   - b. Be alert for electrical hazards because they are not always easy to recognize.
   - c. Perform a careful overview of the scene and have continuous monitoring.

7. During stabilization, atmospheric monitoring should also be started to identify any immediately dangerous to life and health (IDLH) environments for rescuers and victims.

8. The next steps involve looking at the type of incident and planning on how to safely rescue victims.

### F. Access
1. Once the scene is stabilized, rescuers consider how to gain access to the victim.
2. Communicate with the victims at all times during the rescue to make sure they are not injured further by the rescue operation.
3. Technical rescue paramedics are vital resources.
   - a. Their main functions are to treat victims and to stand by in case a rescue team member needs medical assistance.
   - b. As soon as a rescue area or scene is secured and stabilized, the EMS personnel must be allowed access to the victims for medical assessment and stabilization.
   - c. Throughout the course of the rescue operation, which can sometimes span many hours, EMS personnel must continually monitor and ensure the stability of the victim and, therefore, must be allowed access to the victim.

### G. Disentanglement
1. Once precautions have been taken and the reason for entrapment has been identified, the victim needs to be freed as safely as possible.
2. A team member should remain with the victim to direct the rescuers who are performing the disentanglement.
3. In a vehicle collision, the most important point to remember is that the vehicle is to be removed from around the victim rather than trying to remove the victim through the wreckage.

### H. Removal
1. Once the victim has been disentangled, efforts will be redirected to removing the victim.
2. Preparing the victim for removal involves maintaining continued control of all life-threatening problems, dressing all wounds, and immobilizing all suspected fractures and spinal injuries.
3. A victim may have to be removed quickly (rapid extrication) because the victim’s general condition is deteriorating, and time will not permit meticulous splicing and dressing procedures.
4. Packaging is preparing the victim for movement as a unit and is often accomplished by means of a long spine board or similar device.
5. The overriding objective for each rescue, transfer, and removal is to complete the process as safely and efficiently as possible.
   - a. It is important that the rescuer use good body mechanics and victim-packaging, removal, and transportation skills.

### I. Transport
1. Once the victim has been removed from the hazard area, transport to an appropriate medical facility will be accomplished by EMS personnel.
   - a. The type of transport will vary, depending on the severity of the injuries and the distance to the medical facility.
   - b. In rough-terrain rescues, four-wheel drive, high-clearance vehicles may be required to transport victims on stretchers to an awaiting ambulance.
2. Transporting victims who have been injured in a hazardous materials incident may pose many problems.
   - a. Decontamination must occur before transport.
b. Placing a poorly decontaminated victim inside an ambulance or helicopter and then closing the doors puts both the victim and the rescue personnel in danger. Any toxic fumes given off by the victim or by the victim’s clothing can contaminate the inside of the transport vehicle.

c. Receiving hospitals should be notified of the impending arrival of victims who have been involved in a hazardous materials exposure incident.

d. Address rehabilitation needs of rescue personnel.

e. Rotate personnel to reduce the chance for injury or sickness.

f. Important during extreme temperatures and wet conditions

V. Postincident Duties

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<td>Slide: 32</td>
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<td>Level: Fire Fighter II</td>
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<tr>
<td>Lecture/Discussion</td>
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A. Security of the Scene and Preparation for the Next Call

1. Once the rescue is complete, the scene must be stabilized by the rescue crew to ensure that no one else becomes injured. In a trench incident, this includes filling the trench with dirt and roping off the surrounding area.
   a. In a hazardous materials incident, the clean-up of equipment and personnel takes place after the hazardous materials incident has been completely controlled and all victims have been treated and transported.
   b. In a vehicle rescue incident, the vehicle is removed.
   c. In an industrial setting, the supervisor of the facility is responsible for securing the scene.

2. Once you have secured the scene and packed up your equipment, it is important to return to the station and fully inventory, clean, service, and maintain all of the equipment to prepare it for the next call.
   a. Some items will inherently need repair, but most will need simple maintenance before being placed back on the truck and considered in service.
   b. Back at the station, as you prepare for the next call, complete paperwork and document the rescue incident.

3. Record keeping serves several important purposes.
   a. Adequate reporting and the keeping of accurate records ensure the continuity of quality care, guarantees proper transfer of responsibility, and fulfills the administrative needs of the fire department for local, state, and federal reporting requirements.
   b. In addition, the reports can be used to evaluate response times, equipment use, and other areas of administrative interest.

B. Postincident Analysis

1. As with any type of call, the best way to prepare for the next rescue call is to review the last one and identify any strengths and weaknesses.
   a. What could have been done better?
   b. What equipment would have made the rescue safer or easier?
   c. If a death or serious injury occurred during the call, a critical incident stress management session may occur to assist fire fighters.

2. Reviewing a TRI with everyone involved will allow everyone to learn from the call and make the next call even more successful.
VI. General Rescue Scene Procedures

Time: 22.5 Minutes
Slides: 33–47
Level: Fire Fighter II
Lecture/Discussion/Demonstration

A. At any scene you respond to—whether it is a fire, EMS, or technical rescue call—the safety of you, your company, and the public is paramount.

1. At a TRI there are many things that need to be considered. Although the temptation may be to approach the victim or the incident area, it is critically important to slow down and properly evaluate the situation.

2. In all rescue incidents, fire fighters should consider the potential general hazards and risks of utilities, hazardous materials, confined spaces, and environmental conditions, as well as hazards that are immediately dangerous to life and health.

B. Approaching the Scene

1. As you approach the scene of a TRI you will not always know what kind of scene you are going into.

   a. From the initial dispatch of the rescue call, the fire fighter should be compiling facts and factors about the call.

   b. Size-up begins with the information gained from the person reporting the incident and then from the bystanders at the scene on arrival.

   c. The information received when an emergency call is received is important to the success of the rescue operation.

2. The information should include the following:

   a. Location of the incident

   b. Nature of the incident (kinds and number of vehicles)

   c. Condition and position of victims

   d. Condition and position of vehicles, building, structure, terrain, etc.

   e. Number of people trapped or injured and types of injuries

   f. Any specific or special hazard information

   g. Name of person calling and a number where the person can be reached

3. Once on the scene, life-threatening hazards can be identified and corrective measures can be taken

4. A size-up should include the initial and continuous evaluation of the following:

   a. Scope and magnitude of the incident

   b. Risk-benefit analysis

   c. Number of known and potential victims

   d. Hazards

   e. Access to the scene

   f. Environmental factors

   g. Available and necessary resources

   h. Establishment of control perimeter

C. Dealing with Utility Hazards

1. The incident commander (IC) should ensure that the proper procedures have been taken to shut off the utilities in the area where the rescuers will be working.

2. Utility hazards require the assistance of trained personnel.
3. For electrical hazards
   a. Park at least one truck span away.
   b. Watch for falling utility poles; a damaged pole may bring other poles down with it.
   c. Do not touch any wires, power lines, or other electrical sources until they have been deactivated by a power company representative.
   d. It is not just the wires that are hazardous; any metal that they touch is also energized.

4. Both natural gas and liquefied petroleum gas are nontoxic but are classified as asphyxiants.
   a. They displace breathing air.
   b. Both gases are explosive.
   c. If a call involves leaking gas, call the gas company immediately.
   d. If a victim has been overcome by leaking gas:
      i. Wear positive-pressure self-contained breathing apparatus (SCBA).
      ii. Remove the victim from the hazardous atmosphere before beginning treatment.

D. Providing Scene Security
   1. Often co-workers, family members, and sometimes other rescuers will enter an unsafe scene and become additional victims.
   2. The IC should coordinate with law enforcement to help secure the scene and control access.
   3. A strict accountability system should be used by the fire department to control access to the rescue scene.
   4. The steps for establishing a barrier will be practiced in Skill Drill 27-1.

E. Using Protective Equipment
   1. Firefighting gear is designed to protect the body from the high temperatures of fire.
      a. It does, however, restrict movement.
      b. Firefighting gear does not work well in a TRI. Most specialized teams also carry items, such as harnesses; smaller, lighter helmets; and jumpsuits, which are easier to move in.
   2. For personnel operating in a water rescue hazard zone, the minimum personal protective equipment (PPE) includes a Coast Guard–approved personal flotation device (PFD), thermal protection, a helmet appropriate for water rescue, a cutting device, a whistle that works in water, and contamination protection.
   3. Equipment items that are easily carried by fire fighters are:
      a. Binoculars
      b. Chalk or spray paint for marking searched areas
      c. Compass for wilderness rescues
      d. First aid kits
      e. Whistle
      f. Hand-held global positioning system
      g. Cyalume-type light sticks
   4. The IC and the technical rescue team will help to determine what protective equipment you will need to wear while assisting.

F. Using the Incident Command System (ICS)
   1. The first arriving officer immediately assumes command and starts using the ICS.

G. Ensuring Accountability
   1. Accountability should be practiced at all emergencies.
   2. The accountability system is important to ensure safety.
   3. It tracks the personnel on the scene, including:
      a. Identities
      b. Assignment
      c. Location
   4. This system ensures that only rescuers who have been given specific assignments are operating within the area where the rescue is taking place.
   5. By using an accountability system and working within ICS, an IC can track the resources at the scene, make appropriate assignments, and ensure that every person at the scene operates safely.
H. Making Victim Contact

1. At any rescue scene, try to communicate with the victim if at all possible.
2. Sometimes it is just not possible, but try to communicate via a radio, cell phone, or yelling.
3. Reassure the victim that everything is being done to ensure the victim’s safety.
4. To help keep a victim calm do the following:
   a. Make and keep eye contact with the victim.
   b. Tell the truth. Lying destroys trust and confidence. You may not always tell the victim everything, but if the victim asks a specific question, answer truthfully.
   c. Communicate at a level that the victim can understand.
   d. Be aware of your own body language.
   e. Always speak slowly, clearly, and distinctly.
   f. Use the victim’s name.
   g. If a victim is hard of hearing, speak clearly and directly at the person, so that the person can read your lips.
   h. Allow time for the victim to answer or respond to your questions.
   i. Try to make the victim comfortable and relaxed whenever possible.
5. Many of the victims at TRIs require medical care, but this care should only be given if it can be done so safely.
   a. Do not become a victim during a rescue attempt.

VII. Assisting Rescue Crews

Time: 28.5 Minutes
Slides: 48–66
Level: Fire Fighter II
Lecture/Discussion/Demonstration

A. Overview

1. If you have the role of assisting a technical rescue team, training with the team is probably the most important thing you can do.
2. The steps for identifying and retrieving rescue tools will be practiced in Skill Drill 27-2.
3. Three factors about safely approaching the scene that apply to them all:
   a. Approach the scene cautiously.
   b. Position apparatus properly.
   c. Assist specialized team members as needed.

B. Vehicles and Machinery

1. By far, the most common type that we encounter as fire fighters is motor vehicle crashes.
2. Rescues involving mass transit often involve many victims. Most other types of rescues involve single victims.
3. Safe approach
   a. Vehicle and machinery rescues present a wide variety of problems to rescuers and victims.
   b. There are hazards such as:
      i. Flammable liquids
      ii. Electrical hazards
      iii. Unstable machines or vehicles
   c. Electricity is an invisible hazard. Any machine that is encountered should be considered electrically charged until proven otherwise.
   d. The operator of the machine or a maintenance person who is familiar with the machine can be a valuable resource.
   e. For vehicle calls it is extremely important to make sure that traffic has been controlled.
   f. An approved vest must be worn to increase visibility and prevent injuries
   g. Stabilization of the rescue scene includes making sure that the machine cannot move.
   h. Access to some victims will not be easy.
4. How you can assist
   a. At a vehicle or machinery rescue call, you may be called on to assist in the extrication and treatment of the victim.
   b. Protection of the victim will allow the technical rescue team to operate hydraulic tools and cut the vehicle or machine apart without further hurting the victim.
   c. Many of the hydraulic tools are heavy and may require you to help support them while technicians operate them.
   d. You may also be called on to do the following:
      i. Assist with controlling site security and the perimeter of the rescue incident.
      ii. Obtain information from witnesses.
      iii. Retrieve more rescue tools and equipment from the fire apparatus or rescue trucks.
      iv. Console a family member of a victim.
      v. Keep bystanders out of the way.
      vi. Assist in moving items that are in the way of the rescue team.
      vii. Service equipment.
      viii. Set up power tools.
      ix. Stand by with a hose line.
      x. Extinguish a fire.

C. Tools Used
   1. Tools and items that will be required for a vehicle or machinery rescue include the following:
      a. Personal protective equipment
      b. Hydraulic tools (spreaders, cutters, rams)
      c. Halligan tool
      d. Cutting torch
      e. Air chisels
      f. Cribbing
      g. Saber saw
      h. Windshield cutter
      i. Spring-loaded punch
      j. Chains
      k. Air bags (high and low pressure)
      l. SCBA air cylinders
      m. Basic hand tools
      n. Come along
      o. Portable generator
      p. Seat belt cutters
      q. Hand lights and other scene lighting
      r. Hose lines
      s. Blanket

D. Confined Space
   1. A confined space is an enclosed area that is not designed for people to occupy.
      a. Confined spaces have limited openings for entrance and exit and may have limited ventilation to provide air circulation and exchange.
      b. Confined spaces can occur in farm, commercial, and industrial settings.
      c. Confined spaces present a special hazard because they may be oxygen deficient, contain poisonous gases, or have combustible atmospheres.
      d. Entering a confined space without testing the atmosphere for safety and without the proper breathing apparatus can result in death.
      e. All confined spaces should be considered to contain, or have the potential to contain, a hazardous atmosphere until proven otherwise.
   2. Safe approach
      a. As you approach a rescue scene, look for a bystander who might have witnessed the emergency.
b. Information gathered before the technical rescue team’s arrival will save valuable time during the actual rescue.

c. Do not believe a person in a pit has simply suffered a heart attack; always assume that there is an IDLH atmosphere at any confined-space call.

d. An IDLH atmosphere can immediately incapacitate anyone that enters the confined space without breathing protection. There can be toxic gases present, or there may not be enough oxygen to support life.

e. When a rescue involves a confined space, remember that it will take some time for qualified rescuers to arrive on the scene and prepare for a safe entry into the confined space.

f. The victim of the original incident may have died before your arrival.

g. Do not put your life in danger for a body recovery.

3. How you can assist

a. Your main role in confined-space rescues is to secure the scene, preventing other people from entering the confined space until additional rescue resources arrive.

b. As additional highly trained personnel arrive, your company may provide help by giving the rescuers a situation report.

c. The first responding company must share whatever information is discovered at the rescue scene with the arriving crew.

d. Anything that may be important to the response should be noted by the first arriving unit.

e. Observed conditions should be compared with reported conditions, and a determination should be made as to the relative change in the period.

f. A size-up should be quickly completed immediately on arrival, and this information should be relayed to the special rescue team members on their arrival at the scene.

g. Other items of importance that should be included in a situation report are:

i. Description of any rescue attempts that have been made

ii. Exposures

iii. Hazards

iv. Extinguishment of fires

v. Facts and probabilities of the scene

vi. Situation and resources of the fire company

vii. Identity of any hazardous materials present

viii. Progress evaluation

h. Many engine or ladder companies have atmospheric or gas detection devices.

i. If you do encounter an oxygen-deficient atmosphere:

i. Setting up a ventilation fan can help to remove toxic gases and improve airflow to the victim.

ii. Sometimes you can help a victim without entering the confined space by passing down an SCBA, oxygen, first aid supplies, or even a ladder to climb out.

4. Tools used

a. One of the key components of any confined-space rescue is a supplied air respirator system.

i. These are similar to SCBA, except that instead of carrying the air supply in a cylinder on your back, you are connected by a hose line to an air supply located outside the confined space.

ii. This provides the rescuer with a continuous supply of air that is not limited by the capacity of a back-mounted air cylinder.

b. There are a number of other tools and pieces of equipment that can be used during a confined-space rescue operation:

i. Air lines

ii. Air carts

iii. Extra SCBA bottles

iv. Tripod and winch for raising and lowering rescuers and victims

v. Pry bar or utility cover remover

vi. Rescue rope

vii. Personnel harnesses

viii. Gas monitors

ix. Ventilation fans

x. Explosion-proof lights

xi. Radios
E. Rope Rescue

1. Rope rescue skills can be used in a variety of different TRIs.
   a. Rope rescue skills are the most versatile and widely used technical rescue skills.
   b. Rope rescue incidents are divided into low-angle and high-angle operations.

2. Low-angle operations
   a. Situations where the slope of the ground over which the firefighters are working is less than 45°
   b. Firefighters are dependent on the ground for their primary support.
   c. The rope system becomes the secondary means of support.
   d. Low-angle operations are used when the scene only requires ropes to be used as assistance to pull or haul up a victim or rescuer.
   e. This is usually necessary when adequate footing is not present in areas such as a dirt or rock embankment.
   f. Ropes can also be used to assist in raising or lowering a Stokes basket.

3. High-angle operations
   a. Situations where the slope of the ground is greater than 45°
   b. Rescuers or victims are dependent on life safety rope and not a fixed surface of support, such as the ground.
   c. High-angle rescue techniques are used to raise or lower a person when other means of raising or lowering are not readily available.
   d. There is a lot more to learn before you are ready to perform high-angle rescues.

4. Safe approach
   a. If you respond to an incident that may require a rope rescue operation, consider your safety and the safety of those around you.
   b. Protect your safety by remaining away from the area under the victim and away from any loose materials that may fall.
   c. Work to control the scene so that the bystanders and friends of the victim move to an area where they will not be injured.
   d. You can do a lot to stabilize the scene and prevent further injuries by remaining calm and putting your skills to work.

5. How you can assist
   a. You may be assigned to a technical rescue team member to tie knots and get anchors ready.
   b. Do not be offended if the team members go back and check your work.
   c. Keep everyone clear of areas where a falling object could cause injuries.
   d. Keep in mind the importance of following the IMS.
   e. Work to complete your assigned tasks.

6. Tools used
   a. Some of the tools and equipment that you will need to recognize and use are as follows:
      i. PPE (helmet, rescue gloves)
      ii. Personnel harnesses
      iii. Stokes basket
      iv. Harness for Stokes basket
      v. Rescue ropes
      vi. Carabiners
      vii. Webbing and Prussic cord
      viii. Miscellaneous hardware (racks, pulleys)
1. Trench and excavation rescues occur when the earth has been removed for a utility line or for other construction and the sides of the excavation collapse, trapping a worker.
   a. Whenever a collapse has occurred, you need to understand that the collapsed product is unstable and prone to further collapse.
   b. Earth and sand are very heavy, and a person partly entrapped cannot be pulled out.
   c. They must be carefully dug out.
   d. This can be done only after shoring has stabilized the sides of the excavation.
   e. Vibration or additional weight on top of displaced earth will increase the probability of a secondary collapse.
      i. A secondary collapse is one that occurs after the initial collapse.
      ii. It can be caused by equipment vibration, personnel standing at the edge of the trench, or water eroding away the soil.

2. Safe approach
   a. Safety is of paramount importance when approaching a trench or excavation collapse.
   b. Walking close to the edge of a collapse can trigger a secondary collapse.
   c. Stay away from the edge of the collapse and keep all workers and bystanders away.
   d. Vibration from equipment and machinery can cause secondary collapses, so shut off all heavy equipment.
   e. Vibrations caused by nearby traffic can also cause collapse, so it may be necessary to have traffic stopped or diverted.
   f. Soil that has been removed from the excavation and placed in a pile is called the spoil pile.
      i. This material is very unstable and may collapse if placed too close to the excavation.
   g. Make verbal contact with the trapped person if possible.
      i. Provide reassurance by letting the trapped person know that a trained rescue team is on the way.
   h. You can also size-up the scene by looking for evidence that would indicate where the trapped workers might be located. Also, determine where the victims were last seen.

3. How you can assist
   a. As the rescue team starts to work, your company will be assigned certain tasks.
   b. These may range from unloading lumber for shoring to assisting with cutting timbers a safe distance away from the entrapment.
   c. This type of rescue can take a long time. If it is hot or cold, a rehabilitation sector may need to be set up.
   d. Early implementation of the ICS will help make this type of rescue go smoothly and will provide defined requests for your assistance.
   e. Just as in a confined space, trenches may have an IDLH atmosphere inside due to poisonous gases, such as methane or other sewer gases.
      i. Setting up ventilation fans can often make a difference in victim and rescuer survivability.
   f. It may also be necessary to pump water out of a trench.
      i. By removing this water, the situation can be stabilized.

4. Tools used
   a. Tools and equipment used in trench and excavation rescue include the following:
      i. PPE: helmet, gloves, personal protective clothing, harness, flashlight, work boots, knee pads, elbow pads, eye protection, SCBA, and supplied air breathing apparatus (SABA)
      ii. Hydraulic, pneumatic, and wood shores
      iii. Lumber and plywood for shoring
      iv. Cribbing
      v. Power cutting tools and saws
      vi. Carpentry hand tools
      vii. Shovels
      viii. Buckets for moving soil
      ix. Rescue rope, harnesses, webbing, and associated hardware
      x. Utility rope
      xi. Ventilation fans
      xii. Pumps
      xiii. Lighting
      xiv. Ladders
G. Structural Collapse

1. Structural collapse is the sudden and unplanned fall of part or all of a building.
   a. Collapses occur because of fires, removal of supports during construction or renovation, vehicle crashes, explosions, rain, wind, snowstorms, earthquakes, and tornadoes.
   b. Consider the type of building construction when determining the potential for collapse.
   c. When any part of a building is compromised, the dynamics of the building change.
   d. Fire fighters should always be alert for signs of a possible building collapse.
   e. A partial building collapse may be very hazardous to rescuers because of the potential for secondary or further collapse.

2. Safe approach
   a. Because of the variety of factors that can cause building collapses, you must approach the scene very carefully.
   b. As you approach a building collapse, consider the need to shut off utilities.
      i. Entering a structure with escaping natural gas or propane is extremely hazardous.
      ii. Electricity from damaged wiring can also present a deadly hazard.
   c. A prime safety consideration is the stability of the building.
      i. Even a well-trained engineer cannot always determine the stability of a building by looking only at its exterior.
      ii. Therefore, you must operate as though the building may experience a secondary collapse at any time.
   d. The IC must make the decision regarding whether the building is safe to enter.

3. How you can assist
   a. Rescue operations at a structure collapse vary, depending on the size of the building and the amount of damage to the building.
   b. In cases of large building collapses, the rescue operation will be sizable.
      i. These types of rescue situations take a lot of time and require a lot of personnel.
      ii. Personnel without special training will usually be used in support operations.
      iii. For a rescue effort of this type to work, there must be teamwork and a well-organized and well-implemented ICS.

4. Tools used
   a. Fire fighters should know the tools and equipment designed for structural collapse emergency rescue incidents:
      i. PPE: helmet, gloves, work boots, harness, elbow pads, knee pads, eye protection, SCBA, SABA, and dust masks
      ii. Shoring equipment
      iii. Lumber for shoring and cribbing
      iv. Power tools
      v. Hand tools
      vi. Lighting
      vii. Rescue ropes, harnesses, webbing, and associated hardware
      viii. Utility rope
      ix. Buckets
      x. Shovels

H. Water and Ice Rescue

1. Almost all fire departments have the potential for being called to perform a water rescue.
   a. Water is present in small streams and large rivers. It fills lakes, oceans, reservoirs, and swimming pools.
   b. A static source, such as a lake, may have no current.
   c. A white water stream or flooded river may have a very swift current.
   d. In North America, the most common swift water rescue scenario is a car that has tried to drive through a pool of water created by a flooded stream.

2. Safe approach
   a. When responding to water rescue incidents, the safety of you and your teammates is your primary concern.
b. Your turnout gear is not designed for water rescue activities.
   i. Fire fighters who fall into the water while wearing turnout gear quickly find that their
      movements are severely limited by the bulky clothing.
   ii. When working at a water rescue scene, you should use personal protective gear
       designed for water rescue, not structural firefighting.

c. Anytime you are within 10 ft (3 m) of the water, you should be wearing a Coast Guard–
   approved PFD.

d. If you are part of the first arriving engine or truck company, and the endangered people are in
   a vehicle or holding on to a tree or other solid object, try to communicate with them.
   i. Let them know that additional help is on the way.
   ii. Do not exceed your level of training.

e. Ice rescues are common in colder climates.
   i. Many departments in colder regions have developed specialized equipment to assist in
      ice rescues. Receive training in these specialized procedures.

3. How you can assist
a. Water and ice rescues are dangerous to rescuers. PFDs should be used by everyone
   operating at the scene.

b. You may be called on to assist by keeping victims in sight, retrieving equipment, assisting
   with rescue ropes, and changing rescuers air supplies.

c. Be alert for changing weather conditions

4. Tools used
a. The fire fighter should become familiar with the tools for use in water rescue operations:
   i. PFD
   ii. Self-contained underwater breathing apparatus equipment
   iii. Helmet
   iv. Waterproof whistle
   v. Throw bag with rope
   vi. Boat
   vii. Rescue rope, webbing, and associated hardware
   viii. Lighting and flashlights
   ix. Gloves
   x. Goggles or other eye protection
   xi. Suitable footwear for the environmental and rescue conditions

I. Wilderness SAR
1. Wilderness SAR is an activity that is conducted by a limited number of fire departments.
   a. Search is defined as looking for a lost or overdue person.
   b. Rescue, in the SAR context, is defined as removing a victim from a hostile environment.

2. Safe approach
   a. As a beginning fire fighter, you will respond to a possible SAR mission as part of your fire
      company.
   b. In cases of a lost person, some small fire departments will request all available personnel to
      respond with a search.
   c. It is important to respond as part of your department and to work together as a team.
   d. The IC for such a mission should be a person who is well trained in directing SAR missions.
   e. In some communities, SAR is the responsibility of law enforcement personnel.
   f. In others, it becomes the responsibility of volunteer SAR groups.
   g. Wilderness can include varied environments, such as forests, mountains, deserts, natural
      parks, animal refuges, and rain forests.
      i. Depending on the terrain and environmental factors, the wilderness can be as little as a
         few minutes into the backcountry or a few feet off the roadway.
      ii. Incidents with a short access time could require an extended evacuation and thus
          qualify as a wilderness incident.
      iii. When you participate in SAR missions, prepare for the weather conditions by bringing
          suitable clothing.
      iv. Make sure that you do not exceed your physical limitations, and do not get in situations
          that are beyond your ability to handle yourself in the wilderness.
      v. Call for a special wilderness rescue team, depending on the needs of the situation and
         your local protocols.
3. How you can assist
   a. The fire service teaches working in a buddy system; this is another case in which you never go out alone.
   b. By working in teams of at least two and having a radio, teams can be methodically deployed and assigned to a search.
   c. The more knowledge you have about the search area, the more vital your role is during the search.
   d. Knowing your response area and the places where a child or lost person might hide is always beneficial to the search.
   e. A well-coordinated team can be an effective SAR force.
   f. Do not enter the search area before the search team arrives. If the team will be using dogs, your scent will distract them.

4. Tools used
   a. Many of the same tools, equipment, and personal protective clothing that you would use for other specialized rescue situations will be used in SAR emergencies:
      i. Personal clothing appropriate for the environment
      ii. Water
      iii. Food
      iv. Lighting and flashlights
      v. Communications equipment, including radios
      vi. Medical equipment
      vii. Maps, compass, and global positioning system
      viii. Shelter
      ix. Rescue ropes, harnesses, webbing, and associated hardware
      x. Extrication equipment, such as Stokes basket and harness
      xi. Flare gun and flares, whistles, or other signaling devices

J. Hazardous Materials Incidents
1. Hazardous materials are defined as any materials or substances that pose a significant risk to the health and safety of persons or to the environment if not properly handled during manufacture, processing, packaging, transportation, storage, use, or disposal.
   a. Although hazardous materials incidents often involve a petroleum product, there are many other chemicals in our society that have toxic effects when not handled properly.
   b. We tend to think of hazardous materials incidents as occurring during transportation or at a large industrial setting, but it is important to consider that many retail businesses contain significant quantities of hazardous materials.
   c. Most fire departments are trained to recognize these incidents, contain the hazards, and evacuate people if necessary.

2. Safe approach
   a. Hazardous materials incidents do not always get dispatched as hazardous materials incidents.
   b. You must be able to recognize the signs that indicate that there may be hazardous materials present as you approach the scene.
   c. You may see an escaping chemical or smell a suspicious odor.
   d. Warning placards are required for most hazardous materials either for storage or in transit.
   e. Once you have recognized the presence of a hazardous material, you must protect yourself by staying out of the area exposed to the hazardous material.
   f. If you have happened on a hazardous materials incident, it is important to have the hazardous materials team dispatched as soon as possible.
   g. In addition to standard action and precautions, call for a special hazardous materials rescue team immediately on arrival at such an incident, implement site control and scene management, and assist specialized personnel after their arrival according to your training level.

3. How you can assist
   a. To assist at a hazardous materials incident you must have formal training.
   b. Training at the awareness level will provide you with the knowledge and skills you need to be able to recognize the presence of a hazardous material, protect yourself, call for appropriate assistance, and evacuate or secure the affected area.
   c. As part of your training, you will learn how to assist other hazardous materials responders.
Chapter 27  •  Assisting Special Rescue Teams

The four major objectives of training at the operational level are to:
i. Analyze the magnitude of the hazardous materials incident.
ii. Plan an initial response.
iii. Implement the planned response.
iv. Evaluate the progress of the actions taken to mitigate the incident.

4. Tools used
   a. Tools used in a hazardous materials incident include the following:
      i. PPE appropriate to the level of the hazard
      ii. Two-way radios
      iii. Lighting
      iv. Gas monitors
      v. Sensing and monitoring tools to identify the materials involved
      vi. Extensive research material
      vii. Decontamination equipment
      viii. Wide variety of hand tools (hammers, screwdrivers, axe, wrenches, pliers)
      ix. Devices for sealing breached containers
      x. Leak-control devices
      xi. Binoculars
      xii. Fire line tape
      xiii. Control agents

IX. Summary

Time: 9 Minutes
Slides: 67–72
Level: Fire Fighter II
Lecture/Discussion

A. A TRI is a complex rescue incident.
B. Training in technical rescue areas is conducted at three levels: awareness, operations, and technician.
C. Several types of TRIs are encountered by fire fighters.
D. Fire fighters should take formal courses to gain specialized knowledge and skills.
E. Five guidelines must be kept in mind when assisting rescue teams.
F. Fire fighters should know the basic steps of special rescue operations.
G. Facts and factors should be collected starting with the initial dispatch.
H. Size-ups should include initial and continuous evaluation of several main issues.
I. Special precautions should be taken after sizing up the scene.
J. Orders of the company officer should always be followed at any type of TRI.
K. Vehicle and machinery rescues occur in many settings.
L. Adequate air supply should be ensured when working in a confined space.
M. Low- and high-angle rope rescues require safe equipment and adequate training.
N. Trench and excavation rescues are hazardous.
O. A damaged building is prone to structural collapse.
P. Water rescue training is necessary.
Q. Wilderness rescue is necessary even when initial access to a lost or stranded individual occurs quickly.
R. Hazardous materials incidents are not always dispatched as such.
S. Never attempt to move or relocate an elevator.
POST-LECTURE

I. Wrap-Up Activities

Time: 40 Minutes
Level: Fire Fighter I and II
Small Group Activity/Individual Activity/Discussion

Fire Fighter in Action and/or Fire Fighter II in Action

This activity is designed to assist the student in gaining a further understanding of assisting special rescue teams. The activity incorporates both critical thinking and the application of fire fighter knowledge.

Purpose
This activity allows students an opportunity to analyze a firefighting scenario and develop responses to critical thinking questions.

Instructor Directions
1. Direct students to read the “Fire Fighter in Action” and/or “Fire Fighter II in Action” scenario located in the Wrap-Up section at the end of Chapter 27.
2. Direct students to read and individually answer the quiz questions at the end of the scenario. Allow approximately 10 minutes for this part of the activity. Facilitate a class review and dialogue of the answers, allowing students to correct responses as needed. Use the answers noted below to assist in building this review. Allow approximately 10 minutes for this part of the activity.
3. You may also assign these as individual activities and ask students to turn in their comments on a separate piece of paper.

Answers to Multiple Choice Questions
1. A
2. C
3. B
4. D
5. A
6. C
7. C

Technology Resources

This activity requires students to have access to the Internet. This may be accomplished through personal access, employer access, or a local educational institution. Some community colleges, universities, or adult education centers may have classrooms with Internet capability that will allow for this activity to be completed in class. Check out local access points and encourage students to complete this activity as part of their ongoing reinforcement of firefighting knowledge and skills.

Purpose
To provide students an opportunity to reinforce chapter material through use of online Internet activities.

Instructor Directions
1. Use the Internet and go to www.FireFighter.jbpub.com. Follow the directions on the Web site to access the exercises for Chapter 27.
2. Review the chapter activities and take note of desired or correct student responses.
3. As time allows, conduct an in-class review of the Internet activities and provide feedback to students as needed.
4. Be sure to check the Web site before assigning these activities because specific chapter-related activities may change from time to time.
II. Lesson Review

Time: 15 Minutes  
Level: Fire Fighter II

Discussion

Note: Facilitate the review of this lesson’s major topics using the review questions as direct questions or overhead transparencies. Answers are found throughout this lesson plan.

Fire Fighter II

A. What are the different levels of training required for TRIs?  
B. What are some of the rescue situations encountered by fire fighters?  
C. What are the guidelines for rescue operations?  
D. What are the steps for special rescue?  
E. When should control zones be set up?  
F. What is a postincident analysis?  
G. What do you need to know before approaching a scene?  
H. What issues should a size-up look at?  
I. How can we provide scene security?  
J. How can we assist in confined-space incidents?  
K. How can we assist in rope rescue incidents?

III. Assignments

Time: 5 Minutes  
Level: Fire Fighter I and II

Lecture

A. Advise students to review materials for a quiz (determine date/time)  
B. Direct students to read the next chapter in Fundamentals of Fire Fighter Skills as listed in your syllabus (or reading assignment sheet) to prepare for the next class session.