Firefighter Survival and Rescue

Maryland Fire and Rescue Institute
University of Maryland
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The Maryland Fire and Rescue Institute of the University of Maryland is the State’s comprehensive training and education system for all emergency services.

The Institute plans, researches, develops, and delivers quality programs to enhance the ability of emergency service providers to protect life, the environment, and property.
Lesson 1-1: Firefighter Injuries and Fatalities

Student Performance Objective

- Given information from discussion, handouts, and reading materials, describe the main causes of firefighter injuries and fatalities. State the considerations that should be taken by an incident commander when a Rapid Intervention Incident occurs.

Overview

- Firefighter Injuries and Fatalities
- Proactive Leadership
- Rapid Intervention Considerations
Firefighter Injuries and Fatalities

Statistics - In 2010 in the U.S.
- 71,875 firefighters were injured
  - Operating at the fireground 45.4%
  - On scene at non-fire calls 18.6%
  - Responding to/returning from calls 6.1%
  - Training 10.1%
  - Other on-duty injuries 19.7%

Statistics are from the National Fire Protection Association

Firefighter Injuries and Fatalities

2010 Statistics (continued)
- The leading causes of injuries were
  - Overexertion and strain
  - “Fall, slip, jump”

Firefighter Injuries and Fatalities

2010 Statistics (continued)
- 72 on-duty firefighter deaths occurred
  - Operating at the fireground 29%
  - At non-fire emergencies 7%
  - Responding to/returning from calls 25%
  - Training, 15%
  - Other on-duty 24%
Firefighter Injuries and Fatalities

- **2010 Statistics (continued)**
  - Deaths were caused by
    - Stress or overexertion 54%
    - “Struck by or contact with” 26%
    - “Caught or trapped” 11%
    - Other 9%

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Firefighter Injuries and Fatalities

- Prevention of accidents, injuries and deaths requires
  - Effective training
  - Company discipline and accountability
  - Following SOPs
  - Using personal protective clothing and equipment
  - Maintaining high levels of physical fitness

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Firefighter Injuries and Fatalities

- The National Fallen Firefighters Foundation
  - Was created by Congress in 1992
  - Strives to
    - Honor America’s fallen firefighters
    - Prevent line of duty deaths
    - Make fire departments aware of the 16 Firefighter Life Safety Initiatives
Proactive Leadership

- Better training is needed for leaders to recognize
  - Potential collapse
  - Current fire conditions
  - Changes in smoke conditions
- Better leader training will help avoid
  - Confusion
  - Anxiety and panic
  - Denial

Proactive Leadership

- Good leaders should
  - Be confident
  - Make every action deliberate
  - Communicate clearly with teams and other officers
  - Verify communication sent or received
  - Maintain complete accountability
  - Be assertive and physically lead the team when necessary

Rapid Intervention Considerations

- Rapid Intervention Considerations
  - The urgency to save
  - Collapse potential
  - Deteriorating fire conditions
  - Limited time for rescue
  - Emotional issues when leaving the firefighter victim
Student Performance Objective

- Given information from discussion, handouts, and reading materials, describe the main causes of firefighter injuries and fatalities. State the considerations that should be taken by an incident commander when a Rapid Intervention Incident occurs.

Review

- Firefighter Injuries and Fatalities
- Proactive Leadership
- Rapid Intervention Considerations
Lesson 1-2: Mayday

Student Performance Objective

- Given information from discussion, handouts, and reading materials, describe the importance of knowing when conditions require calling for a mayday. Identify situations that may lead to a mayday and when a mayday should be called.

Overview

- The Rules of Calling a Mayday
- Case Study
The Rules of Calling a Mayday

Rule 1: Know when and how to call a mayday
- Urgent or emergency fire transmission (not mayday) should be used when
  - There is a minor SCBA leak
  - There is a minor entanglement
  - Firefighters need to exit the building due to low air alarms
  - A PASS device is activated
  - A firefighter is unaccounted for

Mayday radio transmission should be made when
- There is a lost firefighter with a low air alarm activation
- There is a difficult entanglement
- Complete loss of SCBA air occurs
- There is a lost or disoriented firefighter
- There is a physically trapped firefighter

Factors that help a firefighter to know when to make the mayday call include
- Fire behavior training
- Building construction training
- Knowing your PPE
- Experience
- Assessment of the fire conditions
The Rules of Calling a Mayday

Factors that can impede the mayday call for help include:

- Poor fireground accountability
- Not using a PASS device
- Misguided training
- Lack of experience
- Denial
- Self pride
- Poor radio usage

Rule 2: Never give up

- Try every means of escape
- Never stop or lie down when you can physically keep moving
- Remain calm and keep your presence of mind

Rule 3: Think “outside the box”

- Make use of items in your surroundings
- Remember that unconventional methods may be the only way to escape
The Rules of Calling a Mayday

Rule 4: Know how and when to share SCBA air
- Sharing is to be done only as a last resort
- Sharing air will reduce air time for the person sharing
- Sharing air should be done through a whip line
- Sharing should never be done by removing the facepiece

Rule 5: Keep control of the fire when possible
- Activation of a RIT team should not reduce the number of fire attack individuals
- Additional units can be called for if needed
- If the trapped firefighter still has access to the hoseline he/she should use it to keep the fire at bay until rescued

Case Study
NIOSH F2008-06

Discuss major findings
- Alternate water supplies can be used if necessary
- Search and rescue should advance with a charged hoseline
- Firefighters should be trained to perform a defensive search and use thermal imagers
- Fire departments should ensure mayday protocols are in place and followed
Case Study
NIOSH F2008-06

Discus:
• What would you have done?
• Do you know your SOPs for a mayday?
• What type of equipment does your search team have available?

Student Performance Objective

Given information from discussion, handouts, and reading materials, describe the importance of knowing when conditions require calling for a mayday. Identify situations that may lead to a mayday and when a mayday should be called.

Review

• The Rules of Calling a Mayday
• Case Study
Lesson 2-1: Rapid Intervention Operations

Student Performance Objective:

Student Performance Objective:
Given information from discussion, handouts, and reading materials, describe the considerations for staging a Rapid Intervention Team. Identify the items that must be covered during a scene size up and describe the different elements to consider during a Rapid Intervention Team deployment.

Overview:

- Rapid Intervention Staging
- Rapid Intervention Size-up
- Rapid Intervention Team Deployment
Rapid Intervention Staging

- When selecting a staging area, the IC and RIT officer should consider:
  - Location of RIT staging
  - Adverse weather conditions
  - Size of team and amount of tools
- If multiple RITs are on the scene RIT officers should be made aware of the designation and location of each team

Rapid Intervention Size-up

- Upon arrival at the scene the RIT officer must:
  - Immediately report to IC
  - Establish a staging area for the RIT
  - Obtain a briefing from IC

Rapid Intervention Size-up

- Initial walk around size-up should include:
  - Building dimensions
  - Building occupancy
  - Building construction type
  - Potential for building collapse
  - Placement of windows, doors and fire escapes
Rapid Intervention Size-up

- Size-up should also include tactical information such as
  - Fireground tactics—offensive or defensive being used
  - Pertinent tactical board information
  - Placement of fireground ladders
  - Fireground time vs. fireground progress
  - Status of Rehab and EMS sectors
  - Availability of secondary RIT team

Rapid Intervention Team Deployment

- The Rapid Intervention Team making an entry must know
  - Number of firefighter victims
  - Names and assignments of the victims
  - Location of victims
  - Last radio communication

Rapid Intervention Team Deployment

- Firefighters in distress should use the acronym LUNAR
  - Location
  - Unit
  - Name
  - Assignment
  - Radio Communication
Rapid Intervention Team Deployment

- Rapid Intervention Accountability
  - The RIT officer is first in and last out
  - RIT members must
    - Operate as a team
    - Have assigned responsibilities and tools
    - Maintain accountability during deteriorating fire conditions

Rapid Intervention Team Deployment

- Rapid Intervention Radio Communication
  - Each RIT must have a proper radio identity
  - RIT operations should be assigned a specific frequency or channel

Rapid Intervention Team Deployment

- Rapid Intervention Tool Selection
  - Tools vary depending on:
    - Type of incident
    - Staffing
    - Incident location
  - Tools include but are not limited to:
    - Apparatus (Fire, Rescue, EMS)
    - Portable tools depending on type of structure
    - Additional SCBA and air supply
Rapid Intervention Team Deployment

While on the scene, tools should be staged and kept together at the RIT staging area.

Student Performance Objective

Given information from discussion, handouts, and reading materials, describe the considerations for staging a Rapid Intervention Team. Identify the items that must be covered during a scene size up and describe the different elements to consider during a Rapid Intervention Team deployment.

Review

- Rapid Intervention Staging
- Rapid Intervention Size-up
- Rapid Intervention Team Deployment
Lesson 3-1: Firefighter Survival Emergencies

Student Performance Objective

- Given information from discussion, handouts, and reading materials, describe the different methods to handle entanglement emergencies and perform self rescuing techniques, and understand the different methods to rescue downed firefighters.

Overview

- Entanglement Emergencies
- Self Rescue Techniques
- Rescue of Downed Firefighters
Entanglement Emergencies

- Minor entanglement emergencies can be solved by
  - Using the back up and turn method
  - Using the reduced SCBA profile method

- Major entanglement emergencies will require more involved rescue techniques such as
  - Assistance from partner
  - Use of wire cutters or a knife
  - Rescue by RIT

SCBA self removal techniques for disentanglement and shared air include
- Removal technique while crawling
- Removal technique while kneeling or standing
- SCBA Shared Air Emergency methods
Self Rescue Techniques

Forcible Exit Wall Breach
- Indications for use of wall breach
- Recommendations for using a wall breach
- Procedure for performing a wall breach

Hang Drop Method
- Indications for use of hang drop method
- Recommendations for using the hang drop method
- Procedure for using the hang drop method

Emergency Ladder Escape
- Indications for use of the emergency ladder escape
- Recommendations for using the emergency ladder escape
- Procedure for using the emergency ladder escape
- Emergency ladder escape safety system
Self Rescue Techniques

- Emergency Ladder Slide
  - Procedure for the emergency ladder slide
  - Contraindications for the ladder slide technique

Self Rescue Techniques

- Emergency Rappel Methods
  - Indications for the use of emergency rappel methods
  - Body rappel method
  - Mechanical rappel device method
  - Training considerations
Rescue of Downed Firefighters

Firefighter Rescue Methods
- One Firefighter Drag with SCBA
- Turnout gear drag
- Rescue with webbing harness
- Turnout coat rescue harness
- Side by side rescue drag method
- Push and pull rescue drag method

Rescue from upper and lower levels using stairs
- Narrow Staircase Rescue
  - Push/Pull upward method
  - Downward rescue method
Rescue of Downed Firefighters

- Wide Staircase Rescue
  - Push/Pull method
  - Four point carry method
  - Downward slide rescue method
  - Rescue Basket Method

Rescue of Downed Firefighters

- Rescue from upper and lower levels using ground ladders
  - Window lift and ladder rescue method (boots first)
  - One firefighter window lift and ladder rescue method (headfirst)

Rescue of Downed Firefighters

- Lower level firefighter rescues
  - Lower level handcuff knot rescue
  - Contraindications for using the lower level handcuff knot rescue
  - Lower level handcuff knot rescue operation
Student Performance Objective

- Given information from discussion, handouts, and reading materials, describe the different methods to handle entanglement emergencies and perform self rescuing techniques, and understand the different methods to rescue downed firefighters.

Review

- Entanglement Emergencies
- Self Rescue Techniques
- Rescue of Downed Firefighters