

LESSON ONE

FIREFIGHTER II

Fire Control

DOMAIN: PSYCHOMOTOR

LEVEL OF LEARNING: APPLICATION

MATERIALS

Overhead projector or laptop computer and multimedia projector; projection screen; IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2nd Edition or Delmar Firefighter's Handbook 3rd Edition; Fire department pumping apparatus; water supply; foam for Class "B" fires; burn lab or acquired structure; ventilation equipment and forcible entry tools; sufficient class A & B fuels to support the class size; hoses and nozzles; salvaged electrical equipment; salvaged and disabled flammable gas cylinder.

NFPA 1001 JPRs, 2008 edition

6.3.1 Extinguish an ignitable liquid fire

6.3.2 Coordinate an interior attack line team's accomplishment of an assignment in a structure fire

6.3.3 Control a flammable gas cylinder fire

Junior Member Statement:

Junior Member training activities should be supervised by qualified instructors to assure that the cognitive and psychomotor skills are completed in a safe and non-evasive manner. While it is critical that instructors be constantly aware of the capabilities of all students both mentally and physically to complete certain tasks safely and successfully, the instructor should take every opportunity to discuss with departmental leaders and students the maturity and job awareness each participant has for the hazards associated with fire and rescue training.

TERMINAL OBJECTIVE

The Firefighter II candidate, working as a member of a team shall correctly extinguish or control:

- a) A fire in an elevated location within a structure.
- b) A fire in a below grade area or other location requiring initial attack from above.
- c) A fire hidden within a structure.
- d) An exterior combustible liquids fire of at least 100 sq. ft. using a foam fire stream.
- e) A fire involving an exterior flammable gas cylinder.
- f) A fire involving energized electrical equipment.

ENABLING OBJECTIVES

1. The Firefighter II candidate, working as a member of a team, shall correctly extinguish or control a fire in an elevated location within a structure.
2. The Firefighter II candidate, working as a member of a team, shall correctly extinguish or control a fire in a below grade area or other location requiring initial attack from above.
3. The Firefighter II candidate, working as a member of a team, shall correctly extinguish or control a fire hidden within a structure.
4. The Firefighter II candidate, working as a member of a team, shall correctly extinguish or control an exterior combustible liquids fire of at least 100 sq. ft. using a foam fire stream.
5. The Firefighter II candidate, working as a member of a team, shall correctly extinguish or control a fire involving an exterior flammable gas cylinder.
6. The Firefighter II candidate, working as a member of a team, shall correctly extinguish or control a fire involving energized electrical components.

LESSON ONE

FIREFIGHTER II

Fire Control

MOTIVATION

Extinguishing special problem fires often requires specialized training, equipment and tactics. Due to their very nature, special problem fires present extraordinary personnel safety problems. When confronting these types of fires, it is most important that proper size-up is made and proper tactics are utilized. Fire is not a forgiving master. Injury or death can occur when performing live burn evolutions. Utilize all safety procedures and proceed in a cautious, deliberate manner with a high degree of coordination.

NOTE: This lesson deals primarily with displaying skills and applying knowledge that has been presented in other subject areas. It is not recommended or permitted under NFPA Standard 1403 to allow candidates to participate in live fire burn exercises prior to receiving training in certain core courses. Therefore, this lesson plan does not cover material that is contained in a lesson plan covering a specific subject. The information covered in this lesson plan has not been specifically covered previously. Where necessary, a review of that material can be incorporated into this lesson plan.

The intent of the practical exercise is to build confidence in the candidate. The fires that were staged as part of Fire Control Level I should have been straightforward and indicative of the experience level of the class. The training fires for Level II, covered in this lesson are more challenging. The intent here should not be to build larger, hotter fires, but rather to learn and demonstrate how to extinguish difficult and secluded fires properly and safely.

Many of the delivery agencies require that an Instructor be qualified as a Live Fire Burn Specialist prior to

conducting any structural burning and qualified as an LP gas Specialist prior to burning LPG. Since this lesson requires that interior attacks be performed, whether or not in a burn lab and also the suppression of LP gas fires, it is suggested that you verify this requirement prior to the start of class.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter II candidate, working as a member of a team, shall correctly extinguish or control a fire in an elevated location, within a structure.

1. Distinguish between fires located in upper floors or attics of a residential structure and fires located in high-rise buildings.
2. Discuss and describe the signs and problems associated with attic fires.
 - a) Smoke issuing from attic vents.
 - b) Roof material smoking or melting.
 - c) Roofline deformation.
 - d) Interior ceiling exhibiting signs of intense heat (scorched appearance or burn through.)
 - e) Problems associated with limited access. It may be necessary to pull ceilings and open roofs.
 - f) Discuss limited access in relation to poor egress routes, low overhead, and the inability of personnel to maneuver quickly and poor footing such as having to walk on ceiling joists.
3. Discuss strategy and tactics of attic fires. Be sure to bring out the tools available to attack these fires.
 - a) Vertical and horizontal ventilation techniques may require power saws, pike poles, an axe, and a pry bar.
 - b) Fire stream application from below fire level through access openings or attic vent.
 - c) Confinement of fire is critical due to potential structural instability of roof and ceiling.
 - d) Discuss precautions during salvage operations.

4. Discuss and describe the signs and problems associated with fires located between floors in residential structures.
 - a) Smoke issuing from between floors, melting floor-covering materials, hot to the touch.
 - b) Slow to rapid horizontal fire extension.
 - c) Difficulty in accessing the fire. May require use of an axe, power saw, pry bar, and a pike pole.
5. Discuss strategy and tactics of the above fires and special tools and nozzles available to assist the firefighter.
 - a) Requires opening floor to find seat of fire.
 - b) Requires rapid confinement of fire due to structural component failure such as floor joists.
 - c) Use of a piercing nozzle, cellar nozzle, etc.
6. Discuss multi-level commercial buildings located within the response area of the class. Determine the depth of pre-planning instruction that needs to be done.
7. Explain the need for a pre-incident analysis of high rise buildings.
8. Discuss staging as it applies to high-rise fires, especially forward staging two floors below the fire floor. Take extreme caution with elevator use.
9. Emphasize the potential need for additional manpower, apparatus and equipment.
10. Discuss the use of fixed fire protection systems and their use and effect.
11. Discuss the strategy and tactics that might be employed in high-rise fire attacks.

Reference:

Delmar Handbook 3rd edition, pages 703-706

J&B Fundamentals 2nd edition, pages 405-408, 518, 560, 588, 628, 647-651

IFSTA Essentials 5th edition, pages 763, 793, 795-796

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter II candidate, working as a member of a team shall extinguish or control a fire in a below grade area or other location requiring initial attack from above.

1. Give examples of below grade areas or incident locations that require an attack from above.
2. Discuss paths of heat and fire spread vs. access to the area, specifically the chimney effect of stairwells. Also discuss the problems associated with balloon construction.
3. Discuss ventilation methods and techniques.
4. Describe conventional attack procedures and the use of various nozzles that include cellar, piercing and high expansion foam nozzles.

Reference:

Delmar Handbook 3rd edition, pages 706-707

J&B Fundamentals 2nd edition, page 627

IFSTA Essentials 5th edition, pages 553-568, 570-578, 726-731, 744-746, 767-769, 793-795, 885

PRESENTATION

ENABLING OBJECTIVE #3

The Firefighter II candidate, working as a member of a team, shall correctly extinguish or control a fire hidden within a structure.

1. Explain balloon construction as it relates to hidden wall fires.
 - a) No fire stops, fire can travel easily through wall voids.
2. Discuss methods for locating hidden fires in walls and between floors.
 - a) Sound, heat, discoloration, heat detection equipment.
3. Describe and discuss different ways of extinguishing hidden fires.

Reference:

J&B Fundamentals 2nd edition, page 162

IFSTA Essentials 5th edition, pages 883-886

NOTE: There will be instances where it will not be possible for a practical evaluation to be conducted. In these instances, it shall be incumbent upon the Instructor to describe and document the necessary procedures used to simulate the practical evolutions.

PRESENTATION

ENABLING OBJECTIVE #4

The Firefighter II candidate, working as a member of a team shall correctly extinguish or control an exterior combustible liquids fire of at least 100 sq. ft. using a foam fire stream.

1. Discuss foam application methods.
 - a) Rolling.
 - b) Lobbing / Raining.
 - c) Banking.
2. Discuss the need for coordinated team operations.
3. Discuss the need for safety backup lines.

Reference:

Delmar Handbook 3rd edition, pages 343-346

J&B Fundamentals 2nd edition, pages 523-525

IFSTA Essentials 5th edition, pages 747-748

NOTE: Review information for this objective in the lesson plan "Foam Fire Streams."

PRESENTATION

ENABLING OBJECTIVE #5

The Firefighter II candidate, working as a member of a team shall correctly extinguish or control a fire involving an exterior flammable gas cylinder.

1. State that this class will only address the needs of small cylinders.

2. Discuss and describe the features of small cylinders.
3. Discuss and describe how to disperse escaping vapors.
4. Discuss and describe how to "cool down" a cylinder to prevent a BLEVE.
5. Explain how to approach a cylinder with a hose line.
6. Review characteristics of LPG and Natural Gas.

Reference:

Delmar Handbook 3rd edition, pages 717-718

J&B Fundamentals 2nd edition, pages 142, 633-636, 876

IFSTA Essentials 5th edition, pages 774-776, 778-779

NOTE: It is recommended that an instructor qualified by the NC Fire and Rescue Commission as an LPG Specialist delivers the information and conduct the application exercise for this objective.

PRESENTATION

ENABLING OBJECTIVE #6

The Firefighter II candidate, working as a member of a team, shall extinguish or control a fire involving energized electrical equipment.

1. Define, and list several examples of Class C fires.
2. Discuss commercial high voltage installations; 600 volts or more.
 - a) Large buildings.
 - b) Industry.
 - c) Apartment complexes.
 - d) Commercial buildings, Malls, Super markets, Shopping centers, Hospitals.
3. Describe underground electrical utilities.
 - a) Cableways and vaults.
 - b) Explosion potential.
4. Point out the common residential electrical applications and components.

- a) Overhead or underground service to residence.
 - b) Meter base.
 - c) Exterior Fuse or Circuit breaker panel.
 - d) Interior Fuse or Circuit Breaker panel.
 - e) Main Fuses or Circuit Breakers.
5. Discuss general safety guidelines for electrical emergencies.
 6. Explain how that once the appliance is de-energized it becomes either a Class A, B, and on rare occasions a Class D fire.

Reference:

Delmar Handbook 3rd edition, pages 714, 716

J&B Fundamentals 2nd edition, pages 133 & 637

IFSTA Essentials 5th edition, pages 780-783, 785-787

NOTE: NFPA 1001, 2008 edition does not specifically address fires involving energized electrical equipment. However, due to the frequency that the fire service deals with this type of fire, it shall be covered here for firefighter safety.

NOTE: It is understood that there will be instances where it will not be possible for a practical evaluation to be conducted. In these instances, it will be incumbent upon the Instructor to describe and document the necessary procedures used to simulate the practical evolutions.

APPLICATION

It is recommended that each enabling objective have a practical evolution as an individual exercise. Allow sufficient time for classroom work and drill ground exercises.

Prior to performing the enabling objectives you should insure that sufficient numbers of instructors are available for the number of functional lines. Every attempt should be made to allow each candidate the opportunity to work at each position.

At the conclusion of each group's rotation a critique should be performed. Point out the positive accomplishments of the

candidates and correct any of their mistakes in a supportive and constructive manner. Solicit questions.

NOTE: It is recommended that only Instructors who have successfully completed qualification training, recognized by the North Carolina Fire and Rescue Commission, be used when delivering information or conducting exercises in specialized subject areas.

SUMMARY

Review the control and extinguishing methods utilized for fires in elevated locations.

Review the control and extinguishing methods for fires below ground level locations and re-emphasize ventilation techniques.

Review the control and extinguishing methods for hidden fires and discuss the need for additional tools and equipment.

Re-examine combustible liquids fires, and emphasize the fact that in some cases control may be preferable to extinguishing these fires.

Re-examine flammable gas fires, and emphasize the fact that in some cases control may be preferable to extinguishing these fires.

Review the control and extinguishing methods for energized electrical equipment and emphasize the need to de-energize the equipment, if possible, prior to attack.