

LESSON ONE

FIREFIGHTER II

Alarms and

Communications

DOMAIN: COGNITIVE / PSYCHOMOTOR

LEVEL OF LEARNING: KNOWLEDGE / APPLICATION

MATERIALS

IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2nd Edition or Delmar Firefighter's Handbook 3rd Edition; local jurisdiction's standard operating procedures; pre-fire surveys; access to the communications center; set of dummy telephones; set of portable radios; copies of blank dispatch report sheets; overhead projector or laptop computer and multimedia projector; slide projector and screen; extension cord.

NFPA 1001 JPR, 2008 edition

6.2.2 Communicate the need for team assistance

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 shall correctly identify and demonstrate the appropriate procedures for ordering and transmitting multiple alarms for a fire, and calls for special assistance from an emergency scene.

ENABLING OBJECTIVES

1. The Firefighter II candidate shall correctly define, in writing, the fire department's policy for the ordering and transmitting of multiple alarms for a fire and calls for special assistance from the emergency scene.
2. The Firefighter II candidate, utilizing a fire department radio, shall correctly demonstrate the fire department's procedure for the ordering and transmitting multiple alarms for a fire and calls for special assistance from the emergency scene.

LESSON ONE

FIREFIGHTER II

Alarms and Communications

MOTIVATION

To properly utilize the Incident Command System, a firefighter must have an understanding of the available communications system. On occasion, the Firefighter II candidate may be the first on scene commander, and would have the responsibility of calling for the necessary equipment and assistance to control the emergency. Being able to correctly interpret the fire scene factors in the first minutes of the operation will have a profound effect on the eventual outcome of the operation.

NOTE: It is imperative that the instructor reviews the local jurisdiction's Standard Operating Procedures prior to the delivery of this class. Departments may have different procedures for requesting alarms and/or special assistance from the fire ground.

PRESENTATION

ENABLING OBJECTIVE # 1

The Firefighter II candidate shall correctly define, in writing, the fire department's policy for the ordering and transmitting of multiple alarms for a fire and calls for special assistance from the emergency scene.

1. Discuss at length the local jurisdiction's policy for ordering additional alarms from the emergency scene.
2. Discuss the fire department's policy for requesting special assistance from an emergency scene. Often, special assistance may require a higher authority.

3. Briefly discuss the procedure for requesting special assistance from the emergency scene.

Reference:

IFSTA Essentials 5th edition, pages 947

Local jurisdiction S.O.P.s.

APPLICATION

Divide the class into groups of three or five. Have each group represent a first due engine company. Present the groups with a scenario depicting a local industrial property where an explosion and resulting fire has occurred. High voltage power lines and a large gas main are damaged and are fueling the fire. Let each group decide what procedures must be followed to correctly initiate the operation. The groups will be restricted to the utilization of existing fire department equipment and local services. Once all of the groups have outlined their operations, have a person from each group present their solution to the class. Allow the class to observe each exercise but not make any comments. Once the class has completed this evolution, solicit comments from the group and discuss the appropriate policies and procedures.

PRESENTATION

ENABLING OBJECTIVE # 2

The Firefighter II candidate shall correctly demonstrate the fire department's procedure for the ordering and transmitting of multiple alarms of fire and calls for special assistance from the emergency scene utilizing a fire department radio.

1. Demonstrate the fire department procedure for ordering additional alarms from the emergency scene. Utilize hand-held portable radios for this evolution.
2. Discuss the Standard Operating Procedure for ordering additional alarms from an emergency scene in accordance with this jurisdiction.
3. Demonstrate the procedure for requesting special assistance from the emergency scene. Utilize hand-held portable radios for this evolution.

Reference:
Delmar Handbook 3rd edition, pages 76-77
IFSTA Essentials 5th edition, page 947

APPLICATION

Have each group of firefighters demonstrate their solution to the application generated for Enabling Objective #1. The instructor will act as central dispatch. Utilize hand-held portable radios for this operation. Allow the other groups to observe each exercise, but not make any comments. Once the class has completed this evolution, solicit comments from the class and discuss how well the groups demonstrated this operation.

SUMMARY

Summarize the local fire department policy for ordering and transmitting multiple alarms and calls for special assistance from the emergency scene.

Review each step in the procedure for ordering and transmitting multiple alarms and calls for special assistance from the emergency scene.

LESSON TWO

FIREFIGHTER II

Alarms and Communications

DOMAIN: COGNITIVE / PSYCHOMOTOR

LEVEL OF LEARNING: KNOWLEDGE / APPLICATION

MATERIALS

IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2nd Edition or Delmar Firefighter's Handbook 3rd Edition; NFPA 72, National Fire Alarm Code; NFPA 1221, Standard for the Installation, Maintenance, and Use of Public Fire Service Communication Systems; NFPA 12, Standard on Carbon-Dioxide Extinguishing Systems; samples of a fixed temperature heat detector; rate-of-rise heat detector; photoelectric smoke detector; ionization smoke detector; flame detector; fire-gas detector; access to a commercial complex that incorporates the detection and alarm systems covered in this lesson plan. If all materials are not obtainable, collect as many as possible for display purposes.

NFPA 1001 JPR, 2008 edition

6.5.3 Prepare a pre-incident survey

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 shall correctly identify and describe the types and functions of different detectors and automatic alarm systems designed to detect heat, smoke, fire gases and flame.

ENABLING OBJECTIVES

1. The Firefighter II candidate shall correctly identify the general types of fire detection systems.
2. The Firefighter II candidate shall correctly identify and describe the function of the different types of detectors designed to detect heat, smoke, fire gases and flame.
3. The Firefighter II candidate shall correctly identify and describe the function of each type of automatic alarm system.

LESSON TWO

FIREFIGHTER II

Alarms and Communications

MOTIVATION

In order for the Firefighter II candidate to use the Incident Command properly, they must understand all aspects of the fire scene. In recent years many advancements have been made to reduce fire loss in private and public domains. One such advancement that the firefighter will come across upon arrival at a structural scene is the local alarm and detection systems. New technology regarding design and function of such systems has played a major role in averting total losses to buildings, and has helped to reduce loss of life. The Firefighter II candidate should have a good working knowledge of these systems and be familiar with the state laws and local ordinances pertaining to their installation and maintenance requirements.

PRESENTATION

ENABLING OBJECTIVE # 1

The Firefighter II candidate shall correctly identify the general types of fire detection systems.

1. Display and discuss the two different types of heat detectors.
 - a) Fixed temperature heat detector.
 - b) Rate-of-rise heat detector.

Reference:

Delmar Handbook 3rd edition, pages 353-354
J&B Fundamentals 2nd edition, pages 943-944
IFSTA Essentials 5th edition, pages 826-831

PRESENTATION

ENABLING OBJECTIVE # 2

The Firefighter II candidate shall correctly identify and describe the function of the different type of detectors designed to detect heat, smoke, fire gases and flame.

1. Discuss the three primary physics principles of the fixed temperature devices listed below.
 - a) Fusible device.
 - b) Frangible bulb.
 - c) Continuous line detector.
 - d) Bimetallic detector.

2. Describe the operational characteristics of the following rate-of-rise heat detectors.
 - a) Pneumatic spot detector.
 - b) Pneumatic line detector.
 - c) Rate-compensated detector.
 - d) Thermoelectric detector.

3. Identify the two basic types of smoke detectors.
 - a) Photoelectric: beam application type, refractory photocell.
 - b) Ionization.

4. Discuss the types of power sources used to operate smoke detectors.

5. Identify the three basic types of flame detectors and discuss their function.
 - a) Detect light in the ultraviolet wave spectrum.
 - b) Detect light in the infrared wave spectrum.
 - c) Detect light in both spectrums.

6. Discuss the advantages of a fire-gas detector and a combination detector.

Reference:

Delmar Handbook 3rd edition, pages 353-357

J&B Fundamentals 2nd edition, pages 939-945

IFSTA Essentials 5th edition, pages 827-835

PRESENTATION

ENABLING OBJECTIVE # 3

The Firefighter II candidate shall correctly identify and describe the function of each type of automatic alarm system.

1. Briefly describe the function of an automatic alarm system.
2. Describe the function of the three types of auxiliary alarm systems.
 - a) Local Energy System.
 - b) Shunt System.
 - c) Parallel Telephone System.
3. Describe the functions of a:
 - a) Remote Station System.
 - b) Proprietary System.
 - c) Central Station System.
4. Discuss the various features of a supervising alarm system.
 - a) Trouble signal.
 - b) Manual pull station.
 - c) Carbon dioxide extinguishing agents.
5. Describe some of the auxiliary features of an automatic alarm system.
 - a) Shutting down HVAC systems.
 - b) Closing smoke and fire rated doors.
 - c) Assist evacuations by pressurizing stairwells.
 - d) Overriding elevator controls.
 - e) Monitoring burner management systems.

Reference:

Delmar Handbook 3rd edition, pages 63-65
J&B Fundamentals 2nd edition, pages 940-965
IFSTA Essentials 5th edition, pages 648, 837-842
NFPA 12.

APPLICATION

Set up a field trip to visit a local plant or plants that incorporates some of the old and new technology of detection and alarm systems. The plant safety advisor would be a good contact person and tour guide. Split the class into two groups. Have each group draw a rough draft of the plant layout. Have group 1 locate at least five detection systems

and identify the specific type (heat, smoke, fire-gas etc.). Have group 2 identify type(s) and location of the automatic alarm system(s) used at the plant.

SUMMARY

Review the operational characteristics of the different type of fixed temperature heat detectors, and the principle of a rate-of-rise heat detector, briefly reviewing the function of each type.

Review the differences between photoelectric smoke detectors and ionization smoke detectors.

Review the advantages and disadvantages of the three types of flame detectors currently on the market, and the operational characteristics of the three types of automatic alarm systems.