

LESSON ONE

FIREFIGHTER

Personal Protective Equipment

DOMAIN: COGNITIVE / PSYCHOMOTOR

LEVEL OF LEARNING: KNOWLEDGE

MATERIALS

NFPA Standards: 1001, 1971, 1404, 1981, 1989, 1982, 1852 1975 and 1976; IFSTA Essentials 6th Edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 3rd Edition Departmental S.O.P.s; structural firefighting personal protective equipment; self-contained breathing apparatus.

NFPA 1001 JPRs, 2013 Edition

5.1.2 General Skill Requirements

5.5.1 Clean and check ladders, ventilation equipment, self contained breathing apparatus (SCBA), ropes, salvage equipment, and hand tools

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 Candidate shall correctly identify in writing, the functions, care, use, inspection, maintenance, and limitations, including the donning and doffing of personal protective equipment.

ENABLING OBJECTIVES

1. The Firefighter Candidate shall correctly identify in writing, the reasons for the using each article of personal protective equipment.
2. The Firefighter Candidate shall correctly don and doff their personal protective equipment and demonstrate the proper maintenance procedures for each article.

LESSON ONE

FIREFIGHTER

Personal Protective Equipment

MOTIVATION

The business of firefighting often requires an individual to place him/herself in an environment that is totally hostile; meaning that we as humans are really quite fragile when it comes to superheated and highly toxic atmospheres. This working environment dictates that firefighters shield themselves with a protective shell. Our personal protective equipment literally becomes a safe environment within that hostile working environment. In reality our PPE is all that stands between the firefighter and a trip to the hospital or worse, the morgue. The instructor must emphasize throughout the lesson plan the importance of caring for and properly using PPE.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter Candidate shall correctly identify in writing, the reasons for the using each article of personal protective equipment.

1. Lead the class in a discussion on the types of environment in which personal protective equipment should be worn.
2. Lead the class in a discussion on the types of injuries that occur if personal protective equipment is not worn.
3. Discuss with the class their departmental procedures concerning wearing personal protective equipment.

4. Describe the function of each article of personal protective equipment. Explain to the class that SCBA will be covered in another lesson plan.
5. Make the candidates aware that protective clothing must be thoroughly researched before making a selection and purchase.
 - a) During this presentation, the instructor needs to have available NFPA standards on all personal protective equipment discussed, including NFPA 1851 *Standard of Selection, Care and Maintenance of Protective Ensembles for Structural Firefighting and Proximity Suits*.
6. Lead the class in discussion on types of protective clothing other than those used for structural firefighting and the standards for the special types of protective clothing.
7. Using each article of structural fire fighting clothing discuss the function, design, and the NFPA standards of each article. In discussing this, the instructor may use, if available, the transparencies from the curriculum package entitled "Essentials of Fire Fighting."
8. Lead the class in a discussion on the need, requirements, and benefits for using approved station uniforms.

Reference:

NFPA Standard 1971, 1975, 1976, 1404, 1851, and 1981
J&B Fundamentals 3rd Edition, pages 44-51.
IFSTA Essentials 6th Edition, pages 259-276.

APPLICATION

Working individually, have each candidate list on paper each article of protective clothing and its function for structural fire fighting.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter Candidate shall correctly don and doff their personal protective equipment and demonstrate the proper maintenance procedures for each article.

1. Discuss the importance of proper maintenance of personal protective clothing.
2. Using the manufacturer's specifications, discuss the procedures to be followed in the care and maintenance of protective clothing.
3. Lead the class in a discussion about solutions that should not be used in cleaning personal protective equipment such as solvents, abrasive cleansers, etc.
4. Make class aware of the damage that can occur when turnout gear is exposed to direct sunlight or fluorescent light for long periods of time.
5. Discuss with class the CFR-1910.1030 regulations on the cleaning of personal protective equipment.
6. Using turnout gear, discuss and demonstrate the proper procedures for donning and doffing all personal protective equipment.

Reference:

J&B Fundamentals 3rd Edition, pages 51-54.
IFSTA Essentials 6th Edition, pages 277-280.

APPLICATION

Have the candidates list on paper the guidelines for the proper care and maintenance of PPE. Using protective structural firefighting clothing, demonstrate how to properly clean each article of PPE. After the instructor demonstrates the proper method, have each candidate use their own equipment to demonstrate cleaning procedures. Have candidates check their own equipment for wear and tear and list any defects. Have candidates correctly demonstrate donning and doffing their personal protective equipment.

SUMMARY

Lead the class in a review of the importance of having and using approved personal protective equipment.

Re-emphasize the types of injuries that can occur when firefighters either do not wear or improperly wear personal protective equipment.

Summarize the importance of having departmental S.O.P.s or S.O.G.s concerning the use of personal protective equipment.

Briefly review the standards that regulate the manufacture and use of personal protective equipment.

Summarize the importance of thoroughly researching protective equipment before purchase.

Review the articles of structural firefighting clothing and the function of each.

Re-emphasize the importance of proper maintenance of personal protective equipment.

Review the procedures for the maintenance and care of each article of protective equipment.

Review in detail the proper step-by-step procedure for donning and doffing each article of personal protective equipment.

LESSON TWO

FIREFIGHTER

Personal Protective Equipment

DOMAIN: COGNITIVE / PSYCHOMOTOR

LEVEL OF LEARNING: APPLICATION

MATERIALS

Overhead projector or laptop computer and multimedia projector; projection screen; IFSTA Essentials 6th Edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 3rd Edition.

NFPA 1001 JPR, 2013 Edition

5.3.1 Use SCBA during emergency, operations

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 Candidate shall correctly identify in writing, the leading cause for firefighter fatality and list those activities that provide for an enhanced degree of physical fitness.

ENABLING OBJECTIVES

1. The Firefighter Candidate shall accurately state in writing, the leading cause of death of firefighters and actions which may decrease it.
2. The Firefighter Candidate shall correctly list in writing, those activities that will improve physical fitness.

LESSON TWO

FIREFIGHTER

Personal Protective Equipment

MOTIVATION

Firefighters who are trained in the use of SCBA must be physically capable of wearing SCBA. They must not suffer from claustrophobia and must be able to cope, both mentally and physically, with the rigors of SCBA use under emergency conditions. Training must result in individuals becoming totally confident with themselves, their equipment, and their ability to operate effectively in hostile environments and conditions.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter Candidate shall accurately state in writing, the leading cause of death of firefighters and actions which may decrease it.

1. Point out the fact that firefighting is very physical and demanding.
2. Determine who in the class participates in a physical conditioning program such as aerobic or strength training. Refer to the Firefighter Health & Wellness program for more information.
3. Emphasize that heart attacks are the leading killer of firefighters.
4. Discuss how the cumulative effect of exposure to toxic smoke or the cumulative effect of physical exertion may precipitate a heart attack.

5. Tell students that the United States Fire Administration conducted an in depth study between 1990 and 2000, and found that heart attacks are responsible for 44% of all firefighter deaths.
6. Discuss other types of behavior that can contribute to heart disease.
 - a) Obesity.
 - b) Smoking.
 - c) Lack of exercise.
7. Discuss target heart rates and how to determine them.
8. Discuss the need for both aerobic conditioning and physical conditioning.

Reference:

J&B Fundamentals 3rd Edition, pages 28-30.

IFSTA Essentials 6th Edition, pages 49-54, 64, 281-287.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter Candidate shall correctly list in writing, those activities that will improve physical fitness.

1. Point out the fact that the firefighter can be at rest and then, at a moment's notice, be firefighting.
 - a) This type of sudden exertion requires stamina.
2. Discuss items that hinder physical performance.
 - a) High fat intake.
 - b) High calorie diet.
 - c) Interrupted sleep patterns.
 - d) Smoking and chewing tobacco products.
 - e) Little or no exercise.
3. Discuss environmental and behavioral changes that must be made.
 - a) Physical fitness programs, both aerobic and strength. This includes volunteer and career.
 - b) Dietary. The old saying we are what we eat. Reduction of high fat and high cholesterol foods.

- c) Weight loss. Obesity coupled with high exertion equals death.
- d) Attitude. We must realize the very nature of firefighting will lead to injuries and death.

Reference:

J&B Fundamentals 3rd Edition, pages 5, 28-30.

IFSTA Essentials 6th Edition, pages 49-54, 64.

APPLICATION

At the beginning of the class have some students don an SCBA. Take their blood pressure and pulse rate and have them sit at the rear of the class. Tell them to breathe normally and then time the duration of the air supply to the point that the low air alarm sounds.

At the conclusion of the class take the same students and perform the same preliminaries, except this time have the students perform some type of physical activity, i.e., chopping with an ax, until the low alarm sounds.

Place the results on the board in comparison columns and discuss. After the discussion, have all the students perform at least the second half of this exercise. Be sure that a beginning blood pressure and pulse and an ending blood pressure and pulse are taken for comparison.

NOTE: It is important that the Firefighter Candidate understand the workload their body will encounter during firefighting operations. Many departments have in place, a system to measure physical conditioning and aerobic capability.

SUMMARY

Re-emphasize the leading cause of death among firefighters.

Review those behavioral activities that can be changed to improve firefighter health.

LESSON THREE

FIREFIGHTER

Personal Protective Equipment

DOMAIN: COGNITIVE

LEVEL OF LEARNING: APPLICATION

MATERIALS

Overhead projector or laptop computer and multimedia projector; projection screen; complete SCBA unit; IFSTA Essentials 6th Edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 3rd Edition or Delmar Firefighter's Handbook 3rd Edition.

NFPA 1001 JPR, 2013 Edition

5.3.1 Use SCBA during emergency operations

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 Candidate shall correctly identify and describe in writing, the four common hazardous atmospheres associated with fires and other emergencies that require entry personnel to use self-contained breathing apparatus.

ENABLING OBJECTIVES

1. The Firefighter Candidate shall correctly list in writing, the situations that may be found to be oxygen deficient.
2. The Firefighter Candidate shall correctly list in writing, the reasons for wearing self-contained breathing apparatus in areas of elevated temperatures.
3. The Firefighter Candidate shall correctly list in writing, at least four (4) toxic substances found in smoke.
4. The Firefighter Candidate shall correctly state in writing, at least two (2) examples of toxic atmospheres other than fires.

LESSON THREE

FIREFIGHTER

Personal Protective Equipment

MOTIVATION

The fire service often points, with a degree of pride and resignation, to its reputation as one of the most hazardous occupations in country. The firefighter's working environment is commonly a hazardous atmosphere. It is crucial that the firefighter recognize the full potential of these atmospheres as most can be fatal.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter Candidate shall list in writing, the situations that may be found to be oxygen deficient.

1. Define what constitutes an oxygen deficient atmosphere.
 - a) Point out that OSHA designates an oxygen deficient atmosphere as one that contains less than 19.5% oxygen.
2. Give examples of different situations that may be oxygen deficient.
3. Define the term hypoxia and use a chart to show its effects.

Reference:

J&B Fundamentals 3rd Edition, pages 54-56.
IFSTA Essentials 6th Edition, page 282.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter Candidate shall list in writing, the reasons for wearing self contained breathing apparatus in areas of elevated temperatures.

1. Explain the effects to the body of relatively low heat.
2. Explain the effects high heat and moist heat have on the body.

Reference:

J&B Fundamentals 3rd Edition, page 56.

IFSTA Essentials 6th Edition, page 283.

PRESENTATION

ENABLING OBJECTIVE #3

The Firefighter Candidate shall list in writing, at least four (4) toxic substances found in smoke.

1. Define Smoke and discuss its characteristics.
2. Describe the effects of smoke on the body.
3. Recite a list of toxic gases that may be found at a fire.
4. Give examples of materials that produce toxic gases and stress new building construction materials.
5. Discuss the characteristics of carbon monoxide and its effects on the body.

Reference:

J&B Fundamentals 3rd Edition, page 55.

IFSTA Essentials 6th Edition, pages 284-285.

PRESENTATION

ENABLING OBJECTIVE #4

The Firefighter Candidate shall state in writing, at least two examples of toxic atmospheres other than fires.

1. Give examples of places that may be toxic or oxygen deficient.
2. Discuss basements and below ground level floors in structures.
3. Explain oxygen depletion due to the effects of rust and plant growth on oxygen levels.
4. Stress that, when in doubt, wear SCBA.

Reference:

J&B Fundamentals 3rd Edition, pages 54-56.
IFSTA Essentials 6th Edition, pages 285-287.

APPLICATION

List the four common hazardous atmospheres. Have each candidate give an example within their jurisdiction that would create one or more of the hazardous atmospheres. List the answers on the flip chart or chalkboard under the appropriate hazardous atmosphere and discuss in detail.

SUMMARY

Review the hazards associated with oxygen deficient environments.

Restate the effects of elevated temperatures on the human body and the need for SCBA in these atmospheres.

Review the various toxic substances that may be found in smoke and their effects on the human body.

Re-emphasize the fact that not all toxic environments will be associated with fire; give some pertinent examples of this relative to the respective jurisdiction.

LESSON FOUR FIREFIGHTER Personal Protective Equipment

DOMAIN: PSYCHOMOTOR

LEVEL OF LEARNING: APPLICATION

MATERIALS

IFSTA Essentials 6th Edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 3rd Edition; NFPA 1981, Standard on Open-circuit SCBA for Fire Fighters; overhead projector or laptop computer and multimedia projector; projection screen; appropriate number and types of SCBA.

NFPA 1001 JPR, 2013 Edition

5.3.1 Use SCBA during emergency operations

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 Candidate when given a serviceable SCBA unit shall correctly identify each component of the SCBA unit, describe its function, and correctly list its safety features.

ENABLING OBJECTIVES

1. The Firefighter Candidate given a backpack and harness assembly, shall correctly state its use and safety features.
2. The Firefighter Candidate given an air cylinder assembly, shall correctly state its use, composition, and safety features.
3. The Firefighter Candidate given a regular assembly shall correctly state its use, operation, and safety features.
4. The Firefighter Candidate given a face piece assembly, shall correctly state its use, operation, and safety features.

LESSON FOUR

FIREFIGHTER

Personal Protective Equipment

MOTIVATION

In order for any firefighter to develop the high degree of confidence in their SCBA that allows them to become comfortable with it, they must first become competent. Competency is the direct result of knowledge and repetitive training. Becoming comfortable with the SCBA is extremely important. It is only with this level of confidence that the firefighter can make the right decision when something goes wrong. Developing an in-depth knowledge of their specific SCBA can make a difference between the firefighter's life and death. When the firefighter is placed in a situation where a component of the SCBA fails or circumstance requires the SCBA configuration to be altered, it will be too late to train. The life saving training must have already occurred.

NOTE: When delivering this class in a jurisdiction where a particular type SCBA is being used, the presentation portion should be directed toward that make of SCBA. If there will be numerous types of SCBA represented, it will be advantageous to the instructor to cover all facets of operation and safety of each unit during presentation.

With SCBA there are two general categories, open circuit and closed circuit. Unless the need dictates, it is suggested that only a cursory presentation be made on closed-circuit SCBA systems. Since their use is primarily limited to Haz Mat operations it is not deemed necessary to expend valuable class time on this particular type of SCBA.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter Candidate given a backpack and harness assembly shall correctly state its use and safety features.

1. Using a backpack and harness assembly, define its use.
2. Describe each part of the assembly.
3. Explain the safety features of the assembly's design.

Reference:

J&B Fundamentals 3rd Edition, page 59.

IFSTA Essentials 6th Edition, page 290.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter Candidate given an air cylinder, shall correctly state its use, composition, and safety features.

1. Using an air cylinder, define its use.
2. Discuss and describe the different types of cylinders.
 - a) Steel.
 - b) Aluminum.
 - c) Composite (wrapped).
3. Explain the difference in sizes and pressures.
4. Explain the safety considerations associated with an air cylinder and emphasize low-pressure alarm with a 3-5 minute escape volume.

Reference:

J&B Fundamentals 3rd Edition, page 59.

IFSTA Essentials 6th Edition, pages 290-293.

PRESENTATION

ENABLING OBJECTIVE #3

The Firefighter Candidate given a regulator assembly, shall correctly state its use, operation, and safety features.

1. Discuss the requirements for positive pressure systems.
2. Show the various places where the regulator may be located and discuss the low-pressure alarm.
3. Discuss and demonstrate the airflow to and through the regulator and hose.
4. Discuss the construction and operation of the regulator.
5. Discuss the shape, size, color, operation, and location of the bypass valve, and where applicable the main line valve.
6. Explain the purpose of the pressure gauge.
7. Describe the different types of PASS devices and explain their importance to firefighter safety.

Reference:

J&B Fundamentals 3rd Edition, pages 60-61.

IFSTA Essentials 6th Edition, pages 270, 291.

PRESENTATION

ENABLING OBJECTIVE #4

The Firefighter Candidate given a face piece assembly, shall correctly state its use, operation, and safety features.

1. Explain the two different types of face pieces that are used.

Note: NIOSH requires the use of nose cups with most SCBAs in subfreezing temperatures.

2. Show and explain the different components of the face piece.

Reference:
J&B Fundamentals 3rd Edition, pages 61-62.
IFSTA Essentials 6th Edition, pages 292-293.

APPLICATION

It is recommended that four different stations be established, one for each component of the SCBA. Have the Firefighter Candidates rotate through each station and state its use, operation, and safety features.

SUMMARY

Review each of the four components of the SCBA assembly.

Re-examine the safety features of the SCBA used by the respective jurisdiction.

LESSON FIVE

FIREFIGHTER

Personal Protective Equipment

DOMAIN: COGNITIVE / PSYCHOMOTOR

LEVEL OF LEARNING: COMPREHENSION /
APPLICATION

MATERIALS

IFSTA Essentials 6th Edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 3rd Edition; NFPA 1404, 1982, 1981 and 1989; overhead projector or laptop computer and multimedia projector; projection screen; appropriate number and types of SCBA; cleaning supplies.

NFPA 1001 JPRs, 2013 Edition

5.3.1 Use SCBA during emergency operations
5.5.1 Clean and check ladders, ventilation equipment, self contained breathing apparatus (SCBA), ropes, salvage equipment, and hand tools

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 Candidate shall correctly demonstrate the proper procedures for the inspection, cleaning, and maintenance of SCBA.

ENABLING OBJECTIVES

1. The Firefighter Candidate shall correctly demonstrate performing routine maintenance and inspection (daily-weekly) and periodic maintenance and inspection on SCBA.
2. The Firefighter Candidate shall correctly demonstrate cleaning and sanitizing the SCBA.
3. The Firefighter Candidate shall correctly demonstrate replacing an empty SCBA air cylinder with a full cylinder.
4. The Firefighter Candidate shall correctly demonstrate refilling an expended SCBA air cylinder.

LESSON FIVE

FIREFIGHTER

Personal Protective Equipment

MOTIVATION

In order to insure that the SCBA is operational and ready for use, proper care and maintenance is a necessity. The lack of written policies and preventive maintenance programs will compromise the effectiveness of any SCBA program. The maintenance of SCBA; cylinders, air quality and air supply equipment must be addressed as a fundamental component of any SCBA program.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter Candidate shall correctly demonstrate performing routine maintenance and inspection (daily-weekly) and periodic maintenance and inspection on SCBA.

1. Stress the need to perform a credible after use routine and periodic inspection on SCBA.
2. Demonstrate and discuss the proper way to inspect the backpack and harness assembly.
3. Demonstrate and discuss the proper way to inspect the cylinder and air gauges (cylinder & regulator).
4. Explain the hydrostatic test requirements and where the dates can be found.
5. Demonstrate and discuss the proper way to inspect the face piece assembly.
6. Demonstrate and discuss the proper way to check for air leaks.

7. Demonstrate and discuss the proper way to check the regulator.
8. Explain that most manufacturers require regulators be rebuilt on a regular basis by a qualified person.
9. Explain that any damaged or worn parts discovered in an inspection should be replaced according to manufacturer's instructions.

Reference:

J&B Fundamentals 3rd Edition, pages 73-81.
IFSTA Essentials 6th Edition, pages 303-306.
NFPA 1404

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter Candidate shall correctly demonstrate cleaning and sanitizing the SCBA.

1. Stress the need to clean and sanitize after each use, not just after each fire.
2. Explain why abrasive cleaners and alcohol should not be used on SCBA components, as it may damage or weaken the rubber.
3. Demonstrate and discuss how to break down the SCBA to prepare it for cleaning.
4. Demonstrate and explain how to properly clean, dry and sanitize a face piece assembly.
5. Demonstrate and discuss how to properly clean and dry the backpack and harness assembly.
6. Demonstrate and discuss how to properly clean and dry the cylinder. (Replacing an empty cylinder shall be covered in the next section.)

Explain the necessity to re-assemble, don, and check the SCBA before placing it back into service in a ready to don condition.

7. Discuss the need to tag and remove any defective SCBA from service.

Reference:

J&B Fundamentals 3rd Edition, pages 79-82.

IFSTA Essentials 6th Edition, pages 303-306.

NOTE: As with inspection and maintenance procedures, it is also vital to the well being of the SCBA and firefighter that written procedures be established for the cleaning and sanitizing of the SCBA. The first step in assuring the readiness of the SCBA is in the post use cleaning.

PRESENTATION

ENABLING OBJECTIVE #3

The Firefighter Candidate shall correctly demonstrate replacing an empty SCBA air cylinder with a full cylinder.

1. Stress that care and caution should be taken when changing SCBA air cylinders.
2. Demonstrate and explain step-by-step the one-person method for changing an SCBA air cylinder.
3. Demonstrate and explain step-by-step the two-person method for changing an SCBA air cylinder.

Reference:

J&B Fundamentals 3rd Edition, pages 65-80.

IFSTA Essentials 6th Edition, pages 306-311.

PRESENTATION

ENABLING OBJECTIVE #4

The Firefighter Candidate shall correctly demonstrate refilling an expended SCBA air cylinder.

1. Discuss the need to have written policies and procedures for refill stations regardless of type.
2. Explain the air quality test requirement.
 - a) Breathing air must be tested for purity.

- b) NFPA 1500 states that breathing air from a compressor-purifier must be tested quarterly by a qualified laboratory.
 - c) Such tests must be done routinely and accurately, and up-to-date records must be maintained.
3. Using the available refill system, compressor, or cascade, demonstrate and discuss the step-by-step method for recharging an air cylinder and emphasize checking the hydrostatic test date.

Reference:

J&B Fundamentals 3rd Edition, pages 78-79, 81.

IFSTA Essentials 6th Edition, pages 306-311.

NFPA 1989 and 1500.

APPLICATION

Establish four stations, each equipped with the supplies necessary to perform the necessary task. An inspection station, a cleaning and sanitizing station, a cylinder changing station, and a cylinder refill station. Each station should represent one of the enabling objectives. Where possible, have additional instructors to assist in this process. Once stations and instructors are established, have the students rotate through and perform the task as prescribed in the enabling objectives.

SUMMARY

Re-emphasize the need to perform and document routine and periodic maintenance.

Review the importance of cleaning and sanitizing the SCBA.

Summarize the need to have and follow S.O.P.s for refilling empty cylinders.

LESSON SIX

FIREFIGHTER

Personal Protective Equipment

DOMAIN: PSYCHOMOTOR

LEVEL OF LEARNING: APPLICATION

MATERIALS

IFSTA Essentials 6th Edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 3rd Edition; NFPA 1404 Standard; overhead projector or laptop computer and multimedia projector; projection screen; smoke lab or an acquired structure; smoke generator and liquid; sufficient number of SCBA.

NFPA 1001 JPRs, 2013 Edition

5.3.1 Use SCBA during emergency operations
5.5.1 Clean and check ladders, ventilation equipment, self contained breathing apparatus (SCBA), ropes, salvage equipment, and hand tools

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 Candidate shall successfully demonstrate the use of SCBA, including donning and doffing while wearing protective clothing in conditions of obscured visibility, and in a restricted passage.

ENABLING OBJECTIVES

1. The Firefighter Candidate shall accurately describe in writing, the use and limitations of SCBA.
2. The Firefighter Candidate shall correctly don and doff the SCBA while wearing protective clothing, **within a time frame established by the AHJ.**
3. The Firefighter Candidate under simulated smoke conditions shall successfully demonstrate the ability to perform in obscured visibility with an SCBA.
4. The Firefighter Candidate given a passage of limited or restricted size, shall successfully demonstrate doffing the SCBA, passing through the opening, and donning the SCBA.

LESSON SIX

FIREFIGHTER

Personal Protective Equipment

MOTIVATION

Properly trained and equipped personnel using SCBA provide superior fire ground performance. Training in the use of SCBA during simulated fire ground scenarios is essential to increase the effectiveness and safety of the firefighter during an emergency situation.

NOTE: This lesson works best when delivered in the classroom first and then finished on the drill ground. Sufficient time should be given for each evolution to allow new firefighters to become acclimated to their SCBA and to also allow them to overcome any psychological barriers.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter Candidate shall accurately describe in writing, the use and limitations of SCBA.

1. Discuss the four environmental hazards and stress that SCBA must be worn anytime one of these hazards is present.
2. Discuss the limitations presented by the facial features of the wearer, i.e., facial hair, and how some departments are supplying individual masks.
3. Discuss the mental limitations of the wearer.
4. Discuss the limitations of the equipment and include chemical absorption through the firefighter's skin.

Reference:

J&B Fundamentals 3rd Edition, pages 58-59.

IFSTA Essentials 6th Edition, pages 281-287, 292-293, 295-296.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter Candidate shall correctly don and doff the SCBA while wearing protective clothing **within a time frame established by the AHJ.**

1. Using an SCBA, describe and demonstrate the precautionary safety checks when preparing to don the SCBA.
2. Using an SCBA, describe and demonstrate donning by the Over-the-Head Method.
3. Using an SCBA, describe and demonstrate donning by the Crossed-Arms Coat Method.
4. Using an SCBA, describe and demonstrate donning by the Regular Coat Method.
5. Using an SCBA, describe and demonstrate donning from a Seat Mount.
6. Using an SCBA, describe and demonstrate donning from a Side or Rear Mount.
7. Using an SCBA, describe and demonstrate donning from a Compartment or Backup mount.
8. Describe and demonstrate correct donning of the face piece and emphasize the hazards associated with a poor seal.
9. Describe and demonstrate the correct procedures for doffing the face piece and SCBA.

Reference:

J&B Fundamentals 3rd Edition, pages 64-73.

IFSTA Essentials 6th Edition, pages 297-302.

NOTE: It is not the intent of this lesson nor should it be the intent of the instructor to make the donning of SCBA a “race” against the clock. Rather, it should be stressed that donning the SCBA is paramount to personal safety. It should be stressed, however, that time is important and training should focus on donning the SCBA in a correct and timely manner.

PRESENTATION

ENABLING OBJECTIVE #3

The Firefighter Candidate under simulated smoke conditions shall successfully demonstrate the ability to perform in an SCBA.

NOTE: This objective shall be met in a practical exercise environment. The experience level of the students will dictate the evolutions to be performed. In cases where students are new and inexperienced, it is recommended that the evolutions be completed in a basic to advanced order. Sufficient time should be allowed for individual work and attention where necessary.

Reference:

J&B Fundamentals 3rd Edition, page 600.

IFSTA Essentials 6th Edition, pages 448-449.

NOTE: It is further recommended that imitation smoke be used for all “smoke” scenarios. All exercises should be performed in accordance with NFPA 1404.

PRESENTATION

ENABLING OBJECTIVE #4

The Firefighter Candidate given a passage of limited or restricted size shall successfully demonstrate doffing the SCBA, passing through the opening, and donning the SCBA.

1. Describe situations where it may be necessary to remove the SCBA in order to access or leave an area.

2. Using an SCBA describe and demonstrate how to correctly doff the SCBA, pass the SCBA and yourself through the opening, and don the SCBA.

Reference:

J&B Fundamentals 3rd Edition, pages 593-598.

IFSTA Essentials 6th Edition, pages 471-472.

NOTE: Stress the importance of maintaining control of the face piece and regulator when doffing the air pack.

NOTE: Instruction for this objective should focus on situations that may be found on the fire scene, e.g., attics, crawl spaces, partial collapses, etc. Some of the techniques used in this block of instruction will have an application in confined space rescue. Although students should be encouraged to take a confined space class, it is not the intent of this lesson to teach confined space rescue practices and procedures.

APPLICATION

The use of additional instructors during the practical exercise portion of this lesson will allow you to evaluate students as they apply various techniques. Establish a rotation that will allow students to describe the limitations of the SCBA, don and doff the SCBA, perform a task or tasks under obscured visibility, and then demonstrate working in restricted passage areas. REMEMBER, the intent is to build confidence and instill proper procedures.

SUMMARY

Review the uses and limitations of SCBA.

Restate the need to quickly don the SCBA and what problems may occur if it becomes a speed drill.

Review the practical portions that were conducted on the drill grounds. Emphasize the positive results and suggest solutions for the negative results.

LESSON SEVEN

FIREFIGHTER

Personal Protective Equipment

DOMAIN: PSYCHOMOTOR

LEVEL OF LEARNING: APPLICATION

MATERIALS

IFSTA Essentials 6th Edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 3rd Edition; overhead projector or laptop computer and multimedia projector; projection screen; SCBAs for participants; protective clothing; smoke generator and imitation smoke.

NFPA 1001 JPRs, 2013 Edition

5.3.1 Use SCBA during emergency operation
5.3.9 Conduct a search and rescue in a structure

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 Candidate under simulated smoke conditions shall correctly demonstrate emergency breathing techniques and rescue procedures while wearing SCBA.

ENABLING OBJECTIVES

1. The Firefighter Candidate shall successfully demonstrate the techniques for maximizing the air supply of an SCBA.
2. The Firefighter Candidate under simulated smoke conditions shall demonstrate the ability to perform the following emergency breathing techniques:
 - a) Filter breathing.
 - b) Skip breathing.
 - c) Breathing from the by-pass valve.
 - d) Breathing from the lower pressure hose.
 - e) Breathing from the regulator.
3. The Firefighter Candidate under simulated smoke conditions shall demonstrate rescue procedures for the following:
 - a) A firefighter with functioning respiratory protection.
 - b) A firefighter without functioning respiratory protection.
 - c) A civilian without respiratory protection.

LESSON SEVEN

FIREFIGHTER

Personal Protective Equipment

MOTIVATION

Firefighters should be trained sufficiently and frequently enough in SCBA that their reactions to equipment impairment are instinctive. Emphasis should focus on replacing panic with a rapid, analytical check of possible sources of impairment, and then performing the subsequent corrective action. Fundamental to all emergency procedure training is the principle that one should not compromise the integrity of the SCBA, with particular emphasis on not removing the face piece for any reason. Reinforce this principle throughout the training program. Do not violate the integrity of the SCBA, either by assisting a victim or by removing the facepiece in atmospheres where the quality of air is unknown. The firefighter's life is directly connected to the integrity of the SCBA assembly. If the SCBA integrity is compromised, then the firefighter's life is compromised.

PRESENTATION

ENABLING OBJECTIVE #1

The Firefighter Candidate shall successfully demonstrate the techniques for maximizing the air supply of an SCBA.

1. Go over some of the highlights from the physical requirements lesson, such as heart rate and duration of air.
2. Define controlled breathing.
3. Give an example of its application to emergency escape procedures.

Reference:

J&B Fundamentals 3rd Edition, pages 61, 70.

IFSTA Essentials 6th Edition, pages 281-287, 315, 448-449.

PRESENTATION

ENABLING OBJECTIVE #2

The Firefighter Candidate under simulated smoke conditions shall demonstrate the ability to perform at least the following emergency breathing techniques:

- a) Filter breathing.
 - b) Skip breathing.
 - c) Breathing from the by-pass valve.
 - d) Breathing from the low-pressure hose.
 - e) Breathing from the regulator.
1. State the **OSHA requirement** of operating in teams as it relates to avoiding and assisting in emergency procedures.
 2. Discuss and explain the role of the Breathing Apparatus Officer.
 - a) Remains outside.
 - b) Responsible for knowing the number and identity of all personnel using SCBA.
 - c) Knows their location, function, and time of entry.
 - d) Monitors individual air consumption.
 3. Explain why departmental SOPs should be developed, taking into account the recommendations of the SCBA manufacturer.
 4. Lead the class in a discussion on emergency procedures by stressing the importance of remaining calm in the event of SCBA failure. Talk about panic and fear. Give examples.
 5. Using an SCBA, explain and demonstrate filter breathing.
 - a) Filter breathing is used if a firefighter's air supply is depleted and there are no other available means for getting air.
 - b) The firefighter should immediately exit, if possible, when the SCBA is running low or malfunctioning.

- c) Using the Filter Breathing Method, disconnect the low pressure hose from the regulator, place the low-pressure hose end in a pocket, glove, or inside the turnout coat.
- d) Filter breathing **will not** prevent the firefighter from inhaling toxic gases or otherwise hazardous substances.
- e) Filter breathing should only be used as addressed in a department's S.O.P.s and only when it is impossible to use other methods.

Note: Filter breathing is not certified by NIOSH and violates NFPA, OSHA, and ANSI standards.

- 6. Using an SCBA, explain and demonstrate skip breathing.
 - a) Skip breathing should be practiced whenever using SCBA.
 - b) Skip breathing is an emergency breathing technique used to extend the use of air supply.
 - c) Inhale as during regular breathing, and hold as long as it would take to exhale, and then inhale once again before exhaling.
 - d) Take normal breaths and exhale slowly to keep the carbon dioxide in the lungs balanced.
- 7. Using an SCBA, explain and demonstrate breathing from the by-pass valve.

NOTE: The by-pass valve will rapidly deplete the air supply. This should be done as a last resort.

- 8. Using an SCBA explain and demonstrate breathing from the low-pressure hose.
- 9. Using an SCBA explain and demonstrate breathing from the regulator.
- 10. Explain and demonstrate a 5-minute escape bottle.
 - a) A five-minute escape bottle is an auxiliary cylinder, filled with a five-minute supply of air and connected to an airline unit.
 - b) Five minute escape bottles are used when a greater than normal air supply is needed in an environment containing hazardous materials.

Normally, these devices are not associated with firefighting.

- c) These bottles may be used when the air supply flowing through an airline is interrupted.

11. Explain and demonstrate a cascade system.

Reference:

J&B Fundamentals 3rd Edition, page 62.

IFSTA Essentials 6th Edition, pages 307-308, 313-315.

PRESENTATION

ENABLING OBJECTIVE #3

The Firefighter Candidate under simulated smoke conditions shall demonstrate rescue procedures for the following:

- a) A firefighter with functioning respiratory protection.
 - b) A firefighter without functioning respiratory protection.
 - c) A civilian without respiratory protection.
1. Discuss the strength demands from the lesson on physical requirements.
 2. Emphasize the necessity to work in teams.
 3. Emphasize the importance of establishing departmental S.O.P.s concerning rescue procedures.
 4. Discuss the moral obligations of the firefighter in a rescue setting to the public and to each other.
 5. Discuss carries and drags.
 6. Explain the procedures and possible scenarios for removing a conscious firefighter with and without functioning respiratory protection. Include buddy breathing, **but only as a last resort.**

NOTE: Rapid Intervention Crew drills require advanced training. However, every firefighter should understand the use of all equipment on their airpacks. Buddy breathing and UAC connections should be trained on

using multiple drills in different scenarios. See NFPA 1407 for further information.

7. Explain the procedures and possible scenarios for removing an unconscious firefighter with and without functioning respiratory protection.
8. Discuss the procedures and possible scenarios for assisting a trapped firefighter with and without functioning respiratory protection.
9. Explain the procedures for removing conscious and unconscious civilian victims without respiratory protection.

Reference:

J&B Fundamentals 3rd Edition, pages 593-598.

IFSTA Essentials 6th Edition, pages 439-457.

NOTE: Training must stress that a firefighter should not remove the facepiece of the SCBA in a hazardous environment to assist a civilian fire victim, but should instead rely on a rapid removal of the victim to a safe atmosphere or to a place of refuge. However, when a firefighter becomes a victim due to an SCBA failure or other impairment, some fire departments or fire service personnel insist upon engaging in procedures that are extremely difficult, even with consistent training in relatively ideal conditions. By compromising the integrity of the user's (rescuer's) SCBA, the risk that both individuals will inhale sufficient products of combustion to cause impairment or death is a distinct possibility. See NFPA 1407 for baseline training requirements.

APPLICATION

Under simulated smoke conditions have each Firefighter Candidate perform each of the objectives: maximize air supply, emergency breathing techniques, and the rescue of a victim from a hostile environment. It is recommended that sufficient instructors be present to assure performance and safety.

SUMMARY

Re-emphasize the need to know emergency breathing procedures.

Review the procedures for emergency breathing techniques.

Review the rescue procedures for civilians.

Review in detail the rescue procedures for firefighters.