

## INSTRUCTOR GUIDE

TOPIC: CHANGING THE FIRE SERVICE CULTURE

LEVEL OF INSTRUCTION:

TIME REQUIRED: TWO HOURS

MATERIALS: APPROPRIATE AUDIO-VISUAL MATERIALS

REFERENCES: Fire Department Safety Officer, 1st ed., International Fire Service Training Association.

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PREPARATION:

MOTIVATION: Have you ever heard the expression that the fire service is one hundred years of tradition unhampered by progress. While this may be humorous, it also has some amount of truth associated with it. While we may have made great strides in some areas, we are still doing business the way we always have. Look at the firefighter line of duty death rate and note that it is being maintained even with the many improvements in safety that have been made.

OBJECTIVE (SPO):

The firefighter will demonstrate a general knowledge of the cultures that have evolved in the fire service and changes that need to take place to improve firefighter safety.

OVERVIEW:

### CHANGING THE FIRE SERVICE CULTURE

- \* Traditions
- \* Recognizing Dangerous Situations
- \* Change

## CHANGING THE FIRE SERVICE CULTURE

- SPO: The firefighter will demonstrate a general knowledge of the cultures that have evolved in the fire service and changes that need to take place to improve firefighter safety.
- EO 1-1 Identify fire service traditions that have compromised firefighter safety.
- EO 1-2 Recognize dangerous situations that could result in injury or death to firefighters.
- EO 1-3 Identify changes that need to take place to reduce the potential for injury and death to firefighters.

This drill would be best conducted as an interactive discussion that will provide an opportunity to reflect on where we have been, where we are now, and where we want to go. Each attendee should be encouraged to participate in the open discussion.

I. TRADITION (EO 1-1)

A. Remember when

1. Basic fire training was only 60 hours and we did not talk about things like smoking cessation, proper diet, exercise, wellness, and mental health?
2. Protective clothing may have consisted of a canvas coat, metal helmet, and no turnout pants?
3. Apparatus may have only carried two SCBA and they were in boxes somewhere out of easy access?
4. We rode on the back step of the engine or maybe even in the hosebed or on the running board?
5. There was no incident command system as we know it today?
6. A safety officer was something they had in industry?

B. Safety quiz

1. Are you in good health and physical condition when you are on duty?
2. Do you wear protective clothing and equipment appropriate for the incident?
3. Are you seated and wearing a seatbelt whenever the apparatus is in motion?
4. Do you watch for traffic as you exit or work around apparatus at the emergency scene?
5. Do you stay with your officer and crew when operating at the emergency scene?
6. Do you use proper techniques when lifting?
7. Do you know where the fire is at all times when you are working at a structure fire?

8. Do you use hand and power tools safely?
9. Do you know what to do when lost or disoriented?
10. Do you know when and how to call for help if you are in trouble?

C. Firefighter injuries for 2003 (NFPA)

78,750 firefighter injuries

48.3% of the injuries occurred on the fireground

44.2% of the injuries were strains and sprains

15,900 vehicle collisions involving emergency vehicles

D. Firefighter deaths for 2004 (USFA)

107 line of duty deaths

60.7% of the deaths were members of the volunteer fire and rescue service

25.2% of the deaths occurred on the fireground

45.7% of the deaths were due to heart attack

E. What has changed

1. An unacceptable level of firefighter deaths and injuries which resulted in the issuance of OSHA regulations such as the respiratory regulation and NFPA standards such as NFPA 1500 and the professional qualification series
2. Firefighter techniques, training, and equipment has improved
3. Still requires human intervention and the associated human errors

II. RECOGNIZING DANGEROUS SITUATIONS (EO 1-2)

A. Risk identification

1. Compile a list of all emergency and non-emergency operations and duties
2. Consider worst possible conditions or potential events

3. Sources to assist with identification process
  - a. Department's loss prevention data
  - b. National averages and trends from NFPA and U.S. Fire Administration
  - c. Seek input and ideas from department personnel, trade journals, professional associations, and other service providers
  - d. Other sources include risk management plans developed by local industry and hazardous substance sites, vulnerability analyses, and EPA plans

#### B. Risk Evaluation

1. Evaluate identified risks for both frequency and severity
  - a. Frequency is referred to as "incidence rate" and addresses likelihood of occurrence
  - b. Severity addresses degree of seriousness for incident and measured in a variety of ways such as lost time away from work, cost of damage, cost of and time for repair or replacement of equipment, disruption of service, or legal costs
2. Incidents of high frequency and high severity must have highest priority in risk analysis

#### C. Risk Prioritization

1. Any risk with high probability of occurrence and serious consequences deserves immediate action and would be considered a high priority item
2. Non-serious incidents with a low likelihood of occurrence are a lower priority and can be placed near bottom of action required list

#### D. Risk Control Techniques

1. Risk avoidance
  - a. Best risk control choice
  - b. Personnel should avoid activities that creates risks

- c. Risk avoidance approach frequently is impractical
- 2. Risk transfer
  - a. Accomplished by physically transferring risk to someone else and through purchase of insurance
  - b. Insurance does nothing to affect likelihood of occurrence
- 3. Control measures
  - a. Most common method for management of risk is adoption of effective control measures
  - b. Will not eliminate risk but can reduce likelihood of occurrence or mitigate severity
  - c. Safety, health, and wellness programs; ongoing training and education programs; and well-defined SOP's are effective control measures
  - d. Measures instituted to control incident scene injuries include use of accountability systems, use of full protective clothing, mandatory respiratory protection program, training and education, and health and wellness SOP's
- 4. Monitoring
  - a. Ensures that system is dynamic and facilitates periodic reviews of entire program
  - b. Any problems that occur in process have to be revised or modified
  - c. Intent of a risk management plan is to develop a strategy for reducing inherent risks associated with fire department operations
  - d. Operation of plan is a dynamic and aggressive process that must be monitored and revised at least annually or as needed

### III. CHANGES (1-3)

#### A. Health and Safety Programs

1. Develop a health and safety program that meets requirements, demands, needs, and concerns of organization

2. Each employee should be required to comply with requirements of occupational safety and health standards
3. Supervisors and members have a responsibility to support and abide by programs in interest of improving work environment
4. Important reasons for using an occupational safety and health program
  - a. Ethical obligation for a safety program is evident to prevent injuries, illnesses, and fatalities and to reduce property loss
  - b. It is a sensible economic investment
  - c. It ensures compliance with applicable laws, codes, and standards
5. Process is a comprehensive team effort that requires management support and member participation

## B. Respiratory Protection

1. Introduction
  - a. SCBA can provide protection against all of these circumstances but are generally used to protect against toxic and hazardous atmospheres and oxygen-deficient atmospheres at emergency incidents
  - b. All masks or respiratory protection must meet minimum requirements for environment that employee is in and be able to protect against atmospheric concentration of contaminant present
2. Respiratory Protection Policy
  - a. Written policy covering proper use of all respiratory protection equipment is required by NFPA 1500 and 1582 and by 29 CFR 1910.134
  - b. When adopted by department, it must be communicated to members of department
  - c. Respiratory protection policy requires
    - 1) Selection criteria for respirators
    - 2) Written program
    - 3) Inspection criteria

- 4) Proper use procedures
  - 5) Individual fit testing for employees
  - 6) Maintenance program
  - 7) Training program
  - 8) Air-quality testing program
  - 9) Medical evaluation and certification for those wearing respirators
  - 10) Procedures for regularly evaluating program effectiveness
- d. Inspection programs for SCBA are established in NFPA 1500
- 1) Fire company personnel perform regular (at least weekly) inspections of SCBA
  - 2) Monthly inspections include a check of entire unit for deteriorated components, air tightness of cylinder and valves, gauge comparison, reducing valve and bypass valve operation, and a check of the regulator, exhalation valve, and low-air alarm
  - 3) Following each inspection, SCBA is cleaned before returning to service
- e. Department must maintain a record of hydrostatic tests throughout life of the cylinders

### 3. Fit Testing

- a. Individual facepiece fit testing is required of all employees who are going to use respiratory protection equipment
- b. Testing must be done before allowing any employee to use mask in a hazardous atmosphere
- c. Requirement for a proper fit prohibits wearing of any facial hair such as beards or sideburns that would prohibit a complete seal of facepiece on wearer
- d. Specific steps in fit testing process are found in 29 CFR 1910.134

- e. Medical clearance is required before fit testing

#### 4. Training

- a. All employees must be trained in use of respiratory protection equipment

- b. Training includes

- 1) When to wear equipment

- 2) How to don and doff equipment

- 3) How to operate equipment

- 4) How to perform daily inspection procedures

- 5) How to clean and maintain equipment

- c. Training must be an ongoing process

#### 5. Creation of Database

- a. Final and basic part of respiratory protection program is creation and maintenance of a database

- b. Following information must be maintained

- 1) Personnel files, medical

- a) Fit testing documentation

- b) Annual medical exam information regarding pulmonary tests

- c) Exposure reports

- d) Injury reports that involve respiratory injuries

- 2) Personnel files, general

- a) Fit testing, pass or fail

- b) Documentation and required SCBA training

- 3) SCBA and other respiratory equipment data
  - a) Design and selection criteria
  - b) Annual testing and inspection documentation
  - c) Maintenance records on individual units
  - d) Air-quality reports
- 4) Monthly inspection - Hydrostatic test dates on cylinders

## C. Personal Protective Clothing

### 1. Structural Fire Fighting Clothing

- a. It consists of head and face protection in form of helmet, protective hood, and eye protection; upper body protection in form of a turnout coat; lower body protection in form of turnout pants; foot protection in form of waterproof boots; and gloves for hand protection
- b. As established in department's protective clothing policy, inspection of structural fire fighting ensemble occurs at time new clothing is received, periodically by health and safety officer or unit supervisor, and following its use
- c. Inspections include
  - 1) Periodical inspection - officer inspects clothing for proper condition and cleanliness
  - 2) Inspection following each use - individual firefighter inspects clothing, cleans it, makes minor repairs, or submits it for major repairs as needed
- d. Department should establish a replacement standard that allows entire inventory of protective clothing to be replaced on a specific schedule such as 5, 7, or 10 years or as needed
- e. Protective clothing program should include instructions on care, cleaning, and maintenance of clothing
- f. Protective Clothing can be damaged by physical contact with portions of apparatus, in compartments, and near loose equipment

- g. Ultraviolet light can deteriorate fabric and cause damage to seams of outer shell and inner liner
  - h. When stored at station between shifts, clothing should be in a well-ventilated locker outside living quarters
2. Emergency Medical Services (EMS)
- a. Personnel assigned to medical units require specialized clothing
  - b. Protection against liquid-borne pathogens takes form of garments, gloves, and face protection that meet requirements of NFPA 1999
  - c. NFPA 1999 is compatible with other protective clothing standards in its requirements for testing, labeling, and third-party certification during manufacture
3. Wildland PPE
- a. Includes protective clothing (shirt, jacket, one-piece garment, and trousers), helmet, gloves, footwear, protective shelter, and protective face/neck shroud
  - b. Objective of protective clothing is to provide thermal protection for firefighter but not to increase internal heat stress
  - c. Clothing designed to provide thermal protection for structural fire fighting is not applicable for extended wildland operations
  - d. Protective clothing and equipment inspection and care requirements are specified in NFPA 1977, NFPA 1500, and 29 CFR 1910.132
  - e. Additional requirements, which include carrying water and food supplies as part of protective ensemble, may be found in Federal and state forestry regulations
4. Station Wear/Work Uniform
- a. Intended to provide a limited level of safety for employee in event of an unexpected exposure to fire
  - b. According to NFPA 1975, station/work uniforms shall be constructed of either natural fabrics such as pure wool or cotton or flame-resistant fabrics such as Nomex, Flamex, or PBI and Kevlar

- c. Basic elements of station/work uniform are shirts, trousers, and coveralls
- d. Department should emphasize to fire department members that underwear and socks made of synthetic fibers can contribute to burns if primary protective garment is severely damaged
- e. Because NFPA 1500 requires that fire departments provide for cleaning of station/work uniforms, department should include cleaning and inspection instructions in protective clothing program
- f. If uniforms are cleaned in department-provided clothes washers, washers must be dedicated solely to cleaning of these items
- g. If garments are made of natural fibers, they can remain in use as long as they retain a uniform appearance and have no physical damage due to burns, tears, or rips
- h. Longevity of garments with chemically added fire-resistant properties is based on number of washings which is usually about 100 times
- i. Requirements for different types of work shoes can be found in ANSI Standard Z41
- j. OSHA requirements can be found in Title 29 CFR 1910.136

#### D. Personal Protective Devices

##### 1. PASS Device

- a. Provides an audible alert tone as well as a visible warning light in event wearer is incapacitated and wearer needs assistance
- b. Unit activates when wearer remains motionless for 30 seconds
- c. Units currently take two forms: units that attach to protective clothing and must be turned on manually and units that are integrated into SCBA and are turned on when air is flowing through system
- d. According to NFPA 1500, PASS devices must be tested at least weekly and before each use
- e. Most units require maintenance by manufacturer; therefore, department should maintain spare replacement units NOTE: Part

of the maintenance program should be the regular replacement of batteries in PASS devices

- f. Design and testing criteria of PASS devices are found in NFPA 1982, Standard on Personal Alert Safety Systems (PASS)

## 2. Life-Safety Harnesses

- a. According to NFPA 1983, life-safety harnesses include harness assemblies that are used to support people during rescue operations
- b. Standard divides life-safety harnesses into three categories:
  - 1) Class I - Harness that fastens around waist and around thighs or under buttocks and is designed to support weight of one person on a ladder or emergency escape; designed to support 300 pounds of weight
  - 2) Class II - Harness that fastens around waist and around thighs or under buttocks and is designed to support weight of two persons during rescue; designed to support 600 pounds of weight
  - 3) Class III - Harness that fastens around waist, around thighs or under buttocks, and over shoulders, designed for two persons during rescue and where inverting is possible; designed to support 600 pounds of weight
- c. Life-safety harnesses must be inventoried (with individual serial numbers), inspected and tested periodically, and stored in a manner that prevents damage to them
- d. Cleaning and repair should conform to manufacturer's instructions

## 3. Eye Protection

- a. Eye and face protection required by NFPA 1500 must be appropriate to hazard to which employee is exposed and must meet requirements found in ANSI Z87.1, Practice for Occupational and Educational Eye and Face Protection
- b. Protection includes
  - 1) SCBA full facepiece - Designed to protect respiratory system, eyes, and mucus membranes

- 2) Helmet-mounted faceshield - Provides limited protection to eyes from flying debris
- 3) Safety glasses - Provides limited protection to eyes from flying debris
- 4) Helmet-mounted safety goggles - Provides full protection to eyes from flying debris and chemical splash
- 5) Eye protection for welding/cuffing - Provides protection to eyes from ultraviolet rays and flying debris found in welding/cutting process

#### 4. Hearing Protection

- a. Sources of noise are audible warning devices on apparatus, apparatus engine and pump operations, power-operated tools and equipment (such as radios, lawn mowers, and chain saws), and emergency scene itself
- b. NFPA 1500 requires that hearing protection be provided anytime ambient noise level exceeds 90 decibel (dB)
- c. Goal of program is to identify various sources of noise in workplace and reduce or eliminate the hazard
- d. As part of health and wellness program's annual medical evaluations, hearing tests must be given to all members
- e. Hearing protection takes form of apparatus-mounted radio communication headsets, earmuffs, or single-use or reusable earplugs

#### E. Auxiliary Safety Equipment

##### 1. Life-Safety Rope

- a. Life-safety rope is used strictly for supporting weight of firefighters and/or victims during fire fighting, rescue, or training operations
- b. Guidelines for use, storage, cleaning, inspecting, and disposal of life-safety rope must be included in department's policy and procedures manual or standard operating procedures manual

- c. Rope that fails test or has been used for any purpose other than life safety must be removed from service as life safety rope and destroyed or used in another capacity

## 2. Life-Safety Rope System Components

- a. Life-safety rope system components include carabineers, ascent and descent devices, rings, snap-links, pulleys, blocks and tackles, and other devices used with rescue rope
- b. NFPA 1983 provides requirements for this equipment
- c. Guidelines for inspection, care, maintenance, use, and testing are same as those for life-safety harness and ropes

## F. Miscellaneous Safety-Related Apparel

### 1. Water Rescue

- a. Protection includes head protection in form of a hard hat or helmet, eye protection, gloves, safety harness, and personal flotation device (PFD)
- b. U.S. Coast Guard regulates type and style of personal flotation devices used
- c. Personal flotation devices, like rest of safety equipment, must be inspected regularly, maintained, and removed from service at end of its manufacturer's recommended life span

### 2. Highway Operations

- a. Firefighters responding to vehicle incidents, fires, medical emergencies, and hazardous materials operations on nation's highways are in double jeopardy
  - 1) There is inherent danger from incident itself
  - 2) Firefighters become potential targets for vehicles that are passing incident
- b. Department must establish operational protocol for highway operations that reduces risk to responders
  - 1) Protocol includes proper positioning of apparatus and requiring responders to wear garments with reflective trim

- 2) Reflective trim is required on all structural protective clothing currently manufactured
- 3) When clothing is not in use at highway incidents, lightweight safety vests with reflective trim must be provided to responders to increase their visibility

#### G. Other Changes

1. Consider reducing the amount of apparatus responding in the emergency mode (lights and siren) on alarms or the types of alarms that require an emergency response
2. Learn to manage the air supply; remember that the alarm activates when approximately 5 minutes of air is left in the cylinder and you used approximately 15 minutes of air to get to where the alarm activated
3. Modern protective clothing is very fire resistant but the body inside that clothing cannot withstand the high heat level for any period of time; the protective clothing does not make you indestructible
4. Stop focusing on the fire and focus on the entire scene, especially the stability of the structure and where the fire might have extended
5. There needs to be a change in attitudes such as firefighting being a dangerous activity and some people are going to get hurt; anyone can and will get hurt with an attitude like that
6. There needs to be more emphasis on taking care of physical and mental well-being
7. It should not be acceptable to get injured or die in the line of duty because not all injuries are the result of heroic acts
8. Recognize unsafe practices and do not allow them to continue
9. Dress properly for the emergency, especially respiratory protection
10. Take rehabilitation and self-pacing seriously rather than working until you drop
11. Work in teams, avoid freelancing, and make sure that your officer knows where you are and what you are doing at all times

12. Assess the risk in relation to the benefit; risk a lot to save a lot (human life) and risk little to save little (property)
13. Comply with safety regulations, standards, and policies
14. Wearing dirty protective clothing or wearing a helmet that has been deformed by heat are not badges of honor; they may be carrying contaminants or no longer provide the protection needed
15. Try to learn from the lessons of the past and not repeat them
16. Look at how much of the department's budget is devoted to physical items such as apparatus, equipment, and buildings and how little is devoted to the health and safety of personnel
17. Stop making excuses for not being able to do something that will take care of your people
18. Make sure that everyone goes home

REVIEW:

CHANGING THE FIRE SERVICE CULTURE

- \* Tradition
- \* Recognizing Dangerous Situations
- \* Changes

REMOTIVATION: If we do not change from the past, we will continue to repeat it.  
Everyone has the opportunity to be a change-agent rather than a statistic.

ASSIGNMENT:

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EVALUATION: