

INSTRUCTOR GUIDE

TOPIC: APPARATUS RESPONSE

LEVEL OF INSTRUCTION:

TIME REQUIRED: TWO HOURS

MATERIALS: APPROPRIATE AUDIO-VISUAL MATERIALS

REFERENCES: Fire Department Safety Officer, 1st ed., International Fire Service Training Association; Essentials of Fire Fighting, 4th ed., International Fire Service Training Association

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PREPARATION:

MOTIVATION: While the operator of an emergency vehicle is responsible for the safe operation of the vehicle at all times, the crew must also take some measure to be of safe and make sure that everyone arrives at their destination and returns safely.

OBJECTIVE (SPO):

The firefighter will demonstrate a general knowledge of safety factors involved in responding to and returning from an emergency.

OVERVIEW:

APPARATUS RESPONSE

- * Statistics
- * Response
- * Non-emergency Considerations

APPARATUS RESPONSE

- SPO: The firefighter will demonstrate a general knowledge of safety factors involved in responding to and returning from an emergency.
- EO 1-1 Identify statistics that demonstrate the importance of safety during an emergency response.
- EO 1-2 Identify items that can improve safety during an apparatus responses and returning.
- EO 1-3 Identify procedures, policies, and practices that can improve the safe response and return of apparatus.

This drill is aimed primarily at the operators of emergency vehicles but the information included is beneficial to everyone riding on an emergency vehicle. The drill should be conducted as a interactive discussion so that everyone can benefit from the information shared.

NOTE: The terms "vehicle" and "apparatus" are used interchangeable in the outline. Both terms are referring to rolling stock operated by the department including non-emergency vehicles such as cars and vans. The term "driver" and operator" may be used interchangeable to indicate the individual that is in the driver position on the vehicle and is responsible for the driving and operation of the vehicle from the viewpoint of controlling the power train and braking systems.

I. STATISTICS (EO 1-1)

A. According to 2003 data from the National Fire Protection Association

1. There were 15,900 collisions involving fire department vehicles responding to or returning from incidents
2. There were 850 firefighter injuries associated with collisions involving fire department vehicles responding to or returning from incidents
3. There were 980 collisions involving vehicles owned by firefighters enroute to incidents
4. There were 85 injuries due to firefighters operating privately-owned vehicles going to incidents

B. According to 2004 data from the United States Fire Administration

1. There were 22 line of duty deaths of firefighters responding to or returning from incidents
2. There were 20 collisions involving fire department apparatus that resulted in line of duty deaths

C. While the statistics may not seem large in relation to the overall number of firefighter injuries and deaths, they should not be considered acceptable or part of the cost of doing business

II. RESPONSE (EO 1-2)

A. Emergency Operation of Apparatus

1. Members must be aware of all pertinent laws and SOPs

2. When emergency vehicles are exempt from certain laws or statutes, operators are allowed to do following contrary actions:
 - a. Exceed posted speed limits while having due regard for safety of persons and property and maintaining full control of apparatus
 - b. Proceed past any steady or flashing red signal, traffic light, stop sign, or other device indicating moving traffic after coming to a stop and gaining control of intersection while having due regard for safety of persons and property
 - c. Park or stop on roadways while in performance of job duties
 - d. Disobey posted regulations governing direction of movement of vehicles (going down one-way streets in the opposite direction) and turning of vehicles in specified directions as long as operator does not endanger life or property
 - e. Pass or overtake another vehicle at an intersection with due regard to safety of persons and property
3. Fire departments should enact specific rules and regulations and standard operating procedures pertaining to emergency response of fire department vehicles that meet or exceed municipal, state, and/or jurisdictional requirements (NFPA 1500 can be used as a guide)

B. Crew Responsibility

1. Passengers and operators should not drink while the apparatus is in motion
2. All firefighters should ride within a fully enclosed portion of the cab and firefighters not riding in enclosed seats should wear helmets and eye protection
3. If sirens and noise levels exceed 90 decibels, firefighters should wear hearing protection
4. All firefighters must be seated with their seat belts fastened when the vehicle is in motion
5. Apparatus should have seat belts large enough to accommodate a firefighter in full protective clothing
6. If it is absolutely necessary to ride in an unenclosed jump seat, safety bars should be provided to prevent falling

7. Firefighters should always use handrails when mounting and dismounting apparatus
8. There should be a seated position with a working seat belt for everyone riding on the apparatus

C. Emergency Response Considerations

1. Review the number of types of apparatus responding on each type of incident to determine if an emergency response is necessary
2. Consider having one unit respond in an emergency mode on automatic alarms or activated smoke detectors and other units responding in a routine manner until the incident is upgraded to a working incident
3. Review the priority levels for emergency medical patients in relation to the need to operate in an emergency mode when transporting the patient to a medical facility; also consider the well-being of the patient when using sirens
4. Although certain exemptions to traffic laws may be granted to emergency vehicles responding to an alarm, consideration should be given to following posted speed limits, especially in view of traffic conditions
5. Apparatus responding to an emergency and traveling on the wrong side of the road increases the potential for an accident and should be avoided
6. Precipitation, snow, ice, wet leaves, and hot oily surfaces require extra care and caution when vehicles are in motion because of the weight, size, movement of water in tanks, and stopping distances required
7. Emergency lights and the siren request the right-of-way but is must still be granted by the public

III. NON-EMERGENCY CONSIDERATIONS (EO 1-3)

A. Apparatus Safety Action Plan

1. Fire departments should evaluate all vehicles currently in use and establish an action plan to address and correct any existing safety issues or deficiencies
2. Apparatus safety action plan includes a wide spectrum of issues
 - a. Specifications
 - b. Design

- c. Construction
- d. Purchase
- e. Operation
- f. Response procedures
- g. Inspection
- h. Maintenance
- i. Repair

B. Design and Review of Fire Apparatus Specifications

1. During initial specification phase, the following must be addressed to ensure personnel safety:
 - a. Visibility - Requirements include adequate warning lights, reflective trim, and an appropriate color scheme for apparatus
 - b. Audible warning devices
 - 1) Audible warning devices, including sirens, air horns, and backup alarms, must meet NFPA standard while not creating a safety problem for crew
 - 2) Location of audible devices must provide greatest sound coverage to front of apparatus
 - 3) Crew must not be subjected to noise levels greater than 85 decibels
 - c. Audible warning devices may not be mounted on roof of crew compartment and the department must ensure that apparatus electrical system is capable of handling added load
2. Additional areas of concern that should be addressed during design phase
 - a. Obstructions to operator's line of sight such as window posts, spotlights, or other crew members
 - b. Proper placement of handrails or grab rails in the cab and on the exterior of apparatus

- c. Proper placement of access steps into cab, hose bed, turntable, or upper body
- d. Types of terrain in which apparatus operates
- e. Restrictions on gross vehicle weight and axle/tire loads
- f. Converting vehicles that were designed for other purposes such as hauling fuel to make sure there is adequate braking and handling capability

C. Applicable Standards

1. The department must be familiar with apparatus requirements found in NFPA 1500, 1901, and 1906
2. NFPA 1500, Standard for Fire Department Occupational Safety and Health Program, covers various elements related to personnel safety including administration, training and education, fire apparatus equipment and driver/operator, personal protective clothing and protective equipment, emergency operations, facility safety, medical and physical requirements, and member assistance and wellness
 - a. Some of the elements of Chapter 6 may be worthy of consideration when developing standard operating procedures related to the apparatus
 - b. Consider health and safety as primary concerns with specification, design, operation, maintenance, inspection, and repair
 - c. Tools and equipment carried with enclosed seating areas are secured
 - d. Apparatus is operated only by individuals who have successfully completed an approved driver training program
 - e. Vehicles are operated in compliance with applicable laws
 - f. Drivers should not move the apparatus until all persons are seated and secured with seat belts in an approved riding position
3. NFPA 1901, Standard for Automotive Fire Apparatus, covers design and construction of pumpers, initial fire attack vehicles, tankers, ladders and elevating platforms, and special service apparatus
 - a. Standard outlines basic components of each type of apparatus

- b. Standard defines all mandatory components that ensure fire apparatus meets applicable federal and state motor vehicle laws and codes once construction is complete
- 4. NFPA 1906, Standard for Wildland Fire Apparatus, provides minimum requirements for apparatus primarily designed and deployed to fight wildland fires
 - a. Because wildland firefighting apparatus must be able to operate on both hard surface roads and rugged terrain, standard addresses both road ability and performance
 - b. Design must take into consideration off-road environment in which vehicle operates

D. Ergonomics

1. As tools and equipment are placed and stored on apparatus, ergonomics issue affects how accessible are these tools and equipment and how many firefighters are needed to remove them
2. Apparatus ergonomic conditions of concern to fire service include
 - a. Height of hose bed
 - b. Location of preconnected hoselines
 - c. Height of crew compartment steps
 - d. Placement of equipment in compartments
 - e. Tool, ladder, and equipment storage
 - f. Engine and drive train access as it applies to both maintenance mechanics and company personnel

E. Periodic Service Testing

1. Service testing of fire apparatus is defined in NFPA 1500 as "the regular, periodic inspection and testing of apparatus and equipment, according to an established schedule and guideline, to ensure that they are in a safe and functional operating condition"
2. NFPA 1500 requires following service testing for fire department apparatus:

- a. Fire pumps on all apparatus are to be tested to requirements of NFPA 1911, Standard for Service Tests of Fire Pump Systems on Fire Apparatus
- b. Aerial devices are to be inspected and tested in accordance with requirements of NFPA 1914, Standard for Testing Fire Department Aerial Devices

F. Testing and Documentation

1. Chapter 6 of NFPA 1500 requires that fire department provide and maintain records relating to inspection, maintenance, repair, and service of all vehicles used for emergency operations
2. Testing files that are maintained on each pumper must include manufacturer's certification for pump, acceptance test results, and annual pump test records
3. Testing files maintained on each aerial device must include manufacturer's certification, annual inspection reports, and third-party certification generated during 5-year test
4. Apparatus testing schedule can conform to preventive maintenance schedule

G. Apparatus Inspection/Maintenance

1. Department's SOP manual must include guidelines for daily apparatus inspection and maintenance
2. Company personnel must be trained in performing inspections and routine maintenance of apparatus in accordance with these guidelines
3. To prevent an unsafe apparatus from being placed into service, fire department must develop a list of major mechanical deficiencies
4. Items found on a major deficiencies list include
 - a. Brake failure
 - b. Hydraulics system failure
 - c. Failure of warning devices
 - d. Windshield wiper failure
 - e. Failure of headlights, taillights, and directional indicators

- f. Missing or improperly working seat belts
 - g. Any other condition that would jeopardize safety of firefighters and public
- 5. All apparatus must be inspected following maintenance and repairs
- 6. Along with apparatus testing documentation, an apparatus maintenance record must be maintained
- 7. Only qualified persons in accordance with manufacturer's instructions may perform maintenance, inspection, and repair of fire department apparatus
- 8. Improper maintenance or lack of maintenance on apparatus and equipment can place a serious liability on a fire department, including jeopardizing safety and health of firefighters

REVIEW: Take a look at report of accidents involving emergency vehicles to determine what could have been done differently to prevent the accident. Most accidents, including those involving emergency vehicles, are predictable and preventable. Let us learn from the past and not repeat it.

APPARATUS RESPONSE

- * Statistics
- * Response
- * Non-emergency Considerations

REMOTIVATION: Remember, that we are responding to someone else's emergency rather than ours and we must get there safely in order to help remedy the situation. We also do not have the right-of-way until someone gives it to us, even with the lights and siren operating and certain laws related to emergency vehicle response. Part of the emergency response is also returning safely back to quarters.

ASSIGNMENT:

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EVALUATION: