

NFPA 1002

Fire Department Vehicle Driver/Operator Professional Qualifications 1993 Edition



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The Board of Directors reaffirms that the National Fire Protection Association recognizes that the toxicity of the products of combustion is an important factor in the loss of life from fire. NFPA has dealt with that subject in its technical committee documents for many years.

There is a concern that the growing use of synthetic materials may produce more or additional toxic products of combustion in a fire environment. The Board has, therefore, asked all NFPA technical committees to review the documents for which they are responsible to be sure that the documents respond to this current concern. To assist the committees in meeting this request, the Board has appointed an advisory committee to provide specific guidance to the technical committees on questions relating to assessing the hazards of the products of combustion.

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NFPA 1002
Standard for
Fire Department Vehicle Driver/Operator
Professional Qualifications
1993 Edition

This edition of NFPA 1002, *Standard for Fire Department Vehicle Driver/Operator Professional Qualifications*, was prepared by the Technical Committee on Fire Fighter Professional Qualifications, released by the Correlating Committee on Professional Qualifications, and acted on by the National Fire Protection Association, Inc. at its Annual Meeting held May 24-27, 1993, in Orlando, FL. It was issued by the Standards Council on July 23, 1993, with an effective date of August 20, 1993, and supersedes all previous editions.

The 1993 edition of this document has been approved by the American National Standards Institute.

Origin and Development of NFPA 1002

In 1972, the Joint Council of National Fire Service Organizations (JCNFSO) created the National Professional Qualifications Board for the Fire Service (NPQB) to facilitate the development of nationally applicable performance standards for uniformed fire service personnel. On December 14, 1972, the Board established four technical committees to develop those standards, using the National Fire Protection Association (NFPA) standards-making system. The initial committees addressed the following career areas: fire fighter, fire officer, fire service instructor, and fire inspector and investigator.

The Committee on Fire Fighter Professional Qualifications met regularly after the adoption of NFPA 1001 to produce the first edition of this document, adopted by the Association in 1976. NFPA 1002 was the second in the series of Fire Fighter Professional Qualifications standards.

Subsequent to the adoption of the initial edition, the committee met regularly to revise and update the standard. Additional editions were adopted and issued by the NFPA under the auspices of the NPQB in 1982 and 1988.

The original concept of the professional qualifications standards as directed by the JCNFSO and the NPQB was to develop an interrelated set of performance standards specifically for the fire service. The various levels of achievement in the standards were to build on each other within a strictly defined career ladder. In the late 1980s, revisions of the standards recognized that the documents should stand on their own merit in terms of job performance requirements for a given field. Accordingly, the strict career ladder concept was abandoned, except for the progression from fire fighter to fire officer. The later revisions, therefore, facilitated the use of the documents by other than the uniformed fire services.

In 1990, responsibility for the appointment of professional qualifications committees and the development of the professional qualifications standards were assumed by the NFPA.

The Correlating Committee on Professional Qualifications was appointed by the NFPA Standards Council in 1990 and assumed the responsibility for coordinating the requirements of all of the Professional Qualifications documents.

The intent of the technical committee was to develop clear and concise job performance requirements that can be used to determine that an individual, when measured to the standard, possesses the skills and knowledge to perform as a fire fighter. The committee further contends that these job performance requirements can be used in any fire department in any city, town, or private organization throughout North America.

The Technical Committee would like to thank the members of the Driver/Operator Task Group who provided them valuable time and expertise in the development of this document. These individuals are: Michael A. Wieder, Chair, Tom Ruane, Bill Anderson, Dave Duquette, Chief Harry Kelly, Chief Gary Marrs, and Bob Finley.

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NOTE: Membership on a Committee shall not in and of itself constitute an endorsement of the Association or any document developed by the Committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility to develop and prepare recommended minimum standards of professional competence required of fire fighters.

Contents

Chapter 1 Administration	1002- 4	Chapter 6 Wildland Fire Apparatus	1002- 8
1-1 Scope	1002- 4	6-1 General	1002- 8
1-2 Purpose	1002- 4	6-2 Water Supply	1002- 9
1-3 General	1002- 4	6-3 Operations	1002- 9
1-4 Definitions	1002- 4		
Chapter 2 General Requirements	1002- 5	Chapter 7 Aircraft Rescue and Fire Fighting Apparatus	1002- 9
2-1 General	1002- 5	7-1 General	1002- 9
2-2 Preventive Maintenance	1002- 5	7-2 Water and Extinguishment Agent Supply	1002- 9
2-3 Driving/Operating	1002- 6	7-3 Operations	1002- 9
Chapter 3 Apparatus Equipped with an Attack or Fire Pump	1002- 6	Chapter 8 Referenced Publications	1002-10
3-1 General	1002- 6	Appendix A Explanatory Material	1002-10
3-2 Water Supply	1002- 7	Appendix B Referenced Publications	1002-13
3-3 Sprinklers and Standpipes	1002- 7	Appendix C	1002-13
3-4 Operations	1002- 7	Bibliography	1002-17
Chapter 4 Apparatus Equipped with an Aerial Device	1002- 7	Index	1002-17
4-1 General	1002- 7		
4-2 Operations	1002- 8		
Chapter 5 Apparatus Equipped with a Tiller . .	1002- 8		
5-1 General	1002- 8		
5-2 Operations	1002- 8		

NFPA 1002**Standard for****Fire Department Vehicle Driver/Operator
Professional Qualifications****1993 Edition**

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates explanatory material on that paragraph in Appendix A.

Information on referenced publications can be found in Chapter 8 and Appendix B.

Chapter 1 Administration

1-1 Scope. This standard identifies the minimum job performance requirements for driver/operators of fire department vehicles.

1-2* Purpose. The purpose of this standard is to specify the minimum job performance requirements for service as a fire department vehicle driver, pump operator, aerial operator, tiller operator, wildland apparatus operator, and aircraft rescue and fire fighting apparatus operator.

It is not the intent of this standard to restrict any jurisdiction from exceeding these minimum requirements.

This standard shall cover the requirements for driver/operators of all fire department vehicles.

1-3 General.

1-3.1 The fire department vehicle driver/operators shall be licensed to drive all vehicles they are expected to operate.

1-3.2* The fire department driver/operator shall be subject to periodic medical evaluation, as required by NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 8-1, Medical Requirements, to determine that the driver/operator is medically fit to perform the duties of a fire department vehicle driver/operator.

1-3.3* All fire fighters who drive fire department vehicles or apparatus shall meet the objectives specified in Chapter 2.

1-3.4 The fire apparatus driver who is required to operate an apparatus equipped with an attack or fire pump shall meet the requirements of Chapter 3.

1-3.5 The fire apparatus driver who is required to operate an apparatus equipped with an aerial device shall meet the requirements of Chapter 4.

1-3.6 The fire apparatus driver who is required to function in the tiller position shall meet the requirements of Chapter 5.

1-3.7 The fire apparatus driver who is required to operate wildland fire apparatus shall meet the requirements of Chapter 6.

1-3.8 The fire apparatus driver who is required to operate aircraft rescue and fire fighting apparatus shall meet the requirements of Chapter 7.

1-3.9* Job performance requirements defined by this standard shall be evaluated by individuals approved by the authority having jurisdiction.

1-3.10 The job performance requirements need not be mastered in the order in which they appear. The local, state/provincial, or federal training programs shall establish the instructional priority and the training program content to prepare individuals to meet the job performance requirements of this standard.

1-3.11 The job performance requirements of Chapters 2 through 7 shall be performed utilizing vehicles of similar weight, wheelbase, and function as that expected to be operated in the performance of the driver/operator's normal duties.

1-3.12* Fire apparatus drivers who are expected to operate vehicles off-road, in addition to the applicable requirements of Chapters 2 through 5, shall meet the requirements of 6-1.4.

1-4* Definitions. For the purpose of this standard, the following terms shall have the meanings given below.

Aerial Apparatus. A piece of fire apparatus with a permanently mounted, power-operated elevating device, including aerial ladders, aerial ladder platforms, telescoping aerial platforms, articulating aerial platforms, and elevating water delivery systems.

Aerial Operator. The fire apparatus driver who has met the requirements of Chapter 4 for the operation of apparatus equipped with aerial devices.

Aircraft Rescue and Fire Fighting Vehicle (ARFF). A vehicle intended to carry rescue and fire fighting equipment for rescuing occupants and combating fires in aircraft at, or in the vicinity of, an airport.

Approved. Acceptable to the "authority having jurisdiction."

NOTE: The National Fire Protection Association does not approve, inspect or certify any installations, procedures, equipment, or materials nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or procedures, equipment or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization concerned with product evaluations which is in a position to determine compliance with appropriate standards for the current production of listed items.

Attack Pump. A centrifugal water pump permanently mounted on the apparatus with a rated capacity of 250 gpm (950 L/min) or more, but less than 750 gpm (2850 L/min), at 150 psig (1035 kPa) net pump pressure, and used for fire fighting.

Authority Having Jurisdiction. The "authority having jurisdiction" is the organization, office or individual responsible for "approving" equipment, an installation or a procedure.

NOTE: The phrase “authority having jurisdiction” is used in NFPA documents in a broad manner since jurisdictions and “approval” agencies vary as do their responsibilities. Where public safety is primary, the “authority having jurisdiction” may be a federal, state, local or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, health department, building official, electrical inspector, or others having statutory authority. For training purposes, state/provincial, regional or local training agencies may assume the responsibility of authority having jurisdiction. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the “authority having jurisdiction.” In many circumstances the property owner or his designated agent assumes the role of the “authority having jurisdiction”; at government installations, the commanding officer or departmental official may be the “authority having jurisdiction.”

Fire Apparatus. A fire department emergency vehicle used for rescue, fire suppression, or other specialized functions.

Fire Apparatus Driver. The fire fighter who has met the requirements defined in Chapter 2.

Fire Department. An organization providing rescue, fire suppression, and related activities. The term “fire department” shall include any public, governmental, private, industrial, or military organization engaging in this type of activity.

Fire Department Pumper. A piece of fire apparatus with a permanently mounted fire pump that has a rated discharge capacity of 750 gpm (2850 L/min) or greater as defined in NFPA 1901, *Standard for Pumper Fire Apparatus*.

Fire Department Vehicle. Any vehicle operated by a fire department, including fire apparatus.

Fire Pump. Any pump with a rated discharge capacity of 750 gpm (2850 L/min) or greater mounted permanently on a piece of fire apparatus.

Foam System. A system provided on fire apparatus for the delivery of a proportioned foam and water mixture for use in fire extinguishment. The system includes a concentrate tank, a method for removing the concentrate from the tank, a foam-liquid proportioning system, and a method of delivering the proportioned foam to the fire (i.e., hand lines or fixed turret nozzles).

Job Performance Requirement. A statement that describes a specific job task, lists the items necessary to complete the task, and defines measurable or observable outcomes and evaluation areas for the specific task.

Mobile Water Supply Apparatus. A piece of fire apparatus whose primary purpose is to transport water in a tank with 1000 gal (3785 L) or greater capacity, as specified in NFPA 1903, *Standard for Mobile Water Supply Fire Apparatus*.

Off-Road Use. Use of fire department vehicles in areas where there is a need to traverse steep terrain or to cross natural hazards on or protruding from the ground.

Prerequisite Knowledge. Fundamental knowledge one must have in order to perform a specific task.

Prerequisite Skills. The essential skills one must have in order to perform a specific task.

Pump Operator. The fire apparatus driver/operator who has met the requirements of Chapter 3 of this standard for the operation of apparatus equipped with an attack or fire pump.

Pumping System. A pump, the piping, and associated devices mounted permanently on a piece of fire apparatus for the purpose of delivering a fire stream.

Shall. Indicates a mandatory requirement.

Task. A specific job behavior or activity.

Tiller Aerial Apparatus. A tractor-trailer aerial apparatus with a steering wheel connected to the rear axle for maneuvering the rear portion of the apparatus.

Tiller Operator. The fire apparatus driver/operator who has met the requirements of Chapter 5.

Wildland Fire Apparatus. Apparatus intended primarily for response to wildland/vegetative fires. These vehicles are expected to operate on a wide variety of surfaces, including off road. These vehicles are equipped with fixed or portable pumps used to supply attack lines; however, these pumps are generally of a capacity that does not put the vehicle into the classification of attack or fire pump.

Chapter 2 General Requirements

2-1 General. Prior to operating fire department vehicles, the fire apparatus driver/operator shall meet the job performance requirements defined in Sections 2-2 through 2-3.

2-2 Preventive Maintenance.

2-2.1* Perform routine tests, inspections, and servicing functions on the specified systems and components listed below, given a fire department vehicle and its manufacturer's specifications, so that the operational status of the vehicle is verified.

- (a) Battery(ies)
- (b) Braking system
- (c) Coolant system
- (d) Electrical system
- (e) Fuel
- (f) Hydraulic fluids
- (g) Lubrication
- (h) Oil
- (i) Tires
- (j) Steering system
- (k) Belts
- (l) Tools, appliances, and equipment.

2-2.2 Document the routine tests, inspections, and servicing functions, given maintenance and inspection forms, so that all items are checked for proper operation and deficiencies are reported.

2-3 Driving/Operating.

2-3.1* Operate a fire department vehicle, given a predetermined route on a public way that incorporates the maneuvers and features specified below that the driver/operator is expected to encounter during normal operations, so that the vehicle is safely operated in compliance with all applicable state and local laws, departmental rules and regulations, and the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 4-2.

- (a) 4 left and 4 right turns
- (b) A straight section of urban business street or a 2-lane rural road at least 1 mile (1.6 km) in length
- (c) 1 through-intersection and 2 intersections where a stop has to be made
- (d) 1 railroad crossing
- (e) 1 curve, either left or right
- (f) A section of limited-access highway that includes a conventional ramp entrance and exit and a section of road long enough to allow 2 lane changes
- (g) A downgrade steep enough and long enough to require down shifting and braking
- (h) An upgrade steep enough and long enough to require gear changing to maintain speed
- (i) 1 underpass or a low clearance or bridge.

2-3.1.1 Prerequisite Knowledge: The effects on vehicle control of (a) braking reaction time, (b) load factors, (c) general steering reactions, (d) speed, and (e) centrifugal force. Applicable laws and regulations.

2-3.1.2 Prerequisite Skills: Safe vehicle operation and operation of passenger restraint devices.

2-3.2 Use automotive gauges and controls, given a fire department vehicle and manufacturer's specifications, so that the vehicle is operated within specifications.

2-3.2.1 Prerequisite Knowledge: Identification and operation of automotive gauges and proper operation limits.

2-3.2.2 Prerequisite Skills: Operation of vehicle controls.

2-3.3* Back a vehicle from a roadway into restricted spaces on both the right and left sides of the vehicle, given a fire department vehicle, a spotter, and restricted spaces 12 ft (3.66 m) in width, requiring 90-degree right- and left-hand turns from the roadway, so that the vehicle is parked within the restricted areas without having to stop and pull forward and without striking obstructions.

2-3.3.1 Prerequisite Knowledge: Vehicle dimensions and turning characteristics.

2-3.3.2 Prerequisite Skills: Use of mirrors for backing.

2-3.4* Maneuver a vehicle around obstructions on a roadway while moving forward and in reverse, given a fire department vehicle, a spotter for backing, and a roadway with obstructions, so that the vehicle is maneuvered through the obstructions without stopping to change the direction of travel and without striking the obstructions.

2-3.5* Turn a fire department vehicle 180 degrees within a confined space, given a fire department vehicle, a spotter for backing, and an area in which the vehicle cannot perform a U-turn without stopping and backing up, so that the vehicle is turned 180 degrees without striking obstructions within the given space.

2-3.6* Maneuver a fire department vehicle in areas with restricted horizontal and vertical clearances, given a vehicle and a course that requires the operator to move through areas of restricted horizontal and vertical clearances, so that the operator accurately judges the ability of the vehicle to pass through the openings and no obstructions are struck.

2-3.6.1 Prerequisite Skills: Judgment of vehicle clearances, front and back, height, and width.

2-3.7* Operate a vehicle using defensive driving techniques under both emergency and nonemergency conditions, given a fire department vehicle, so that control of the vehicle is maintained.

2-3.7.1 Prerequisite Knowledge: Principles of skid avoidance, night driving, shifting and gear patterns, negotiating railroad crossings and draw bridges, and weight and height limitations for both roads and bridges.

2-3.7.2 Prerequisite Skills: Safe vehicle operation during emergency and nonemergency conditions, operation under adverse environmental or driving surface conditions.

2-3.8 Operate all systems and equipment on the vehicle, given manufacturer's specifications and instructions and departmental policies and procedures for the systems and equipment, so that each system or piece of equipment is operated in accordance with the applicable instructions and policies.

Chapter 3 Apparatus Equipped with an Attack or Fire Pump

3-1 General.

3-1.1* The requirements of Fire Fighter I as specified in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, and the job performance requirements defined in Sections 3-1 through 3-4 shall be met prior to certification as a fire department driver/operator-pumper.

3-1.2 Perform the specified routine tests, inspections, and servicing functions listed below, in addition to those contained in 2-2.1, given a fire department pumper and its manufacturer's specifications, so that the operational status of the pumper is verified.

- (a) Water tank and other extinguishing agent levels (if applicable)
- (b) Pumping system
- (c) Foam systems.

3-1.3* Perform the practical driving exercises specified in 2-3.3 through 2-3.6, given a fire department pumper and a spotter for backing, so that each exercise is performed safely without striking the vehicle or obstructions.

3-1.4* Position a fire department pumper to operate at a fire hydrant and static supply source utilizing each existing pumper intake connection, given a pumper, a length of intake hose, and appropriate fittings or tools, so that the intake hose can be connected, without kinks, to the pump connection without repositioning the vehicle.

3-1.5* Operate a fire department pumper over a predetermined route on a public way that incorporates the maneuvers and features specified in 2-3.1, so that the vehicle is safely operated in compliance with all applicable state and local laws, departmental rules and regulations, and the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 4-2.

3-2 Water Supply.

3-2.1 Ascertain the expected fire flow, given a specific location, a water source, and water supply information for that location, so that the amount of water available for fire fighting at the location is estimated and alternative sources of water are identified.

3-2.1.1 Prerequisite Knowledge: Components of municipal water distribution systems; problems related to small-diameter or dead-end main, low-pressure and private water supply systems, hydrant coding systems; and reliability of static sources.

3-3 Sprinklers and Standpipes.

3-3.1 Supply water to fire sprinkler and standpipe systems, given specific system information and a fire department pumper, so that water is supplied to the system at the proper volume and pressure.

3-3.1.1 Prerequisite Knowledge: Calculation of pump discharge pressure, hose layouts, location of fire department connection, alternative supply procedures if fire department connection is not usable, operating principles of sprinkler systems as defined in NFPA 13, *Standard for the Installation of Sprinkler Systems*; NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Mobile Homes*; and NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height*; fire department operations in sprinklered properties as defined in NFPA 13E, *Recommendations for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems*; and operating principles of standpipe systems as defined in NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.

3-4 Operations.

3-4.1* Produce effective hand or master streams, utilizing the sources specified below, so that the pump is safely engaged, all pressure control and vehicle safety devices are set, the rated flow of the nozzle is achieved, and the apparatus is continuously monitored for potential problems.

- (a) Internal tank
- (b) Pressurized source
- (c) Static source.

3-4.1.1 Prerequisite Knowledge: Hydraulic calculations for friction loss and flow using both written formulas and estimation methods. Safe operation of the pump.

3-4.1.2 Prerequisite Skills: Method(s) of power transfer from vehicle engine to pump, drafting operations, operation of pumper pressure control systems, operation of the volume/pressure transfer valve (multistage pumps only), operation of auxiliary cooling systems, and assembly of hose lines, nozzles, valves, and appliances.

3-4.2 Pump a supply line of 2½ in. (65 mm) or larger, given a relay pumping evolution, the length and size of the line, desired flow and intake pressure, so that the proper pressure and flow are provided to the next pumper in the relay.

3-4.3 Produce a foam fire stream, given foam-producing equipment, so that properly proportioned foam is provided.

3-4.4 Change water supply from the apparatus water tank to an external source, given a pumper with an operating fire attack line of 1½ in. (38 mm) or larger, so that the flow of water to the attack line is not interrupted and the proper pressure is maintained.

Chapter 4 Apparatus Equipped with an Aerial Device

4-1 General.

4-1.1* The requirements of Fire Fighter I as specified in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, and the job performance requirements defined in Sections 4-1 through 4-2 shall be met prior to certification as a fire department driver/operator-aerial.

4-1.2 Perform the routine tests, inspections, and servicing functions listed below, in addition to those specified in 2-2.1, given a fire department aerial apparatus, so that the operational readiness of the aerial apparatus is verified.

- (a) Cable systems (if applicable)
- (b) Aerial device hydraulic systems
- (c) Slides and rollers
- (d) Stabilizing systems
- (e) Aerial device safety systems
- (f) Breathing air systems
- (g) Communication systems.

4-1.3* Perform the practical driving exercises specified in 2-3.3 through 2-3.6, given a fire department aerial apparatus and a spotter for backing, so that each exercise is performed safely without striking the vehicle or obstructions.

4-1.4* Operate a fire department aerial apparatus over a predetermined route on a public way, using the maneuvers specified in 2-3.1, so that the vehicle is safely operated in compliance with all applicable state and local laws, departmental rules and regulations, and the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 4-2.

4-2 Operations.

4-2.1 Maneuver and position an aerial apparatus, given an incident location, a situation description, and an assignment, so that the apparatus is properly positioned for safe aerial device deployment.

4-2.1.1 Prerequisite Knowledge: Capabilities and limitations of aerial devices related to reach, tip load, angle of inclination, and angle from chassis axis. Effects of topography, ground and weather conditions on safe deployment, and use of the aerial device.

4-2.2 Stabilize an aerial apparatus, given a properly positioned vehicle and the manufacturer's recommendations, so that power can be transferred to the aerial device hydraulic system and the device can be safely deployed.

4-2.2.1 Prerequisite Knowledge: Aerial apparatus hydraulic systems, manufacturer's specifications for stabilization, stabilization requirements, effects of topography and ground conditions on safe stabilization.

4-2.2.2 Prerequisite Skills: Transfer of power from the vehicle's engine to the hydraulic system, operation of vehicle stabilization devices.

4-2.3 Maneuver and position the aerial device from each control station, given an incident location, a situation description, and an assignment, so that the aerial device is properly positioned to safely accomplish the assignment.

4-2.3.1 Prerequisite Knowledge: Aerial device hydraulic systems, hydraulic pressure relief systems, gauges and controls, cable systems, communications systems, electrical systems, emergency operating systems, locking systems, manual rotation and lowering systems, stabilizing systems, aerial device safety systems, system overrides and the hazards of using overrides, safe operational limitations of the given aerial device, safety procedures specific to the device, and operations near electrical hazards and overhead obstructions.

4-2.3.2 Prerequisite Skills: Raising, rotating, extending, positioning to a specified location; locking, unlocking, retracting, lowering, and bedding the aerial device.

4-2.4 Lower the aerial device using the emergency operating system so that the aerial device is safely lowered to its bedded position.

4-2.5 Deploy and operate an elevated master stream, given a master stream device and desired flow, so that the stream is effective and the device is operated safely.

4-2.5.1 Prerequisite Knowledge: Nozzle reaction, range of operation, weight limitations.

4-2.5.2 Prerequisite Skills: Connection of water supply to master stream device, manual or remote control of elevated nozzle.

Chapter 5 Apparatus Equipped with a Tiller

5-1* General. The requirements of Fire Fighter I as specified in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, and the job performance requirements defined in Section 5-2 shall be met prior to certification as a fire department driver/operator-tiller.

5-2 Operations.

5-2.1* Perform the practical driving exercises from the tiller position specified in 2-3.3 through 2-3.6, given a fire department aerial apparatus equipped with a tiller and a spotter for backing, so that each exercise is performed safely without striking the vehicle or obstructions.

5-2.2 Operate a fire department aerial apparatus equipped with a tiller from the tiller position over a predetermined route on a public way, using the maneuvers specified in 2-2.1, so that the vehicle is safely operated in compliance with all applicable state and local laws, departmental rules and regulations, and the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 4-2.

5-2.2.1 Prerequisite Knowledge: Principles of tiller operation, methods of communication with driver.

5-2.2.2 Prerequisite Skill: Operation of the communication system between the tiller operator's position and the driver's compartment.

5-2.3 Position a fire department aerial apparatus equipped with a tiller from the tiller position, given the apparatus operating instructions, an incident location, a situation description, and an assignment, so that the aerial device is properly positioned to safely accomplish the assignment.

5-2.3.1 Prerequisite Knowledge: Principles of positioning the aerial apparatus from the tiller position.

Chapter 6 Wildland Fire Apparatus

6-1 General.

6-1.1 The job performance requirements defined in Sections 6-1 through 6-3 shall be met prior to certification as a driver/operator-wildland fire apparatus.

6-1.2 Perform the specified routine tests, inspections, and servicing functions listed below, in addition to those contained in 2-2.1, given a wildland fire apparatus and its manufacturer's specifications, so that the operational status is verified.

(a) Water tank and/or other extinguishing agent levels (if applicable)

(b) Pumping system

(c) Foam systems.

6-1.3* Perform the practical driving exercises specified in 2-3.3 through 2-3.6, given a wildland fire apparatus, so that each exercise is performed safely without striking the vehicle or obstructions.

6-1.4* Operate a wildland fire apparatus over a predetermined route on a public way that incorporates the maneuvers and features specified in 2-3.1, so that the vehicle is safely operated in compliance with all applicable state and local laws, departmental rules and regulations, and the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 4-2.

6-1.5* Operate a wildland fire apparatus, given a predetermined route off of a public way that incorporates the following maneuvers and features that the driver/operator is expected to encounter during normal operations, so that the vehicle is safely operated in compliance with all applicable departmental rules and regulations, the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 4-2, and the design limitations of the vehicle.

- (a) Loose or wet soil
- (b) Steep grades (30 percent fore and aft)
- (c) Limited sight distance
- (d) Blind curve
- (e) Vehicle clearance obstacles (height, width, under-carriage)
- (f) Limited space for turn around
- (g) Side slopes (20 percent side to side).

6-2 Water Supply.

6-2.1 Ascertain the available water supply sources, given a specific location, an area map, and available preincident information, so that the amount of water available for fire fighting at the location is determined and alternative sources of water are identified.

6-2.1.1 Prerequisite Knowledge: Components of municipal and private water distribution systems, map reading, alternative water supply sources.

6-3 Operations.

6-3.1* Produce effective fire streams, utilizing the sources specified below, so that the pump is safely engaged, all pressure-control and vehicle safety devices are set, the rated flow of the nozzle is achieved, and the apparatus is continuously monitored for potential problems.

- (a) Water tank
- (b) Pressurized source
- (c) Static source.

6-3.1.1 Prerequisite Knowledge: Hydraulic calculations for friction loss and flow using both written formulas and estimation methods. Safe operation of the pump, proper apparatus placement, and personal safety considerations.

6-3.1.2 Prerequisite Skills: Method(s) of providing power to the pump, drafting operations, operation of pumper pressure-control systems, operation of the volume/pressure transfer valve (multistage pumps only), operation of auxiliary cooling systems, and assembly of hose lines, nozzles, and valves and appliances.

6-3.2 Pump a supply line, given a relay pumping evolution, the length and size of the line, and flow and desired intake pressure, so that adequate intake pressures and flow are provided to the next pumper in the relay.

6-3.3 Produce a foam fire stream, given foam-producing equipment, so that the proper proportion of foam is provided.

Chapter 7 Aircraft Rescue and Fire Fighting Apparatus

7-1 General.

7-1.1* The requirements of Fire Fighter I as specified in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, and the job performance requirements defined in Sections 7-1 through 7-3 shall be met prior to certification as a fire department driver/operator-aircraft rescue and fire fighting apparatus (ARFF).

7-1.2* Perform the routine tests, inspections, and servicing functions specified below, in addition to those contained in 2-2.1, given an aircraft rescue and fire fighting vehicle and the manufacturer's servicing, test, and inspection criteria, so that the operational status of the vehicle is verified.

- (a) Agent dispensing systems
- (b) Secondary extinguishing systems.

7-1.3* Perform the practical driving exercises specified in 2-3.3 through 2-3.6, given an aircraft rescue and fire fighting vehicle and a spotter for backing, so that each exercise is performed safely without striking the vehicle or obstructions.

7-1.4 Operate an aircraft rescue and fire fighting vehicle, given a predetermined route on an airport that includes the maneuvers listed in 2-3.1, and operation on a taxiway, a runway, and in an aircraft parking area, so that the vehicle is safely operated in compliance with all applicable federal, state/provincial and local laws, departmental rules and regulations, and the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 4-2.

7-1.5* Operate an aircraft rescue and fire fighting apparatus, given a predetermined route, off of an improved surface that incorporates the maneuvers and features specified below that the driver/operator is expected to encounter during normal operations, so that the vehicle is safely operated in compliance with all applicable departmental rules and regulations, the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Section 4-2, and the design limitations of the vehicle.

- (a) Loose or wet soil
- (b) Steep grades (30 percent fore and aft)
- (c) Limited sight distance
- (d) Vehicle clearance obstacles (height, width, under-carriage)
- (e) Limited space for turn around
- (f) Side slopes (20 percent side to side).

7-2 Water and Extinguishment Agent Supply. Determine the length of time an extinguishing agent will be available, given the rate of discharge and total agent supply for an ARFF vehicle, so that the calculations are accurate for each available agent using both internal and external water supplies.

7-3* Operations. Produce a fire stream, given a rate of discharge and water supplied from the sources specified

below, so that the pump is safely engaged, the turrets are deployed, the agent is delivered to the intended target at the proper rate, and the apparatus is continuously monitored for potential problems.

- (a) The internal tank
- (b) Pressurized source
- (c) Static source.

7-3.1 Prerequisite Knowledge: Principles of agent management and application, effects of terrain and wind on agent application, turret capabilities and limitations, tower light signals, airport markings, aircraft recognition, aircraft danger areas, theoretical critical fire area and practical critical fire area, aircraft entry and egress points, and proper apparatus placement.

7-3.2 Prerequisite Skills: Method(s) of providing power to the pump.

7-3.3 Produce a fire stream while the vehicle is in both forward and reverse power modulation, given a discharge rate and intended target, so that the pump is safely engaged, the turrets are deployed, the agent is delivered to the intended target at the proper rate, and the apparatus is safely moved and continuously monitored for potential problems.

7-3.4 Maneuver and position an ARFF vehicle, given an incident location and description that involves the largest aircraft that routinely uses the airport, so that the vehicle is properly positioned for safe operation at each operational position for the aircraft.

7-3.4.1 Prerequisite Skills: Vehicle positioning for fire fighting and rescue operations.

Chapter 8 Referenced Publications

8-1 The following documents or portions thereof are referenced within this standard and shall be considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

8-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 1991 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Mobile Homes*, 1991 edition.

NFPA 13E, *Recommendations for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems*, 1989 edition.

NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height*, 1991 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 1993 edition.

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 1992 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 1992 edition.

NFPA 1901, *Standard for Pumper Fire Apparatus*, 1991 edition.

NFPA 1903, *Standard for Mobile Water Supply Fire Apparatus*, 1991 edition.

Appendix A Explanatory Material

This Appendix is not a part of the requirements of this NFPA document, but is included for information purposes only.

A-1-2 The purpose of this standard is not to mandate that all fire apparatus driver/operators meet the requirements of all chapters of this standard. Personnel should meet only those provisions that pertain to the types of apparatus they will be expected to drive and operate.

A-1-3.2 Although the frequency of the medical evaluation is not specified, it is recommended that the medical evaluation be made on at least an annual basis.

A-1-3.3 It is the committee's intent that this standard be applied to all fire department vehicles. Drivers of vehicles not specifically addressed in Chapters 3 through 7, e.g., staff or command vehicles, rescue or utility vehicles, buses, etc., are expected to meet the requirements of Chapter 2. Agencies operating unique or special vehicles, e.g., tractors, bulldozers, cranes, graders, etc., should develop job performance requirements and training programs for those vehicles.

A-1-3.9 It is recommended that evaluators be individuals who were not directly involved as instructors for the requirement being evaluated.

A-1-3.12 The maneuvers and features specified for this job performance requirement include driving situations that the committee has determined to be essential. The committee recognizes that each of these situations may not exist in all areas. Where this occurs, those specific requirements may be omitted. It should not be assumed that all these vehicles are wheel drive.

A-1-4 Action verbs used in the job performance requirements in this document are based on the first definition of the verb found in *Webster's Third New International Dictionary of the English Language*.

A-2-2.1 Routine tests, inspections, and servicing functions should be performed on a daily, weekly, monthly, or other periodic basis as determined by departmental policy. The specifications provided by the manufacturer for these functions should be followed.

A-2-3.1 The maneuvers and features specified for this job performance requirement include driving situations that the committee has determined to be essential. The committee recognizes that each of these situations may not exist in all areas. Where this occurs, those specific requirements may be omitted.

A-2-3.3 The alley dock exercise may be used as practice for or in the evaluation of this requirement. This exercise measures a driver's ability to drive past a simulated dock or stall, back the apparatus into the space provided, and stop smoothly. A dock or stall can be simulated by arranging barricades 40 ft (12.2 m) from a boundary line. These barricades should be 12 ft (3.66 m) apart, and the length should be approximately 20 ft (6.1 m). The driver should pass the barricades with the dock on the left and then back

the apparatus, using a left turn, into the stall. The exercise should then be repeated with the dock on the right side, using a right turn. [See Figure A-2-3.3(a).]

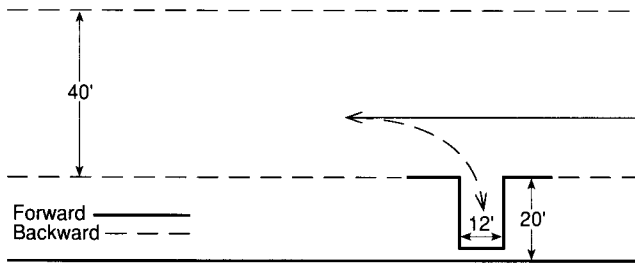


Figure A-2-3.3(a) Alley dock exercise.

The apparatus station parking maneuver may also be used as practice for or in the evaluation of this requirement. This exercise measures the driver's ability to back the apparatus into a fire station to park, or to back the apparatus down a street to reverse the direction of travel. An engine bay can be simulated by allowing for a 20-ft (6.1-m) minimum setback from a street 30 ft (9 m) wide, with a set of barricades at the end of the setback, spaced 12 ft (3.66 m) apart to simulate the garage door. The setback from the street should be determined by the testing agency to ensure that the distances reflect those encountered by the apparatus driver during the normal course of duties. A marker placed on the ground should indicate to the operator the proper position of the left front tire of the vehicle once stopped and parked. A straight line may be provided to assist the operator while backing the apparatus, facilitating the use of vehicle mirrors. The minimum depth distance is determined by the total length of the vehicle. [See Figure A-2-3.3(b).]

NOTE: For large vehicles, such as ARFF apparatus, this course may need to be modified.

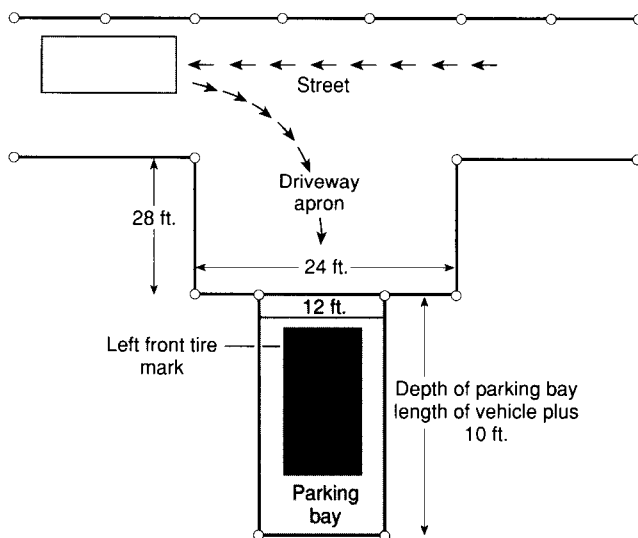


Figure A-2-3.3(b) Station parking procedure drill.

A-2-3.4 The serpentine exercise may be used as practice for or in the evaluation of this requirement. This exercise measures a driver's ability to steer the apparatus in close

limits without stopping. The exercise should be conducted with the apparatus moving first backward, then forward. The course or path of travel for this exercise can be established by placing a minimum of 3 markers, each spaced between 30 ft (9 m) and 38 ft (12 m) apart, in a line. The spacing of the markers should be based on the wheel base of the vehicle used. Adequate space must be provided on each side of the markers for the apparatus to move freely. The driver should drive the apparatus along the left side of the markers in a straight line and stop just beyond the last marker. The driver then should back the apparatus between the markers by passing to the left of marker No. 1, to the right of marker No. 2, and to the left of marker No. 3. At this point, the driver should stop the vehicle and then drive it forward between the markers by passing to the right of marker No. 3, to the left of marker No. 2, and to the right of marker No. 1. (See Figure A-2-3.4.)

NOTE: For large vehicles, such as ARFF apparatus, this course may need to be modified.

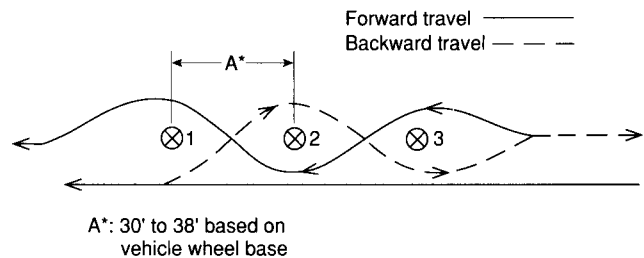


Figure A-2-3.4 Serpentine exercise.

A-2-3.5 The confined space turnaround may be used as practice for or in the evaluation of this requirement. This exercise measures the driver's ability to turn the vehicle around in a confined space without striking obstacles. The turn is accomplished within an area 50 ft × 100 ft (15.25 m × 30.5 m). The driver moves into the area from a 12-ft (3.66-m) opening in the center of one of the 50-ft (15.25-m) legs, turns the vehicle 180 degrees, and returns through the opening. There is no limitation on the number of times the driver has to maneuver the vehicle to accomplish this exercise, but no portion of the vehicle should extend over the boundary lines of the space. (See Figure A-2-3.5.)

NOTE: For large vehicles, such as ARFF apparatus, this course may need to be modified.

A-2-3.6 The diminishing clearance exercise may be used as practice for or in the evaluation of this requirement. This exercise measures a driver's ability to steer the apparatus in a straight line, to judge distances from wheel to object, and to stop at a finish line. The speed at which a driver should operate the apparatus is optional, but it should be great enough to necessitate quick judgment. This exercise is to be performed both forward and in reverse with a spotter. The course for this exercise is created by arranging 2 rows of markers to form a lane 75 ft (22.9 m) long. The lane varies in width from 9 ft 6 in. (2.9 m) to a diminishing clearance of 8 ft 2 in. (2.5 m). The driver should maneuver the apparatus through this lane without touching the markers. The vehicle should be stopped at a finish line 50 ft (15.25 m) beyond the last marker. No portion of the vehicle should protrude beyond this line. Vertical clearance judgment should be evaluated using a prop with a

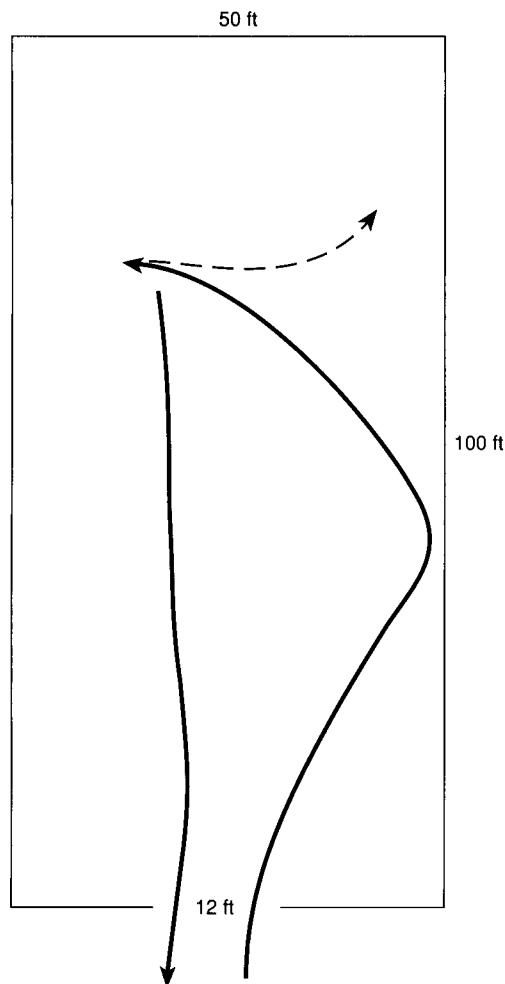


Figure A-2-3.5 Confined space turnaround.

crossbar that is adjustable, based on the vehicle height. During the evaluation, the driver should drive forward and back through the prop with the crossbar at several differing heights, including one that is lower than the top of the vehicle. The prop should not be struck. The intent of the vertical clearance judgment is for proper identification of the furthest point in the form of the apparatus. In situations where the apparatus is gaining entry to roadways or limited-height areas, the driver/operator must allow appropriate space ahead of the apparatus in order to avoid striking objects, or extending apparatus into traffic lanes. (See Figure A-2-3.6.)

NOTE: For large vehicles, such as ARFF apparatus, this course may need to be modified.

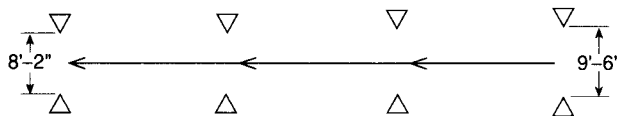


Figure A-2-3.6 Diminishing clearance exercise.

A-2-3.7 Emergency driving simulation should be restricted to a driving track or similar controlled area. Emergency driver training should not be conducted on

public ways. For more information, see 49 CFR Part 383, *Commercial Driver's License Standards: Requirements and Penalties*, Section 383.110, page 29.

A-3-1.1 The requirements of Chapters 3, 4, 5, and 7 specify that the candidate shall meet the requirements of Fire Fighter I as specified in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, before certification as a fire apparatus driver/operator. This means that the individual applying for certification as a fire apparatus driver/operator has met all of the objectives in Chapters 1, 2, and 3 of NFPA 1001. These objectives include further requirements in areas such as fire hose, nozzles, and appliances; fire streams; water supplies; and sprinklers. These are in addition to the requirements of this standard. Any fire fighter who has already been certified as a Fire Fighter I should review the requirements of the referenced chapters of NFPA 1001, as the candidate may be tested on the requirements included therein.

A-3-1.3 See A-2-3.3 through A-2-3.6.

A-3-1.4 The hydrant or water source spotting exercise may be used as practice for or in the evaluation of this requirement. This exercise measures the driver's ability to spot the pumper at a hydrant for pumping operations that require soft or hard intake hose to be hooked from the pumper connections to the water source.

A hydrant located along a street utilizing a set of barricades set 15 ft (4.6 m) on each side of the hydrant to simulate parked vehicles can be used. The driver should be able to position the pumper and complete the hydrant to pump connections on the left side, right side, and front or rear (if so configured) without having kinks in the soft intake hose, moving the barricades, or repositioning the pumper.

A rural scenario would require that the driver position the pumper to a portable water tank and deploy a hard intake from the left, right, and front or rear (if applicable) pump connections.

An additional rural scenario would require the driver to position the pumper to perform drafting operations from a pond, lake, or stream.

A-3-1.5 See A-2-3.1.

A-3-4.1 Pressurized sources include:

- (a) Connection to a hydrant
- (b) Supply line from another pumping source.

A-4-1.1 See A-3-1.1.

A-4-1.3 See A-2-3.3 through A-2-3.6.

A-4-1.4 See A-2-3.1.

A-5-1 See A-3-1.1.

A-5-2.1 See A-2-3.3 through A-2-3.6.

A-6-1.3 See A-2-3.3 through A-2-3.6.

A-6-1.4 See A-2-3.1.

A-6-1.5 See A-2-3.1.

A-6-3.1 Pressurized sources include:

- (a) Connection to a hydrant
- (b) Supply line from another pumping source.

A-7-1.1 See A-3-1.1.

A-7-1.2

(a) An agent dispensing system is the PRIMARY fire suppression agent carried on ARFF vehicles and usually is AFFF.

(b) A secondary extinguishing system is a separate system, totally independent of the primary. It includes Halon 1211 (its future replacement), dry chemical, and other such systems used for specific types of aircraft associated fires.

A-7-1.3 See A-2-3.3 through A-2-3.6.

A-7-1.5 See A-2-3.1.

A-7-3 Pressurized sources include:

- (a) Connection to a hydrant
- (b) Supply line from another pumping source.

Appendix B Referenced Publications

B-1 The following documents or portions thereof are referenced within this standard for informational purposes only and thus are not considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

B-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 402M, *Manual for Aircraft Rescue and Fire Fighting Operations*, 1991 edition.

NFPA 403, *Standard for Aircraft Rescue and Fire Fighting Services at Airports*, 1993 edition.

NFPA 407, *Standard for Aircraft Fuel Servicing*, 1990 edition.

NFPA 409, *Standard on Aircraft Hangars*, 1990 edition.

NFPA 414, *Standard for Aircraft Rescue and Fire Fighting Vehicles*, 1990 edition.

NFPA 419, *Guide for Master Planning Airport Water Supply Systems for Fire Protection*, 1992 edition.

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 1992 edition.

NFPA 1902, *Standard for Initial Attack Fire Apparatus*, 1991 edition.

NFPA 1904, *Standard for Aerial Ladder and Elevating Platform Fire Apparatus*, 1991 edition.

NFPA 1914, *Standard for Testing Fire Department Aerial Devices*, 1991 edition.

NFPA 1921, *Standard for Fire Department Portable Pumping Units*, 1993 edition.

NFPA 1931, *Standard on Design of and Design Verification Tests for Fire Department Ground Ladders*, 1989 edition.

Engine Company Fireground Operations, 2nd edition, Harold Richman, 1986.

Fire Command, Alan Brunacini, 1985.

Fire Department Pumper Tests and Fire Stream Tables, 9th edition, 1981.

Fire Protection Handbook, 17th edition, 1991.

Fire Terms, Burklin and Purington, 1980.

Hydraulics for Fire Protection, Harry E. Hickey, 1980.

Truck Company Fireground Operations, 2nd edition, Harold Richman, 1986.

B-1.2 Other Publications.

B-1.2.1 American Association of State Highway and Transportation Officials, Suite 225, 444 North Capitol Street, N.W., Washington, DC 20001, *A Policy on Geometric Design of Highways and Streets*, 1984.

B-1.2.2 U.S. Government Publication. Federal Highway Administration, *Commercial Driver's License Standards: Requirements and Penalties*, 49 CFR Part 383, Revised June 22, 1990.

B-1.2.3 Fire Protection Publications, Oklahoma State University, Stillwater, OK 74074.

Fire Department Aerial Apparatus, 1st edition, 1991.

Fire Department Pumping Apparatus, 7th edition, 1989.

Fire Stream Practices, 7th edition, 1989.

Hose Practices, 7th edition, 1988.

Water Supplies for Fire Protection, 4th edition, 1988.

Fire Service Ground Ladder Practices, 8th edition, 1984.

B-1.2.4 McGraw-Hill, Inc., *Standard Handbook for Civil Engineers*, 1976.

B-1.2.5 United States Fire Administration, *Emergency Vehicle Driver Training*, FA-110, September 1991.

B-1.2.6 Webster's Third New International Dictionary of the English Language.

Appendix C

This Appendix is not a part of the requirements of this NFPA document, but is included for information purposes only.

Explanation of the Standards and Concepts of JPRs

The primary benefit of establishing national professional qualification standards is to provide both public and private sectors with a framework of the job requirements for the fire service. Other benefits include enhancement of the profession, individual as well as organizational growth and development, and standardization of practices.

NFPA professional qualification standards identify the minimum job performance requirements for specific fire service positions. The standards may be used for training design and evaluation, certification, measuring and critiquing on-the-job performance, defining hiring practices, and setting organizational policies, procedures, and goals (other applications are encouraged).

Professional qualification standards for a specific job are organized by major areas of responsibility defined as duties. For example, the fire fighter's duties may include fire suppression, rescue, and water supply; and the Public Fire Educator's duties may include education, planning and development, and administration. Duties are major functional areas of responsibility within a job.

The professional qualification standards are written as job performance requirements (JPRs). Job performance requirements describe the performance required for a specific job. JPRs are grouped according to the duties of a job. The complete list of JPRs for each duty defines what an individual must be able to do in order to successfully perform that duty. Together, the duties and their JPRs define the job parameters; that is, the professional qualification standard as a whole is a job description.

Breaking Down the Components of a Job Performance Requirement

The job performance requirement is the assembly of three critical components. These components are as follows:

- (1) Task to be performed.
- (2) Tools, equipment, or materials that must be provided to successfully complete the task.
- (3) Evaluation parameters and/or performance outcomes.

Example

(1) Task	(1) Ventilate a pitched roof;
(2) Tools, equipment, or materials	(2) Given an ax, a pike pole, an extension ladder, and a roof ladder;
(3) Evaluation parameters and performance outcomes	(3) So that a 4-ft × 4-ft hole is created, all ventilation barriers are removed; ladders are properly positioned for ventilation; ventilation holes are correctly placed; and smoke, heat, and combustion by-products are released from the structure.

The task to be performed: The first component is a concise statement of what the person is supposed to do.

Tools, equipment, or materials that must be provided to successfully complete the task: This component ensures that all individuals completing the task are given the same minimal tools, equipment, or materials when being evaluated. By listing these items, the performer and evaluator know what must be provided in order to complete the task.

Evaluation parameters and/or performance outcomes: This component defines how well one must perform each task—for both the performer and evaluator. The JPR guides performance outcomes. This portion of the JPR promotes consistency in evaluation by reducing the variables used to gauge performance.

In addition to these three components, the JPR contains prerequisite knowledge and skills. Just as the term prerequisite suggests, these are the necessary knowledge and

skills one must have prior to being able to perform the task. Prerequisite knowledge and skills are the foundation for task performance.

Once the components and prerequisites are put together, the JPR might read as follows:

Example 1:

The Fire Fighter I shall ventilate a pitched roof, given an ax, a pike pole, an extension ladder, and a roof ladder; so that a 4-ft × 4-ft hole is created; all ventilation barriers are removed; ladders are properly positioned for ventilation; and ventilation holes are correctly placed.

Prerequisite Knowledge: Pitched roof construction, safety considerations with roof ventilation, the dangers associated with improper ventilation, knowledge of ventilation tools, the effects of ventilation on fire growth, smoke movement in structures, signs of backdraft, and the knowledge of vertical and forced ventilation.

Prerequisite Skills: Remove roof covering; properly initiate roof cuts; use the pike pole to clear ventilation barriers; use ax properly for sounding, cutting, and stripping; position ladders; and climb and position self on ladder.

Example 2:

The Fire Investigator shall interpret burn patterns, given standard equipment and tools and some structural/content remains, so that each individual pattern is evaluated with respect to the burning characteristics of the material involved.

Prerequisite Knowledge: Knowledge of fire development and the interrelationship of heat release rate, form, and ignitability of materials.

Prerequisite Skill: Interpret the effects of burning characteristics on different types of materials.

Examples of Potential Uses

Certification:

JPRs can be used to establish the evaluation criteria for certification at a specific job level. When used for certification, evaluation must be based on the successful completion of JPRs.

First, the evaluator verifies the attainment of prerequisite knowledge and skills prior to JPR evaluation. This might be through documentation review or testing.

Next, the candidate is evaluated on completing the JPRs. The candidate performs the task and is *evaluated* based on the evaluation parameters and/or performance outcomes. This performance-based evaluation can be either practical (for psychomotor skills* such as "ventilate a roof") or written (for cognitive skills* such as "interpret burn patterns").

Using Example 1, a practical performance-based evaluation would measure the ability to "ventilate a pitched roof." The candidate passes this particular evaluation if the standard was met, i.e., a 4-ft × 4-ft hole was created; all ven-

tilation barriers were removed; ladders were properly positioned for ventilation; ventilation holes were correctly placed; and smoke, heat, and combustion by-products were released from the structure.

For Example 2, when evaluating the task “*interpret burn patterns*,” the candidate could be given a written assessment in the form of a scenario, photographs, and drawings and then be asked to respond to specific written questions related to the JPRs evaluation parameters.

* NOTE: Psychomotor skills are those physical skills that can be demonstrated or observed. Cognitive skills (or mental skills) cannot be observed, but rather are evaluated on how one completes the task (process oriented) or on the task outcome (product oriented).

Remember, when evaluating performance, candidates must be given the tools, equipment, or materials listed in the JPR before they can be properly evaluated, e.g., an ax, a pike pole, an extension ladder, and a roof ladder.

Curriculum Development/Training Design and Evaluation:

The statements contained in this document that refer to job performance were designed and written as job performance requirements. While a resemblance to instructional objectives may be present, these statements should not be used in a teaching situation until after they have been modified for instructional use.

Job performance requirements state the behaviors required to perform specific skill(s) on the job, as opposed to a learning situation. These statements should be converted into instructional objectives with behaviors, conditions, and standards that can be measured within the teaching/learning environment. A job performance requirement that requires a fire fighter to “ventilate a pitched roof” should be converted into a measurable instructional objective for use when teaching the skill. (See *Figure C-1*.)

Using Example 1, a terminal instructional objective might read as follows:

The candidate will ventilate a pitched roof, given a simulated roof, an ax, a pike pole, an extension ladder, and a roof ladder, so that 100 percent accuracy is attained on a skills checklist. (At a minimum, the skills checklist should include each of the measurement criteria from the JPR.)

Figure C-2 is a sample checklist for use in evaluating this objective.

While the differences between job performance requirements and instructional objectives are subtle in appearance, the purpose of each statement differs greatly. JPRs state what is necessary to perform the job in the “real world.” Instructional objectives, however, are used to identify what students must do at the end of a training session and are stated in behavioral terms that are measurable in the training environment.

By converting JPRs into instructional objectives, instructors will be able to clarify performance expectations and avoid confusion related to using statements designed for purposes other than teaching. Additionally, instructors will be able to add local/state/regional elements of performance into the standards as intended by the developers.

Prerequisite skills and knowledge should be converted into enabling objectives. These help to define the course content. The course content should include each of the prerequisite knowledge and skills. Using Figure C-2, the enabling objectives are pitched roof construction, safety considerations with roof ventilation, remove roof covering, properly initiate roof cuts, etc. These ensure that the course content supports the terminal objective.

NOTE: It is assumed that the reader is familiar with curriculum development or training design and evaluation.

Other Uses

While the professional qualifications standards are principally used to guide the development of training and certification programs, there are a number of other potential uses for these documents. Because they are written in JPR terms, they lend themselves well to any area of the profession where a level of performance or expertise must be determined. Such areas might include:

Employee Evaluation/Performance Critiquing. The JPRs can be used as a guide by both the supervisor and the employee during an evaluation. The JPRs for a specific job define tasks that are essential to perform on the job, as well as the evaluation criteria to measure when those tasks are completed.

Establishing Hiring Criteria. Professional qualifications standards may be used in a number of ways to further the establishment of hiring criteria. The Authority Having Jurisdiction might simply require certification at a specific job level, e.g., Fire Fighter I. The JPRs might also be used as the basis for pre-employment screening by establishing essential minimal tasks and the related evaluation criteria. An added benefit is that individuals interested in employment can work toward the minimal hiring criteria at local colleges.

Employee Development. The professional qualifications standards can be useful to both the employee and the employer in developing a plan for the individual's growth within the organization. The JPRs and the associated prerequisite skills and knowledge can be used as a guide to determine additional training and education required for the employee to master the job or profession.

Succession Planning. Succession planning or career pathing addresses the efficient placement of people into jobs in response to current needs and anticipated future needs. A career development path can be established for targeted individuals to prepare them for growth within the organization. The JPRs and prerequisite knowledge and skills could then be used to develop an educational path to aid in the individual's advancement within the organization or profession.

Establishing Organizational Policies, Procedures, and Goals. The JPRs can be incorporated into organizational policies, procedures, and goals where employee performance is addressed.

Converting JPRs into Instructional Objectives

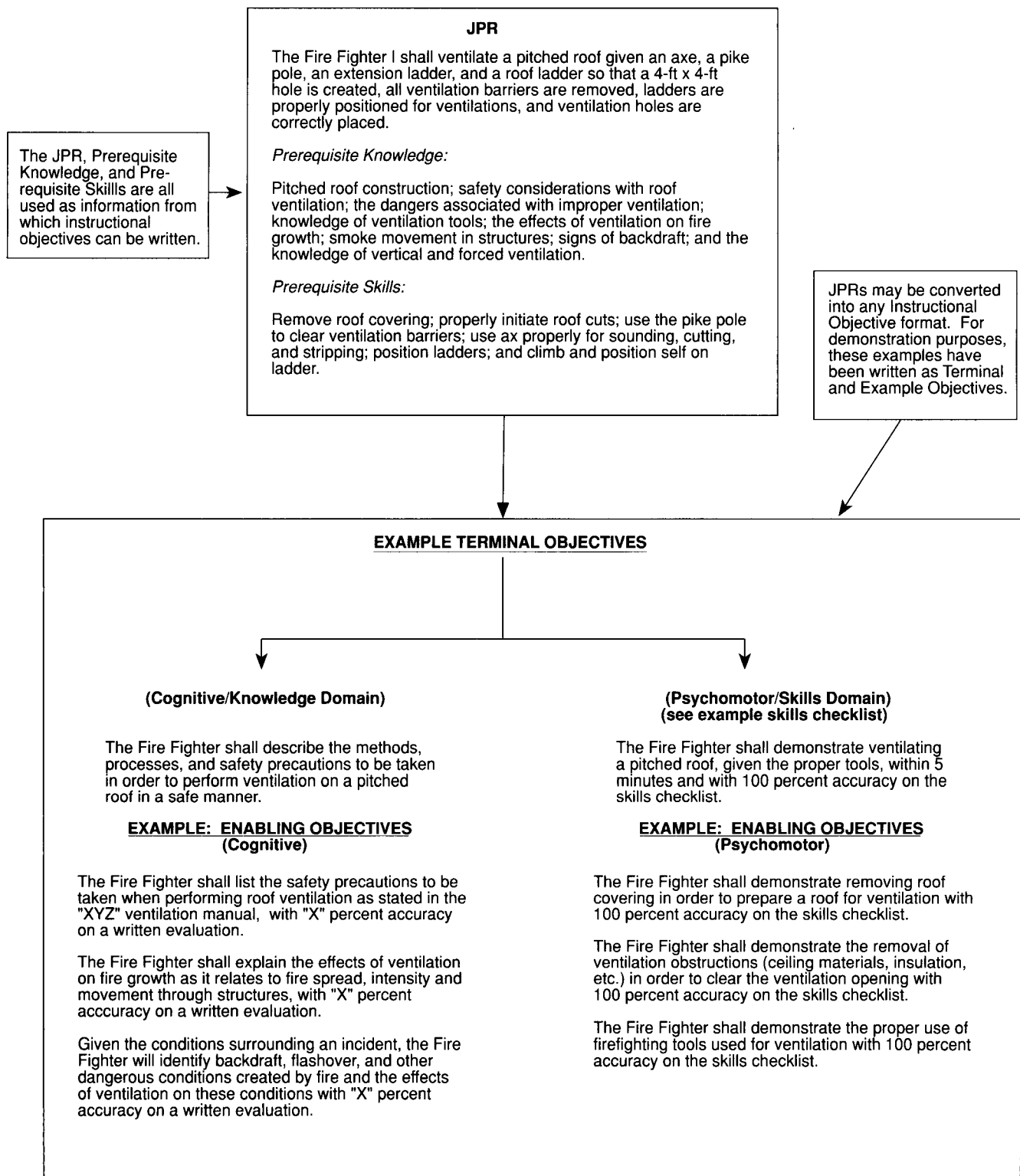


Figure C-1 Converting JPRs into instructional objectives.

Skills Checklist (Roof Ventilation)

OBJECTIVE: The Fire Fighter shall demonstrate ventilating a pitched roof, given the proper tools, within 5 minutes and with 100 percent accuracy on the skills checklist.

YES NO

- | | | |
|--------------------------|--------------------------|---|
| ☐ | ☐ | 1. 4-ft x 4-ft hole was created. |
| ☐ | ☐ | 2. All ventilation barriers were removed. |
| ☐ | ☐ | 3. Ladders were properly positioned. |
| ☐ | ☐ | 4. Ventilation holes were correctly placed (directly over fire, highest point, etc.). |
| ☐ | ☐ | 5. Task completed within 5 minutes.
(Time to complete task: _____). |

Figure C-2 Skills checklist.

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Index

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-A-

Aerial apparatus

- Definition 1-4
- With tillers (definition) 1-4

Aerial operators see also Tiller operators

- Certification requirements 1-3.5, 4-1.1
- Definition 1-4
- Driving/operating skills 4-1.3 to 4-1.4, A-4-1.3 to A-4-1.4
- Equipment operation skills 4-2
- Fire Fighter I requirements 4-1.1, A-4-1.1
- Preventive maintenance skills 4-1.2

Agent dispensing systems see Fire suppression agents

Aircraft rescue and fire fighting (ARFF) vehicle operators

- Certification requirements 1-3.8, 7-1.1
- Driving/operating skills 7-1.3 to 7-1.5, 7-3.3, A-7-1.3, A-7-1.5
- Equipment operation skills 7-3.1 to 7-3.2
- Extinguishment agent supply skills 7-2
- Fire Fighter I requirements 7-1.1, A-7-1.1
- Preventive maintenance skills 7-1.2, A-7-1.2
- Water supply skills 7-2

Aircraft rescue and fire fighting (ARFF) vehicles

- Definition 1-4
- Extinguishing systems 7-1.2, 7-2, A-7-1.2

Alley dock exercise A-2-3.3

Apparatus station parking maneuver A-2-3.3

Approved (definition) 1-4

Attack pump (definition) 1-4; see also Pump operators

Authority having jurisdiction

- Definition 1-4
- Job performance requirements, evaluation of 1-3.9

-C-

Confined space turnaround A-2-3.5

-D-

Definitions 1-4, A-1-4

Diminishing clearance exercise A-2-3.6

Driving/operating skills

- Aerial operators 4-1.3 to 4-1.4, A-4-1.3 to A-4-1.4