NFPA 600

Standard on Industrial Fire Brigades

2005 Edition



NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471
An International Codes and Standards Organization

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NFPA 600

Standard on

Industrial Fire Brigades

2005 Edition

This edition of NFPA 600, *Standard on Industrial Fire Brigades,* was prepared by the Technical Committee on Loss Prevention Procedures and Practices and acted on by NFPA at its November Association Technical Meeting held November 13–17, 2004, in Miami Beach, FL. It was issued by the Standards Council on January 14, 2005, with an effective date of February 7, 2005, and supersedes all previous editions.

This edition of NFPA 600 was approved as an American National Standard on February 7, 2005.

Origin and Development of NFPA 600

In 1902 NFPA adopted *Suggestions for Organizing Private Fire Departments* recommended by the Committee on Private Fire Department Regulations. In 1912 NFPA adopted two pamphlets, *Organization and Execution of Exit Drills* and *Organization and Drilling of Private Fire Brigades*, on the recommendation of the Committee on Private Fire Departments and Fire Drills. In 1924 the NFPA adopted *Suggestions for the Organization, Drilling and Equipment of Private Fire Brigades* on the recommendation of the Committee on Field Practice, and revisions were adopted in 1930, 1937, and 1949.

Jurisdiction for the publication was transferred in 1948 to the new Committee on Fire Brigades and Watchmen, and a revised edition was published in 1955. The guide was completely revised in 1967.

In 1969 the committee was reorganized as the Technical Committee on Loss Prevention Procedures and Practices, and the guide was reconfirmed in 1975. In 1981 a complete revision was accomplished, and a partial revision was made in the 1986 edition, as well as a redesignation from NFPA 27 to NFPA 600.

In 1992 the document was completely revised as a standard to provide a minimum level of occupational safety and health for industrial fire brigade members consistent with the Occupational Safety and Health Administration (OSHA). The standard incorporated the concepts of advanced exterior fire fighting and site-specific hazards for the first time. These concepts were needed for industrial fire brigades to properly address the types of situations they encounter.

In 1996 the document was revised to include industrial fire departments, which were previously addressed in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program.* This reorganization assisted the authority having jurisdiction and owner/operators in determining the standard they must comply with and if they are in compliance. Other changes made the document more user friendly and better clarified the requirements of the standard.

Changes to the 2000 edition were mainly editorial or were provided for clarification. A noteworthy exception was the change in the number of industrial fire brigade members for interior structural fire fighting. Two industrial fire brigade members were now required to be available for rescue, whereas the previous edition required only one.

The 2005 edition incorporates revised definitions that correspond to preferred terms found in the *Glossary of Terms.* One of the definition changes incorporates a broader scope for the medical professionals who assess medical and physical fitness of fire brigade members. The term "qualified physician" has been replaced by "qualified health care professional" to reflect actual practice.

The 2005 edition has also added references to the professional qualification standard, NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications,* which was adopted after the effective date of the 2000 edition. The standard has also been revised and reorganized in accordance with the *Manual of Style for NFPA Technical Committee Documents.*

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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 for documents on fire brigades, guard services, and techniques for securing effective fire loss prevention programs in industrial, commercial, institutional, and similar properties.

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NFPA 600

Standard on

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

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for mandatory extracts are given in Chapter 2 and those for nonmandatory extracts are given in Annex B. Editorial changes to extracted material consist of revising references to an appropriate division in this document or the inclusion of the document number with the division number when the reference is to the original document. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex B.

Chapter 1 Administration

1.1* Scope.

1.1.1 This standard contains minimum requirements for organizing, operating, training, and equipping industrial fire brigades. It also contains minimum requirements for the occupational safety and health of industrial fire brigade members while performing fire fighting and related activities.

1.1.2* This standard shall apply to any organized, private, industrial group of employees having fire-fighting response duties, such as emergency brigades, emergency response teams, fire teams, and plant emergency organizations.

1.1.3* This standard shall not apply to industrial fire brigades that respond to fire emergencies outside the boundaries of the industrial site where the off-site fire involves unfamiliar hazards or enclosed structures with layout and contents that are unknown to the industrial fire brigade.

1.1.4 This standard shall not apply to medical response, confined space rescue response, and hazardous material response activities.

1.2* Purpose. The purpose of this standard is to provide minimum requirements for organization, operation, training, and occupational safety and health for industrial fire brigades.

1.3 Alternate Requirements.

1.3.1 The application of the performance objectives of this standard can vary for many industrial operations.

1.3.2 The authority having jurisdiction shall be permitted to examine and approve organization, operations, training, and occupational safety and health requirements that provide an equivalent level of safety to the level of safety provided by the requirements of this standard.

1.4* Limits of Actions and Responsibilities of Industrial Fire Brigade.

1.4.1 General.

1.4.1.1 The degree of potential exposure to a hazardous environment and the degree of training shall determine the limits of any industrial fire brigade action and responsibility.

1.4.1.2 The written industrial fire brigade organizational statement and standard operating procedures shall define these limits.

1.4.2* Incident Command. At facilities where designated employees are intended to function as the first responders to incipient fires, the industrial fire brigade shall assume command of the incident once the brigade arrives on the fire scene.

1.4.3 Limits for Industrial Fire Brigades Assigned Incipient Fire-Fighting Response Duties.

1.4.3.1 Interior and exterior fires shall be considered incipient stage when industrial fire brigade members function as follows:

(1) They are able to safely fight the fire in normal work clothing.
(2) They are not required to crawl or take other evasive action to avoid smoke and heat.
(3) They are not required to wear thermal protective clothing or self-contained breathing apparatus (SCBA).
(4) They are able to fight the fire effectively with portable extinguishers or handlines flowing up to 473 L/min (125 gpm).

1.4.3.2 Exterior fires shall be considered appropriate for defensive action outside of the hot and warm zones by industrial fire brigade members who have been assigned incipient fire-fighting response duties when the following occurs:

(1) The organizational statement lists it as a response duty of the industrial fire brigade, and it is covered by the standard operating procedures.
(2) The industrial fire brigade has received training for that activity.
(3) SCBA and thermal protective clothing are not required.
(4) Personal evasive action is not required.
(5) The industrial fire brigade is able to perform defensive action effectively, using handlines flowing up to 1140 L/min (300 gpm), master streams, or similar devices for the manual application of specialized agents.

1.4.4 Limits for Industrial Fire Brigades Assigned Only Advanced Exterior Fire-Fighting Response Duties. Exterior fires shall be considered appropriate for offensive action within the hot zone by industrial fire brigade members who have been assigned advanced exterior fire-fighting response duties when the following occurs:

(1) The organizational statement lists it as a response duty of the industrial fire brigade, and it is covered by the standard operating procedures.
(2) The industrial fire brigade has received training for that activity.
(3) SCBA and thermal protective clothing are provided.
(4) The industrial fire brigade is able to perform offensive action effectively, using handlines flowing up to 1140 L/min (300 gpm), master streams, or similar devices for the manual application of specialized agents.

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1.4.5 Limits for Industrial Fire Brigades Assigned Only Interior Structural Fire-Fighting Response Duties. Interior structural fires shall be considered appropriate for offensive action within the hot zone by industrial fire brigade members who have been assigned interior fire-fighting response duties when the following occurs:

(1) The organizational statement lists it as a response duty of the industrial fire brigade, and it is covered by the standard operating procedures.
(2) The industrial fire brigade has received training for that activity.
(3) SCBA and protective clothing for structural fire fighting are provided.
(4) The industrial fire brigade is able to perform offensive actions effectively, using handlines flowing up to 1140 L/min (300 gpm), master streams, or similar devices for the manual application of specialized agents.

1.4.6 Limits of Industrial Fire Brigades Assigned Both Advanced Exterior and Interior Structural Fire-Fighting Response Duties.

1.4.6.1 Both exterior fires and interior structural fires shall be considered appropriate for offensive action within the hot zone for industrial fire brigade members who have been assigned both advanced exterior and interior fire-fighting response duties when the following occurs:

(1) The organizational statement lists it as a response duty of the industrial fire brigade, and it is covered by the standard operating procedures.
(2) The industrial fire brigade has received training for that activity.
(3) SCBA and thermal protective clothing are provided.
(4) The industrial fire brigade is able to perform offensive action effectively, using handlines flowing up to 1140 L/min (300 gpm), master streams, or similar devices for the manual application of specialized agents.

1.4.6.2 Protective clothing for proximity fire fighting shall not be worn for interior structural fire fighting.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications,* 2001 edition.

NFPA 1403, *Standard on Live Fire Training Evolutions,* 2002 edition.

NFPA 1911, *Standard for Service Tests of Fire Pump Systems on Fire Apparatus,* 2002 edition.

NFPA 1914, *Standard for Testing Fire Department Aerial Devices,* 2002 edition.

NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting,* 2000 edition.

NFPA 1976, *Standard on Protective Ensemble for Proximity Fire Fighting,* 2000 edition.

NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services,* 2002 edition.

NFPA 1982, *Standard on Personal Alert Safety Systems (PASS),* 1998 edition.

2.3 Other Publications. (Reserved)

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary,* 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.2.5 Standard. A document, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix or annex, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

3.3 General Definitions.

3.3.1* Combustible Liquid. A liquid that has a closed-cup flash point at or above 37.8°C (100°F).

3.3.2 Designated Employee. An employee who is not a member of an industrial fire brigade but who has been trained to use portable fire extinguishers or small hose lines to fight incipient fires in the employee's immediate work area.

3.3.3 Drill. An exercise involving a credible simulated emergency that requires personnel to perform emergency response operations for the purpose of evaluating the effectiveness of the training and education programs and the competence of personnel in performing required response duties and functions. [**601,** 2005]

3.3.4 Drug. Any substance, chemical, over-the-counter medication, or prescribed medication that can affect performance.

3.3.5* Education. The process of imparting knowledge or skill through systematic instruction.

3.3.6 Emergency Response Operations. Activities related to emergency incidents, including response to the scene of the incident and specific response duties performed at the scene.

3.3.7 Enclosed Structure. A structure with a roof or ceiling and at least two walls that can present fire hazards to employees, such as accumulations of smoke, toxic gases, and heat, similar to those found in buildings.

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3.3.8 Fire Fighting.

3.3.8.1* ***Advanced Exterior Fire Fighting.*** Offensive fire fighting performed outside of an enclosed structure when the fire is beyond the incipient stage.

3.3.8.2 ***Defensive Fire Fighting.*** The mode of manual fire control in which the only fire suppression activities taken are limited to those required to keep a fire from extending from one area to another.

3.3.8.3 ***Incipient Fire Fighting.*** Fire fighting performed inside or outside of an enclosed structure or building when the fire has not progressed beyond incipient stage.

3.3.8.4* ***Interior Structural Fire Fighting.*** The physical activity of fire suppression, rescue, or both, inside of buildings or enclosed structures that are involved in a fire beyond the incipient stage.

3.3.8.5 ***Offensive Fire Fighting.*** The mode of manual fire control in which manual fire suppression activities are concentrated on reducing the size of a fire to accomplish extinguishment.

3.3.9 Fit.

3.3.9.1 ***Medically Fit.*** As determined by a qualified healthcare professional, there are no known medical limitations that would interfere with the process of making decisions and providing direction while exposed to a stressful environment.

3.3.9.2 ***Physically Fit.*** As determined by a qualified healthcare professional, there are no known physical or medical limitations that would interfere with the performance of strenuous heavy lifting and pulling or with the use of self-contained breathing apparatus that can be required during emergency response organizations.

3.3.10* Flammable Liquid. A liquid that has a closed-cup flash point that is below 37.8°C (100°F) and a maximum vapor pressure of 2068 mm Hg (40 psia) at 37.8°C (100°F).

3.3.11* Hazardous Atmosphere. Any atmosphere that is oxygen deficient or that contains a toxic or disease-producing contaminant.

3.3.12 Incident Management System. A system that defines the roles and responsibilities to be assumed by personnel and the operating procedures to be used in the management and direction of emergency operations; the system is also referred to as an incident command system (ICS).

3.3.13* Incipient Stage. The early stage of a fire, in which the progression has not developed beyond that which can be extinguished using either portable fire extinguishers or handlines flowing up to 473 L/min (125 gpm).

3.3.14 Industrial Fire Brigade. An organized group of employees within an industrial occupancy who are knowledgeable, trained, and skilled in at least basic fire-fighting operations, and whose full-time occupation might or might not be the provision of fire suppression and related activities for their employer.

3.3.15 Industrial Fire Brigade Apparatus. An industrial fire brigade emergency response vehicle designed and intended primarily for fire suppression, rescue, or other specialized function that includes pumpers, foam apparatus, aerial ladders, rescue vehicles, and other such apparatus.

3.3.16 Industrial Fire Brigade Management. The individual designated by top management to be responsible for the organization, management, and functions of the industrial fire brigade.

3.3.17 Industrial Fire Brigade Training Coordinator. The designated company representative with responsibility for coordinating effective, consistent, and quality training within the industrial fire brigade training and education program.

3.3.18 Industrial Occupancy. Occupancies that include industrial, commercial, mercantile, warehouse, power plant (utility), and institutional or similar occupancy, including for-profit, not-for-profit, and governmental facilities.

3.3.19 Master Stream. A portable or fixed fire-fighting appliance supplied by either hose lines or fixed piping and that has the capability of flowing in excess of 1140 L/min (300 gpm) of water or water-based extinguishing agent.

3.3.20 Performance Standards. Minimum requirements for knowledge and skills that must be provided to or demonstrated by the industrial fire brigade member upon completion of a training or education session.

3.3.21 Qualified Healthcare Professional. A licensed medical doctor or other licensed healthcare professional qualified to provide professional expertise in the areas of occupational safety and health as they relate to emergency response activities.

3.3.22 Response Duty. A fire-related service, function, or task identified in the industrial fire brigade organizational statement and assigned to a member to perform.

3.3.23* Site. The location of an industrial complex/facility that includes all property within the property lines of the company.

3.3.24 Site-Specific Hazard. A hazard that is present at the specific facility for which the industrial fire brigade has been organized.

3.3.25 Specialized Agents. Fire-extinguishing agents, such as dry chemicals, dry powders, carbon dioxide, halon, and other such non-water-based agents.

3.3.26 Standard Operating Procedure. A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely for the performance of designated operations or actions. [**1521,** 2002]

3.3.27* Support Members. Personnel assigned to the industrial fire brigade to perform specific response duties, including those people who have specific technical knowledge or skills or who have been given specific assignments that indirectly support manual fire suppression efforts.

3.3.28 Thermal Protective Clothing. Protective clothing such as helmets, footwear, gloves, hoods, trousers, and coats that are designed and manufactured to protect the industrial fire brigade member from the adverse effects of fire.

3.3.29 Training. The process of achieving proficiency through instruction and hands-on practice in the operation of equipment and systems that are expected to be used in the performance of assigned response duties.

3.3.30 Zone.

3.3.30.1 ***Cold Zone.*** The area immediately outside the boundary of the established warm zone where personnel are safe from the adverse effects of a fire.

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3.3.30.2 ***Hot Zone.*** The area immediately surrounding the physical location of a fire having a boundary that extends far enough from the fire to protect industrial fire brigade members positioned outside the hot zone from being directly exposed to flames, dense smoke, or extreme temperatures.

3.3.30.3 ***Warm Zone.*** The control area immediately outside the boundary of the established hot zone having a boundary that extends far enough from the hot zone to protect personnel outside the warm zone from the adverse effects of the fire.

Chapter 4 Requirements for All Industrial Fire Brigades

4.1 General Administration.

4.1.1* Corporate or local management shall be responsible for the following:

(1) Evaluating the site-specific conditions and hazards to determine site-specific response duties to be assigned to the industrial fire brigade
(2) Assigning the site-specific response duties of the industrial fire brigade
(3) Establishing, reviewing, and maintaining a written industrial fire brigade organizational statement
(4) Establishing lines of authority and assigning responsibilities to ensure that the components of the industrial fire brigade organizational statement are accomplished
(5)*Establishing a written policy for the occupational safety and health of industrial fire brigade members
(6)*Establishing a written policy for the medical and job-related physical performance requirements for industrial fire brigade members
(7) Developing or adopting performance-based standards that establish baseline levels of proficiency in skills, knowledge, and the safety measures necessary for industrial fire brigade members to accomplish the site-specific response duties described in the industrial fire brigade organizational statement
(8) Developing, reviewing, and maintaining written standard operating procedures for site-specific conditions and hazards
(9) Ensuring that a system exists to advise industrial fire brigade management of changes in an employee's eligibility for participation in an industrial fire brigade, resulting from changes in the employee's medical condition
(10) Establishing a policy to ensure that the records required in this standard are maintained
(11) Establishing a policy to ensure that annual funds are budgeted and available for equipment, vehicles, training and education, medical and job-related physical performance evaluations, and other necessary items to accomplish these objectives

4.1.2* Management shall establish, review, and maintain a written industrial fire brigade organizational statement.

4.1.2.1 This policy statement, which establishes the existence of the industrial fire brigade, shall include the following:

(1) Basic organizational structure
(2) The type, amount, and frequency of training and education to be provided
(3) The expected number of members in the brigade
(4) The response duties that the brigade is expected to perform in the workplace, which define the limits of industrial fire brigade responsibility
(5) The shifts during which the brigade members are available for response

4.1.2.2* The organizational statement shall be available for inspection by the authority having jurisdiction, the industrial fire brigade members, and their designated representatives.

4.1.3 Management shall establish lines of authority and assign responsibilities to ensure that the components of the industrial fire brigade organizational statement are accomplished.

4.1.3.1 Management shall designate the responsible individual for the administration of the industrial fire brigade organizational statement and the training and education program.

4.1.3.2 Management shall establish responsibility for initiating, maintaining, and enforcing standard operating procedures to ensure the safety and health of industrial fire brigade members.

4.1.3.3 Management shall establish a policy to ensure that each industrial fire brigade member cooperates, participates, and complies with the provisions of the industrial fire brigade organizational statement and the training and education program.

4.1.4* Management shall ensure that industrial fire brigade members are a part of a corporate or local company occupational safety and health policy that identifies specific goals and objectives for the prevention and elimination of accidents, injuries, illness, and fatalities while performing industrial fire brigade response duties.

4.1.4.1 Management shall ensure that industrial fire brigade members are adequately represented on corporate or local company occupational safety and health committees as they relate to members performing assigned industrial fire brigade response duties.

4.1.4.2* Management shall delegate the response duties and responsibilities of the industrial fire brigade safety program to a qualified individual(s).

4.1.4.3 The safety program shall include the following:

(1) Records and data management
(2) Liaison with management, equipment suppliers, site or corporate safety, and medical and health departments
(3) Development and maintenance of standard operating procedures
(4) Accident prevention
(5) Equipment specification and maintenance
(6) Accident investigation
(7) Incident scene safety
(8) Training and education

4.1.5* All records associated with the operation of the industrial fire brigade required in this standard shall be maintained in a location where they are available for inspection by the authority having jurisdiction.

4.2 General Operations.

4.2.1* An incident management system shall be established with written procedures applying to all members involved in emergency and training operations and shall be utilized to manage all emergency and training operations.

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4.2.1.1 All members involved in emergency response organizations shall be familiar with the incident management system.

4.2.1.2 The incident management system shall identify roles and responsibilities relating to the safety of industrial fire brigade operations.

4.2.1.3 Safety responsibilities shall be assigned to supervisory personnel at each level of the organization.

4.2.1.4 This system shall include the roles and responsibilities of any responding public fire department and other outside agencies.

4.2.1.5* A standard system shall be used to identify and account for each industrial fire brigade member present at the scene of the emergency.

4.2.1.6 NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications*, shall be used to establish minimum levels of proficiency in both skills and knowledge to permit all industrial fire brigade members to safely accomplish the site-specific response duties described in the industrial fire brigade organizational statement.

4.2.1.7 The incident management system shall ensure that the risk to members is evaluated prior to taking action.

4.2.1.7.1 In situations where the risk to industrial fire brigade members is unacceptable, the emergency response activities shall be limited to defensive operations.

4.2.1.7.2 Regardless of the risk, actions shall not exceed the scope of the organizational statement and standard operating procedures.

4.2.2 Standard operating procedures for site-specific conditions and hazards shall be developed, reviewed, and maintained.

4.2.2.1 These procedures shall be maintained in written form and shall address the site-specific functions identified in the industrial fire brigade organizational statement.

4.2.2.2* These procedures shall include information regarding site-specific hazards to which industrial fire brigade members can be exposed during a fire or other emergency.

4.2.2.3 These procedures shall address the site-specific limitations of emergency response organizations.

4.2.2.4 These procedures shall be accessible to all industrial fire brigade members.

4.2.2.5 These procedures shall ensure that the shift industrial fire brigade leader is notified of all major fire protection systems and equipment that are out of service.

4.2.3 Risk Management Policy.

4.2.3.1 A risk management policy for emergency response shall be established by industrial fire brigade management.

4.2.3.2 The risk management policy shall be routinely reviewed with industrial fire brigade members and shall be based on the following recognized principles:

(1) Some risk to the safety of industrial fire brigade members is acceptable where saving human lives is possible.
(2) Minimal risk to the safety of the industrial fire brigade members, and only in a calculated manner, is acceptable where saving endangered property is possible.
(3) No risk to the safety of industrial fire brigade members is acceptable where saving lives or property is not possible.

4.2.4 Operational safety requirements for industrial fire brigade members responding to a fire emergency shall be established and shall at a minimum include the following:

(1) Personnel who are not trained in accordance with this standard are not permitted to enter the warm or hot zones established for a fire emergency.
(2)*SCBA and thermal protective clothing are worn by industrial fire brigade members entering the hot zone.
(3) Thermal protective clothing is worn by industrial fire brigade members entering the warm zone.
(4) Industrial fire brigade members operate in teams of two or more in response to fires that have advanced beyond the incipient stage.
(5) Industrial fire brigade members operating in the hot and warm zones have an established communications system.
(6) When industrial fire brigade members are operating in the hot zone, at least one industrial fire brigade member with the capability to call for assistance remains outside the hot zone and maintains an awareness of the safety of industrial fire brigade members located inside the hot zone.
(7) When industrial fire brigade members are operating in the hot zone, additional brigade members are standing by in the warm zone with approved equipment to provide assistance or rescue.
(8) Industrial fire brigade members positioned in the warm zone are visible to command positions at all times.
(9) Personnel and industrial fire brigade members positioned in any fire zone have opportunity to relocate to an alternate position should fire conditions change.
(10) Experienced industrial fire brigade members oversee activities of less experienced brigade members during fire-fighting operations.

4.3 Education, Training, and Drills.

4.3.1 A training and education program shall be established and maintained for all industrial fire brigade members to ensure that they are able to perform their assigned response duties in a manner that does not pose a hazard to themselves or other members.

4.3.2 All members shall be trained to a level of competency commensurate with the response duties and functions that they are expected to perform, including the operation of all of the fire-fighting and rescue equipment and systems they are expected to use.

4.3.3* Members shall meet the minimum skills and knowledge requirements of NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications*, for each site-specific task expected to be performed by brigade members before their participation in emergency response operations.

4.3.4 Industrial fire brigade members shall not perform any response duties they have not been trained and educated to perform.

4.3.5* The quality and frequency of training and education provided shall ensure that industrial fire brigade members are capable of performing their assigned response duties in a manner that does not present a hazard to themselves or endanger other personnel.

4.3.6 The prevention of accidents, injury, death, and illness during performance of any industrial fire brigade function shall be an established goal of training and education.

4.3.7* A designated industrial fire brigade training coordinator shall provide instruction to the industrial fire brigade or

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shall verify the qualifications of other instructors providing training and education to industrial fire brigade members.

4.3.8* Industrial fire brigade members designated as leaders shall receive training and education commensurate with their response duties. Such training and education shall be more comprehensive than that provided to the other industrial fire brigade members.

4.3.9* Drills shall be conducted as often as necessary to evaluate the effectiveness of the industrial fire brigade training and education program and the competence of industrial fire brigade members in performing assigned response duties. Lessons learned shall be evaluated and documented, and additional training shall be provided as necessary to improve performance that is below established standards.

4.3.10* The training and education provided to members shall include a review of the applicable provisions of this standard.

4.3.11 The training and education program shall include the principles and practices of fire fighting and emergency response to the extent required by the type of industrial fire brigade established and by the assignment within the brigade.

4.3.12 The training and education program shall address new hazards, equipment, and procedures introduced into the facility.

4.3.13* Training provided to industrial fire brigades shall develop and increase competency in life safety, property conservation, and reduction of business interruption.

4.3.14 Training shall include site-specific hazards. *(See 4.2.2.2.)*

4.3.15 Training Records.

4.3.15.1 Individual training records shall be maintained for each member of the industrial fire brigade.

4.3.15.2 Training records shall include, but not be limited to, courses completed, subjects studied, refresher courses completed, and other evaluations of skills and knowledge, drill attendance records, and leadership or other special accomplishments related to industrial fire brigade activities.

4.3.15.3 Training records shall be maintained and shall be available for inspection by the authority having jurisdiction.

4.3.15.4 Training records shall be reviewed at least annually by industrial fire brigade management and the industrial fire brigade training coordinator to evaluate training needs and equipment needs of the brigade.

4.4 Organization of the Industrial Fire Brigade.

4.4.1 Industrial Fire Brigade Management. Industrial fire brigade management shall be responsible for the following:

(1) Establishing programs to accomplish the items identified in the industrial fire brigade organizational statement
(2) Establishing the size and organization of the industrial fire brigade
(3) Coordinating and scheduling necessary meetings
(4) Establishing and maintaining fire protection equipment inspection programs for industrial fire brigade equipment
(5) Coordinating the maintenance and review of necessary reports and records
(6)*Maintaining liaison with local fire authorities
(7) Making information on hazardous materials and processes to which the brigade can be exposed available to brigade members
(8) Establishing job-related physical performance requirements for industrial fire brigade members

4.4.2 Industrial Fire Brigade Leader. The industrial fire brigade leader shall be responsible for the following:

(1) Establishing a chain of command within the brigade to act in the absence of the brigade leader
(2) Assisting in the selection process of brigade members
(3) Establishing and maintaining a brigade roster
(4) Selecting assistant industrial fire brigade leaders as appropriate to the size of the brigade and keeping them informed of all operations of the brigade
(5) Developing pre-emergency plans for site-specific hazards and making information on hazardous materials and processes to which the industrial fire brigade can be exposed available to all industrial fire brigade members
(6) Selecting and maintaining equipment used by the brigade
(7) Issuing written reports on the status of the industrial fire brigade to management, at least annually
(8) Assisting in fire investigations

4.4.3 Assistant Industrial Fire Brigade Leaders. The assistant industrial fire brigade leader shall complete all tasks assigned by the industrial fire brigade leader and shall substitute in the leader's absence.

4.4.4 Industrial Fire Brigade Members.

4.4.4.1 Industrial fire brigade members shall be selected from employees at the facility.

4.4.4.2 Members shall meet the requirements established for industrial fire brigade members and shall represent as many separate areas and departments of the facility as is practical.

4.4.4.3 Each industrial fire brigade member shall cooperate, participate, and comply with the provisions of the industrial fire brigade organizational statement and the training and education program.

4.4.4.4 Industrial fire brigade leaders or designated representatives shall ensure that support members are trained for their assigned response duties.

4.4.5 Identification. Industrial fire brigade members shall be issued identification for the following purposes:

(1) Assistance in reaching the incident in an emergency
(2) Identification by security personnel
(3) Establishing authority

4.4.6 Industrial Fire Brigade Communications. Means shall be established for the following:

(1) Notification of industrial fire brigade members of a reported incident
(2) Communications between industrial fire brigade members during an emergency

4.4.7 Support Members.

4.4.7.1 Support members shall demonstrate awareness of the plant's pre-fire plan prior to an incident and shall demonstrate their assigned response duties for those tasks.

4.4.7.2 Support members shall not be permitted to enter the warm zone or the hot zone.

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4.5 Medical and Job-Related Physical Requirements.

4.5.1 General Fitness.

4.5.1.1* Prior to being accepted for industrial fire brigade membership, employees who are expected to perform advanced exterior or interior structural fire fighting shall be examined and certified as medically and physically fit by a qualified healthcare professional.

4.5.1.2 The medical and physical fitness requirements shall take into account the risks and the tasks associated with the individual's assigned industrial fire brigade response duties.

4.5.1.3 Industrial fire brigade members who are under the influence of alcohol or drugs shall not participate in any industrial fire brigade operations.

4.5.2 Medical Requirements. Industrial fire brigade members who perform advanced exterior fire fighting or interior structural fire fighting shall be medically evaluated annually and after each medical leave of absence by a qualified healthcare professional.

4.5.3* Job-Related Physical Performance Requirements.

4.5.3.1* Industrial fire brigade management shall establish job-related physical performance requirements for industrial fire brigade members.

4.5.3.2 Industrial fire brigade members shall meet the job-related physical performance requirements of 4.5.3.1 prior to assignment to the industrial fire brigade.

4.5.3.3 Industrial fire brigade members who are expected to perform advanced exterior or interior structural fire fighting shall be evaluated annually to ensure that they continue to meet the job-related physical performance requirements of 4.5.3.1.

4.5.3.4 When the evaluation required in 4.5.3.3 concludes that an industrial fire brigade member does not meet the job-related physical performance requirements of 4.5.3.1, the member shall not be permitted to continue to perform those task-specific activities.

4.5.4* Physical Fitness. Industrial fire brigade members shall be required to report to management any changes in their physical condition that could impact their performance as an industrial fire brigade member.

4.6 Industrial Fire Brigade Equipment.

4.6.1 The industrial fire brigade shall be provided with the appropriate equipment to enable it to perform the response duties assigned in the organizational statement.

4.6.2* The equipment shall be selected based on the nature of the facility and the site-specific hazards present.

4.6.3 Storage space for the industrial fire brigade equipment shall be provided so that fire-fighting equipment is accessible.

4.6.4 A written equipment list that the industrial fire brigade is expected to use shall be maintained on the site, reviewed annually, and updated as necessary. The list shall include the location of the equipment and procedures for obtaining the equipment when needed.

4.6.5 All industrial fire brigade equipment shall be inspected and maintained at least annually.

4.6.6 Operation and maintenance manuals for industrial fire brigade equipment shall be available to the industrial fire brigade.

4.6.7 Maintenance reports of industrial fire brigade equipment shall be available to the industrial fire brigade.

4.7 Industrial Fire Brigade Apparatus.

4.7.1 Industrial fire brigade management shall consider industrial fire brigade health and safety as primary concerns in the specification, design, construction, acquisition, operation, maintenance, inspection, and repair of all apparatus.

4.7.1.1* Industrial fire brigade apparatus shall be operated only by members who have been qualified in its proper operation by formal training using performance-based standards.

4.7.1.2 Industrial fire brigade apparatus drivers shall have valid driver's licenses for the applicable type of vehicle as required by state law or corporate policy.

4.7.1.3 Apparatus shall be operated in compliance with all applicable traffic laws.

4.7.1.4 Industrial fire brigade apparatus drivers shall be directly responsible for safe and prudent operation under all conditions.

4.7.1.5* All persons riding on industrial fire brigade apparatus shall be seated and secured with seat belts.

4.7.2 All industrial fire brigade apparatus shall be maintained in accordance with the manufacturer's recommendations.

4.7.3 All industrial fire brigade apparatus shall be inspected at least weekly and within 24 hours after any use or repair to identify and correct unsafe conditions.

4.7.4 Industrial fire brigade apparatus found unsafe shall be placed out of service until repaired.

4.7.5 Fire pumps on apparatus shall be service tested in accordance with the frequency and procedures specified in NFPA 1911, *Standard for Service Tests of Fire Pump Systems on Fire Apparatus.*

4.7.6 All aerial devices shall be inspected and service tested in accordance with the frequency and procedures specified in NFPA 1914, *Standard for Testing Fire Department Aerial Devices.*

Chapter 5 Industrial Fire Brigades That Perform Incipient Stage Fire Fighting

5.1 General. Industrial fire brigades organized to perform incipient stage fire fighting shall meet the requirements of Sections 5.2 through 5.4 in addition to all applicable requirements of Chapters 1 and 4 of this standard.

5.2 Education, Training, and Drills.

5.2.1* All industrial fire brigade members shall receive training and education at least annually.

5.2.2 All industrial fire brigade members shall participate in a drill at least annually.

5.2.3* Training and drills involving live fire evolutions shall be performed in accordance with recognized safety precautions.

5.3 Protective Clothing and Protective Equipment. Thermal protective clothing and SCBA shall not be required.

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5.4 Medical. Each industrial fire brigade member shall meet the medical and job-related physical performance requirements as specified in Section 4.5.

Chapter 6 Industrial Fire Brigades That Perform Advanced Exterior Fire Fighting Only

6.1 General. Industrial fire brigades organized to perform advanced exterior fire fighting only shall meet the requirements of Sections 6.2 through 6.4 in addition to all applicable requirements of Chapters 1 and 4 of this standard.

6.2 Education, Training, and Drills.

6.2.1 All industrial fire brigade members shall receive training and education at least quarterly to meet the requirements of Section 4.3.

6.2.2 All industrial fire brigade members shall participate in a drill at least semiannually to meet the requirements of Section 4.3.

6.2.3 Live fire training shall be conducted at least annually. Training and drills involving a live fire evolution shall be performed in accordance with recognized safety precautions.

6.2.4 Live fire training shall include props that are representative of and that simulate as closely as possible the hazards and conditions that could be encountered by the industrial fire brigade member.

6.3 Protective Clothing and Protective Equipment.

6.3.1 Thermal protective clothing and protective equipment shall be available in sufficient quantities and sizes to fit each industrial fire brigade member expected to enter the hot and warm zones.

6.3.2 Thermal protective clothing and protective equipment meeting the requirements of 6.3.2.1 and 6.3.2.2 shall be required to be worn by all industrial fire brigade members entering the hot and warm zones.

6.3.2.1* Protective clothing shall be in accordance with NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, or NFPA 1976, *Standard on Protective Ensemble for Proximity Fire Fighting*.

6.3.2.2 Helmets, gloves, and footwear shall be in accordance with NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*.

6.3.3 SCBA and personal alert safety systems (PASS) devices meeting the requirements of 6.3.3.1 through 6.3.3.3 shall be provided for and shall be used by all industrial fire brigade members working in the hot zone.

6.3.3.1 PASS devices shall be in accordance with NFPA 1982, *Standard on Personal Alert Safety Systems (PASS)*.

6.3.3.2 Open-circuit-type self-contained breathing devices shall be in accordance with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services*.

6.3.3.3 Closed-circuit-type self-contained breathing devices shall be approved by the National Institute for Occupational Health and Safety (NIOSH) and Mine Safety and Health Administration (MSHA) with a minimum service duration of 30 minutes and shall operate in the positive pressure mode only.

6.3.4 Thermal protective clothing and protective equipment shall be used and maintained in accordance with manufacturer's instructions.

6.3.4.1 A maintenance and inspection program shall be established for thermal protective clothing and protective equipment.

6.3.4.2 Specific responsibilities shall be assigned for inspection and maintenance of thermal protective clothing and protective equipment.

6.3.5 Industrial fire brigade members using SCBA shall operate in teams of two or more who are in communication with each other through visual, audible, physical, safety guide rope, electronic, or other means to coordinate their activities and are in close proximity to each other to provide assistance in case of an emergency.

6.3.5.1 Where industrial fire brigade members are involved in operations that require the use of SCBA or other respiratory protective equipment, at least one member shall be assigned to remain outside the area where respiratory protection is required.

6.3.5.2 The member who remains outside shall be responsible for maintaining a constant awareness of the number and identity of personnel using SCBA, their location, function, and time of entry.

6.3.5.3 This member, with SCBA, shall be trained, equipped, and available for rescue.

6.3.6 All industrial fire brigade members entering the hot zone shall be provided with approved hoods that provide protection for the ears and neck and interface with the SCBA facepiece, thermal protective coat, and helmet.

6.4 Medical. Each industrial fire brigade member shall meet the medical and job-related physical performance requirements specified in Section 4.5.

Chapter 7 Industrial Fire Brigades That Perform Interior Structural Fire Fighting Only

7.1 General. Industrial fire brigades organized to perform interior structural fire fighting only shall meet the requirements of Sections 7.2 through 7.4 in addition to all applicable requirements of Chapters 1 and 4 of this standard.

7.2 Education, Training, and Drills.

7.2.1 All industrial fire brigade members shall receive training and education at least quarterly to meet the requirements of Section 4.3.

7.2.2 All industrial fire brigade members shall participate in a drill at least semiannually to meet the requirements of Section 4.3.

7.2.3 Live fire training shall be conducted at least annually. Training and drills involving a live fire evolution shall be performed in accordance with NFPA 1403, *Standard on Live Fire Training Evolutions*.

7.2.4 Live fire training shall include props that are representative of and that simulate as closely as possible the hazards and conditions that could be encountered by the industrial fire brigade member.

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7.3 Protective Clothing and Protective Equipment.

7.3.1 Thermal protective clothing and protective equipment for structural fire fighting shall be available in sufficient quantities and sizes to fit each industrial fire brigade member expected to enter the hot and warm zones.

7.3.2 Thermal protective clothing and protective equipment meeting the requirements of 7.3.2.1 through 7.3.2.4 shall be required to be worn by all industrial fire brigade members entering the hot and warm zones.

7.3.2.1 Protective clothing, helmets, gloves, and footwear shall be in accordance with NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*.

7.3.2.2 PASS devices shall be in accordance with NFPA 1982, *Standard on Personal Alert Safety Systems (PASS)*.

7.3.2.3 Open-circuit-type self-contained breathing devices shall be in accordance with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services*.

7.3.2.4 Closed-circuit-type self-contained breathing devices shall be approved by NIOSH and MSHA with a minimum service duration of 30 minutes and shall operate in the positive pressure mode only.

7.3.3 All industrial fire brigade members entering the hot zone shall be provided with approved hoods that provide protection for the ears and neck and interface with the SCBA facepiece, protective coat for structural fire fighting, and helmet.

7.3.4 Thermal protective clothing and protective equipment shall be used and maintained in accordance with manufacturers' instructions.

7.3.4.1 A maintenance and inspection program shall be established for thermal protective clothing and protective equipment.

7.3.4.2 Specific responsibilities shall be assigned for inspection and maintenance.

7.3.5 Industrial fire brigade members performing emergency response operations below ground level shall be provided with self-contained or externally supplied breathing apparatus and shall use that apparatus unless the safety of the atmosphere can be established by testing and continuous monitoring.

7.3.6* Industrial fire brigade members using SCBA shall operate in teams of two or more who are in communication with each other through visual or voice contact to coordinate their activities and are in close proximity to each other to provide assistance in case of an emergency.

7.3.6.1 Where industrial fire brigade members are involved in operations that require the use of SCBA, at least two members shall be assigned to remain outside the area where respiratory protection is required.

7.3.6.2 One member shall be responsible for maintaining a constant awareness of the number and identity of personnel using SCBA, their location, function, and time of entry.

7.3.6.3 These members with SCBA shall be trained, equipped, and available for rescue.

7.4 Medical. Each industrial fire brigade member shall meet the medical and job-related physical performance requirements specified in Section 4.5.

Chapter 8 Industrial Fire Brigades That Perform Advanced Exterior and Interior Structural Fire Fighting

8.1 General. Industrial fire brigades intended to perform both advanced exterior and interior structural fire-fighting response duties shall meet the requirements of Chapters 1, 4, 6, and 7 of this standard.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1 A major concern of industrial fire protection professionals is the protection of employees and property from the threat of fire in the workplace. In 1980 the Occupational Safety and Health Administration (OSHA) defined its requirements for industrial fire brigades. These requirements apply to industrial fire brigades once corporate or local management, in the role as an authority having jurisdiction, has determined that they want an industrial fire brigade at a facility.

In OSHA, 29 CFR 1910.156, Subpart L, two types of industrial fire brigades are defined in an attempt to establish levels of industrial fire brigade function and to identify the training and safety requirements for each of those levels. Industrial fire protection professionals have wrestled with categorizing every existing industrial fire brigade into either the incipient stage category or the interior structural category.

In attempting to develop a state-of-the-art industrial fire brigade standard, the Technical Committee on Loss Prevention Procedures and Practices has followed OSHA's lead in setting requirements based on the incipient and interior structural industrial fire brigade definitions.

The adoption of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, by the NFPA in 1987 brought about an entirely new perspective — that of inclusion of the industrial fire brigades in the same category as municipal fire departments. Although the work done by the Technical Committee on Fire Department Occupational Safety and Health is admirable and is intended to safeguard all fire fighters, the Technical Committee on Loss Prevention Procedures and Practices believes that a separate industrial fire brigade standard is needed.

Although every industrial fire brigade is unique, just as every municipal fire department is unique, industrial fire brigades, including those that can be referred to as industrial fire departments, have far different needs in many respects from those of municipal fire departments.

The primary difference between industrial fire brigades and municipal fire departments is that industrial fire brigades must deal with conditions and hazards that are limited to those that exist within a given facility that is generally privately owned and operated. Although these site-specific hazards can and do represent the same degree of hazard to both industrial fire brigade members and municipal fire fighters, industrial fire brigade members are not usually concerned with, nor are they expected to deal with, hazards and emergencies beyond the boundaries of the facility that the brigade serves.

In addition to this primary difference, it must be remembered that at an industrial facility a program of occupational

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safety and health has already been established for all personnel including members of the industrial fire brigade. Further, industrial fire brigades constituted in accordance with this standard will, of necessity, have a much more thorough knowledge of the buildings and facilities where they respond than do municipal fire fighters who must respond to a significantly greater variety of buildings and facilities, many of which have unidentified and undisclosed hazards.

A municipal fire department, as a local government function, must provide a service to a very broad-based municipality with a multitude of unknown factors at every given response. Variables such as property size and accessibility; building size, construction, and contents; manufacturing process hazards; fixed fire-extinguishing systems and special agent availability; and storage and use of solvents, oils, chemicals, or other hazardous materials are all potential unknown factors that can hinder the effectiveness of any municipal fire department and place a greater safety risk on the fire fighters.

This distinct advantage of familiarity achieves a higher level of industrial fire brigade safety and allows for the fundamental difference between a municipal fire department and an industrial fire brigade.

A.1.1.2 This standard is intended to meet or exceed the industrial fire brigade–related requirements of OSHA, 29 CFR 1910, Chapter XVII, Subpart L, "Fire Protection." Further, this standard is intended to assure the industrial fire brigade member with an appropriate degree of occupational safety and health while performing industrial fire brigade response duties, just as NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, assures an appropriate degree of occupational safety and health for the municipal fire department member.

For additional information on industrial fire brigade organization, see Chapter 4 in the NFPA *Industrial Fire Hazards Handbook*.

A.1.1.3 It is the intent that industrial fire brigade members, who are trained and qualified under the guidance of this standard respond to familiar hazards that are common to the industrial facility being protected.

Industrial fire brigades complying with the requirements of this standard should be permitted to respond to fires outside the boundaries of the industrial facility only when the industrial fire brigade is trained and familiar with the hazards associated with the fire. For example, an industrial fire brigade having appropriate training in accordance with this standard can respond to a fire involving an enclosed structure outside the boundaries of the industrial facility, if such response was anticipated and preplanned by industrial fire brigade management. Each industrial fire brigade member should be familiar with the layout and contents of the structure and should be provided with the opportunity to tour the structure at least quarterly.

A.1.2 Requirements for the establishment of industrial fire brigades are established by the authority having jurisdiction.

A.1.4 The potential exposure and training separates an organized industrial fire brigade from designated employees (as defined by OSHA) who have some fire response duties in the general work area. The scope of industrial fire brigade actions and responsibilities is based on the specific response duties that the industrial fire brigade members are expected to perform. If an industrial fire brigade member is not expected to perform a particular fire-fighting function, then management has no obligation to train or equip the industrial fire brigade member to perform that function.

A.1.4.2 Designated employees who are intended to respond to incipient fires in their immediate work area should receive training commensurate with the response duties they are expected to perform. Their responsibilities normally are limited to sounding an alarm, taking immediate action to extinguish the fire, and evacuating the area.

A.3.2.1 Approved. 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, 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 that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, 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, or health department; building official; electrical inspector; or others having statutory authority. 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 or her 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.

A.3.3.1 Combustible Liquid. Combustible liquids are classified as follows:

(1) Class II. Liquids that have flash points at or above 37.8°C (100°F) and below 60°C (140°F).
(2) Class IIIA. Liquids that have flash points at or above 60°C (140°F) and below 93.4°C (200°F).
(3) Class IIIB. Liquids that have flash points at or above 93.4°C (200°F).

A.3.3.5 Education. It does not necessarily require formal classroom instruction.

A.3.3.8.1 Advanced Exterior Fire Fighting. Advanced exterior fire fighting often requires industrial fire brigade members to contain, control, and extinguish exterior fires involving site-specific hazards, such as flammable and combustible liquid spills or leaks, liquefied petroleum gas releases, and electrical substations. Advanced exterior fire fighting is usually performed using handlines flowing up to 1140 L/min (300 gpm), master streams, or similar devices for the manual application of specialized agents. Thermal protective clothing is required and the use of SCBA could be required.

A.3.3.8.4 Interior Structural Fire Fighting. This definition is extracted from OSHA, 29 CFR 1910.

Rescue is the activity of removing victims by an industrial fire brigade as part of fire-fighting activities. Rescue activities

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requiring specialized equipment and training, such as confined space and high-angle rescue, are not included in this standard.

A.3.3.10 Flammable Liquid. Flammable liquids (Class I) are classified as follows:

(1) Class IA. Liquids that have flash points below 22.8°C (73°F) and boiling points below 37.8°C (100°F).
(2) Class IB. Liquids that have flash points below 22.8°C (73°F) and boiling points at or above 37.8°C (100°F).
(3) Class IC. Liquids that have flash points at or above 22.8°C (73°F) and below 37.8°C (100°F).

A.3.3.11 Hazardous Atmosphere. A hazardous atmosphere might or might not be immediately dangerous to life and health.

A.3.3.13 Incipient Stage. A fire is considered to be beyond the incipient stage when the use of thermal protective clothing or self-contained breathing apparatus is required or an industrial fire brigade member is required to crawl on the ground or floor to stay below smoke and heat.

A.3.3.23 Site. A site can include several facilities.

A.3.3.27 Support Members. When organizing the industrial fire brigade, management should take into consideration the need for specialized response duties required in the event of a fire or related emergency and should assign personnel to the brigade to ensure that these response duties are accomplished.

In most cases, personnel are not expected to perform manual fire suppression activities in the event of an emergency but are expected to perform only those specialized tasks for which they have been chosen. Some of these specialized assignments include the following:

(1) Building evacuation: Personnel are expected to perform specialized response duties to ensure that personnel are safely evacuated from an enclosed structure or the facility in the event of fire. They can be known as industrial fire brigade wardens or by a variety of other titles.
(2) Sprinkler system control: Personnel are assigned to perform specialized response duties to ensure that control of the automatic sprinkler protection system within the fire area or the facility is maintained by facility personnel in the event of fire. These personnel can be known as industrial fire brigade sprinkler valve operators or a variety of other titles.
(3) Electrical power control: Personnel are expected to perform specialized response duties to ensure that control of electrical power within the fire area or the facility is maintained by facility personnel in the event of fire. These personnel can be known as industrial fire brigade electricians or by a variety of other titles.
(4) Utility control: Personnel are expected to perform specialized response duties to ensure that control of plant utilities within the fire area or the facility — for example, steam, water, natural gas, and other liquid or vapor piping systems — is maintained by facility personnel in the event of fire. These personnel can be known as industrial fire brigade utility control technicians or by a variety of other titles.
(5) Fire pump operation: Personnel are expected to perform specialized response duties to ensure that stationary fire pumps are placed into operation or are operating properly in the event of fire. They can be known as industrial fire brigade fire pump operators or by a variety of other titles.
(6) Salvage: Personnel are expected to perform specialized response duties to ensure that actions are taken during and after manual fire suppression activities to minimize the resultant damage from the fire. These personnel can be known as industrial fire brigade salvage personnel or by a variety of other titles.
(7) Traffic control: Personnel are expected to perform specialized response duties to ensure that control of foot and vehicular traffic in and around the fire area or the facility is maintained in the event of fire and to ensure that any responding agency is directed to the fire area. These operations can be accomplished by facility security personnel who have been assigned to the industrial fire brigade.

A.4.1.1 Even during times of economic stress, providing adequate funds for proper equipment and training is necessary in order to maintain the safety and operational effectiveness of the industrial fire brigade.

The structure of the brigade should be determined based on an analysis of all factors present in the areas where the brigade will operate, including, but not limited to, the following:

(1) Property size
(2) Property accessibility
(3) Building size and construction
(4) Building contents
(5) Fire protection equipment
(6) Fire hazards
(7) Personnel safety
(8) Public fire department assistance
(9) Availability of personnel
(10) Shift and vacation schedule of the facility
(11) Other response duties of the brigade, such as fire watch and maintenance of fire-fighting equipment

A.4.1.1(5) The establishment of a written policy for the occupational safety and health of industrial fire brigade members is intended to help prevent, and reduce the severity of, accidents, injuries, and exposures that occur. It is possible that an existing corporate safety program or policy satisfies the requirements of this standard.

A.4.1.1(6) The establishment of a written policy for medical and job-related physical performance requirements will help ensure that industrial fire brigade members will be medically and physically capable of performing their required response duties and will help to reduce the risk of injuries and illnesses.

A.4.1.2 The following is a sample industrial fire brigade organizational statement.

ABC Industrial Fire Brigade Organizational Statement

November 2004

Purpose: The ABC Industrial Fire Brigade was organized to safeguard the employees and the property of the ABC Corporation from the threat of fire. The industrial fire brigade is intended to function as an incipient stage industrial fire brigade as identified by OSHA, 29 CFR 1910, Subpart L.

Membership: Anyone who works at the ABC Corporation is welcome to join the industrial fire brigade, although certain specific members are appointed, based on their particular job and location within the facility. At the present time, there are a total of 25 members in the brigade.

Members are identified as fire-fighting members and support members. Fire-fighting members are expected to perform fire-fighting response duties, utilizing both hand portable fire extinguishers and wheeled fire extinguishers and

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the 38 mm (1½ in.) hose lines stationed throughout the facility. Support members are not expected to fight fires but are expected to perform specialized response duties that are intended to support the fire-fighting operations. These support functions ensure the following:

(1) Building is evacuated.
(2) Sprinkler valves are open.
(3) Fire department is directed to the scene of the fire.
(4) Fire pump is operating properly.
(5) Other logistical needs of the fire-fighting members are met.

Organization: The brigade is headed by a brigade chief. A shift industrial fire brigade leader is also assigned to each shift. In the absence of the chief, the shift chief is in charge of the brigade. During a fire incident, the shift chief or brigade chief is in charge of the incident until the local municipal fire department arrives. At this time, the officer in charge of the fire department forces on scene and the shift chief will establish a joint incident command.

Functions: The primary function of the industrial fire brigade is to perform fire-fighting operations prior to the arrival of the fire department or operation of the sprinkler system. The fire-fighting operations cannot exceed the capabilities of the brigade members present to prevent fires from spreading.

Additional functions include the provision of advanced first aid assistance in any salvage operations that are necessary during any type of incident, including a fire, and the checking of fire protection and life safety equipment throughout the facility on a daily basis.

Training: The primary source of training for fire-fighting members is that conducted within the facility by the industrial fire brigade training officer. This training is conducted on a monthly basis.

Support members receive training on a bimonthly basis in the operation of the fire protection equipment, building evacuation information, and other related topics. This training is provided by the industrial fire brigade training officer and other personnel from the facility, such as the maintenance supervisor, the emergency coordinator, and the safety director.

Safety: While this industrial fire brigade exists to help safeguard the people and property of the ABC Corporation, the first and foremost consideration must be for the safety of the industrial fire brigade members. The brigade has limited resources and training and thus has limited abilities. These limits must be recognized by all members to ensure that members are not extended beyond their capabilities or the limitations imposed by the equipment with which they must operate.

Sample Organizational Statement — An Alternative Sample

The ABC Corporation, under contract with the XYZ Company for management and operation of the XYZ plant, will use an emergency response team (ERT) for the protection of those facilities.

The ERT is composed of employees whose normal job duties are not that of an ERT. In the event of an emergency, ERT members will leave their normal assigned duties and assume the response duties of the ERT. Responding ERT members will be grouped into teams, and designated ERT leaders (ERTLs) using the Incident Management System will direct and supervise emergency response operations. The total number of available ERT members responding to an emergency will vary from 2 to 40 depending on the particular site, the time of day, and response times. As dictated by the size and duration of the emergency, this number could increase to more than 100 with response by trained ERT members and leaders from other XYZ plant sites.

For fires involving enclosed structures, the ERT will perform only incipient fire fighting and will not enter into a building or enclosed structure involved with fire beyond the incipient stage. For a building involved with fire beyond the incipient stage, ERT members will notify local municipal fire departments or mutual aid organizations to respond and will assist with evacuation, account for personnel, perform first aid, and protect adjacent exposures.

For emergency fire response to the site-specific hazards associated with the storage and transfer of crude oil, the ERT will perform advanced exterior fire fighting. In performing advanced exterior fire fighting, ERT members will wear protective gear and will have responsibilities for rescue, emergency first aid, isolation of fuel sources, and application of water, foam, and dry chemical from the perimeter of the fire, which does not require entry into the interior of enclosed structures involved with fire beyond the incipient stage. Emergency contractors will be employed as necessary for complex fire emergencies that are beyond the training of the ERT.

For response to site-specific hazardous materials emergencies, the ERT will perform limited functions. In performing the limited hazardous materials functions, ERT members will be provided with appropriate personal protective equipment and will approach the source of a spill or leak and attempt to contain, control, and terminate the emergency conditions for which they have been trained. Emergency contractors will be employed as necessary for complex spills, leaks, and cleanups that are beyond that for which the ERT are trained.

Each ERT member will receive training and education commensurate with the response duties and functions they are expected to perform. Forty hours of fire, safety, and hazardous materials response training will be provided annually at the ERT Training Academy using established performance-based standards. Training at the academy will include, but not be limited to, hose and nozzle handling, fire fighter safety, use of protective gear, strategies and tactics, first aid, cardiopulmonary resuscitation (CPR), hazard identification, spill control, and live fire fighting involving flammable liquids and gases. ERT members must attend and successfully complete one ERT Training Academy program before participating in emergency response organizations.

ERT members will receive additional fire training quarterly. Training will be provided at each of the ABC Corporation facilities by qualified personnel to meet established performance standards. Such training will include classroom instruction and hands-on training that has been selected to keep ERT members familiar with site-specific equipment, systems, and standard operating procedures.

Designated ERTLs will annually receive 8 hours of specialized classroom instruction and will train and function as leaders in all live fire and hazardous materials training exercises at the ERT Training Academy and at the sites. Such training will be over and above that provided to other members and will be provided by qualified personnel. Instruction will include, but not be limited to, such subjects as leadership, methods of teaching, incident command, communications, tactics and strategies, and standard operating procedures.

A.4.1.2.2 The purpose of the industrial fire brigade's organizational statement is to demonstrate management's commitment to the establishment of an industrial fire brigade. This statement identifies all of the information pertinent to the

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industrial fire brigade and is intended to provide the industrial fire brigade member with a clear picture of the organization of the brigade and the response duties that he or she is expected to perform as they relate to the industrial fire brigade.

In addition to the information required in the organizational statement, the following information should also be included:

(1) Line of authority of each industrial fire brigade member
(2) Number of industrial fire brigade leaders
(3) Number of industrial fire brigade instructors
(4) List and description of the types of awards or recognition that brigade members are eligible to receive

The industrial fire brigade organizational statement is intended to represent the foundation of the industrial fire brigade and is similar to the mission statement of the organization. Thus, everything that the brigade does should be in accordance with the information in the organizational statement. As such, the organizational statement requires periodic revision as the mission, organization, or response duties of the brigade change.

A.4.1.4 The following is an example of a safety policy statement:

It is corporate or local company policy to operate an industrial fire brigade and to provide all industrial fire brigade members with the highest possible levels of safety and health while they are performing their assigned industrial fire brigade response duties.

A.4.1.4.2 The determination of whether the individual will have a full-time or part-time assignment should be made by the management. This determination should depend on the size and structure of the industrial fire brigade; the activity level; the level of risk in the industrial fire brigade's work environment; and the history of accidents, injuries, occupational illness, deaths, and exposures.

A.4.1.5 Medical records can be stored elsewhere in accordance with company policies.

A.4.2.1 For information on incident management systems, see NFPA 1561, *Standard on Emergency Services Incident Management System.*

A.4.2.1.5 Industrial fire brigades are often organized in such a manner that they respond to the emergency scene and assemble upon arrival. A system should be established to identify each industrial fire brigade member arriving at the emergency scene and to organize them into groups with appropriate supervision. A standard system of "reporting in" at the incident and becoming a part of the organized system of operation should be implemented.

A.4.2.2.2 Site-specific special hazards should be identified and itemized for the industrial fire brigade, along with a detailed explanation of each hazard. Special hazards can consist of unique operations or hazardous materials. Typical operations are emergency response activities for data processing and electronic control equipment, where the discharge of a special extinguishing agent can present a special hazard to industrial fire brigade members; engine test areas; paint dip, mix, and storage rooms; spray booths; flammable liquid tank farms; oil quenching and machinery operations; energized electrical equipment; hazardous materials; and combustible dusts.

A.4.2.4(2) Industrial fire brigade members using SCBA should be fit-tested to meet the requirements of NFPA and 29 CFR 1910.134, "Respiratory Protection."

A.4.3.3 Job training requirements can vary significantly from one location to another. Those requirements should be documented based on site-specific needs. In order to meet the requirements of 4.3.3, industrial fire brigade management should perform an analysis of required industrial fire brigade response duties.

A.4.3.5 Management should develop a plan and schedule to provide training, education, and drills at the minimum specified frequencies required by this standard.

Scheduling difficulties in the industrial setting can make it difficult to provide training, education, or drills for each individual brigade member on a specific day. For this reason, the following clarifications are intended to provide the necessary flexibility for planning and scheduling these activities:

(1) Quarterly requirements should be accomplished every 90 days and should not exceed 120 days between sessions.
(2) Semiannual requirements should be accomplished every 183 days and should not exceed 243 days between sessions.
(3) Annual requirements should be accomplished every 365 days and should not exceed 455 days between sessions.

A.4.3.7 The industrial fire brigade training coordinator should be an employee who is recognized or certified as an industrial fire brigade or fire service instructor by a government authority or national certification organization, or the coordinator should demonstrate the competency to meet the requirements of management in its role as an authority having jurisdiction.

For information on performance standards for industrial fire brigade instructors, see NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications*, or equivalent performance standards.

Where industrial fire brigade training is contracted and provided by individuals or agencies outside of the company organization, the designated fire training coordinator should verify and ensure that instructors providing the training are knowledgeable in the subjects being presented. Such training should be accomplished using prepared lesson plans and performance-based standards that have been approved by the industrial fire brigade training coordinator.

Employees and members of the industrial fire brigade who have been trained in the methods of teaching and are recognized by the fire training coordinator as knowledgeable in the subject being presented can provide instruction to the industrial fire brigade with the use of prepared lesson plans and performance-based standards that have been approved by the fire training coordinator.

The industrial fire brigade training coordinator should oversee the industrial fire brigade training and education program to ensure quality and consistency of the training provided.

A.4.3.8 Industrial fire brigade leaders should be provided training on the incident management system established in 4.2.1 of this standard. For information on performance standards for industrial fire brigade leaders, see NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications*; Chapter 2 of NFPA 1021, *Standard for Fire Officer Professional Qualifications*; or other performance standards.

A.4.3.9 Management should designate the person(s) responsible for planning and scheduling drills based on realistic scenarios for credible site-specific emergencies. Drills can be either announced or unannounced as determined by the authority having jurisdiction. Management should consider the use of periodic unannounced drills. Generally, drills are

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not considered training evaluations. However, announced drills can incorporate a degree of training while performing an evaluation of the industrial fire brigade. Announced drills can vary in types of response, speed of response, and use of equipment. Unannounced drills can be used to evaluate the fire-fighting readiness of the industrial fire brigade, industrial fire brigade leader, and fire protection systems and equipment.

Where mutual aid or other outside agencies play an important role in the emergency response procedures of the site, drills and pre-emergency planning should be conducted in conjunction with these agencies.

Management should designate the person(s) responsible for observing drills and for critiquing industrial fire brigade or outside agency performance. Lessons learned should be incorporated into the training and education program to improve any performance that is below established standards.

While recognizable training benefits are achieved through drills exercising the knowledge and skills of the industrial fire brigade, drills should not be considered as training *(see 3.3.3, Drill)*. For example, if industrial fire brigade members were never trained in the operation of a piece of industrial fire brigade apparatus or in the proper strategies and tactics for emergency fire operations, then industrial fire brigade members could not demonstrate competence in performing these tasks in a drill. Drills can be valuable in determining the frequency of refresher training necessary to maintain industrial fire brigade skills.

Responses to actual emergencies can reduce the necessity to conduct drills, providing the actual responses occur with sufficient frequency and as long as the industrial fire brigade performance during these responses is evaluated in accordance with established performance objectives and is properly documented.

A.4.3.10 Because members will be required to meet the provisions of this standard that apply to the type of industrial fire brigade of which they are members, it is important that the applicable provisions of this standard be reviewed in the training program.

A.4.3.13 Members of the industrial fire brigade should be afforded opportunities to improve their skills and knowledge of fire prevention and fire fighting through attendance at outside meetings and special training classes. Members who belong to volunteer fire departments and who receive certified training from a qualified instructor as a part of their public fire department activities can have this training documented in their individual industrial fire brigade training records.

A.4.4.1(6) Industrial fire brigade management should maintain a close working relationship with all emergency response organizations that could reasonably be expected to respond to the facility during an emergency. This relationship should include the following:

(1) A written mutual aid agreement signed by management and the emergency response organization
(2) Establishment of an incident management system that identifies the roles and responsibilities of both the industrial fire brigade and the emergency response organization
(3) An invitation to the emergency response organizations to participate in a pre-fire planning walk-through or tour of the facility
(4) An invitation to the emergency response organizations to participate in industrial fire brigade drills at least annually
(5) A means of communication between the industrial fire brigade and the emergency response organizations (This communication can be accomplished by the use of common radio frequencies, the exchange of respective portable radios, or other means.)
(6) A means to ensure that fire hose threads are compatible or that adequate adapters are provided and available
(7) Knowledge by both the industrial fire brigade and the emergency response organizations of the other's available equipment (This information should include items such as water supply, pump size, foam capabilities, portable or fixed master stream devices, or both, and other specialized equipment.)

A.4.5.1.1 For information on medical requirements, see OSHA requirements in 29 CFR 1910.156, 29 CFR 1910.134, or NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*.

A.4.5.3 Minimum physical performance requirements should be established to ensure that industrial fire brigade members are able to satisfactorily perform their assigned emergency response activities under adverse conditions.

A.4.5.3.1 Many critical emergency response activities can be physically demanding. These tasks require muscular strength, muscular endurance, aerobic capacity, flexibility, equilibrium, and anaerobic power. Industrial fire brigade management should include these capabilities for the evaluation of industrial fire brigade members.

A.4.5.4 Industrial fire brigade members should be encouraged to maintain good physical condition.

A.4.6.2 In selecting the equipment necessary to allow the industrial fire brigade members to perform their response duties as specified in the industrial fire brigade organizational statement, management should recognize that such a selection can be drawn from a wide range of equipment. The following is a sample of the equipment more commonly selected:

(1) Portable fire extinguishers (Portable fire extinguishers should be in accordance with NFPA 10, *Standard for Portable Fire Extinguishers*.)
(2) Hose and hose accessories (Fire hose should be in accordance with NFPA 1961, *Standard on Fire Hose*. Hose should be maintained in accordance with NFPA 1962, *Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose*.)
(3) Portable lighting equipment, including portable electric generators, extension cords, electrical adapters, handheld lights, and spare batteries
(4) Forcible entry tools, including axes, saws, power tools, plaster hooks, pike poles, claw tools, door openers, crowbars, sledgehammers, wire and bolt cutters, and battering rams
(5) Ladders
(6) Salvage and overhaul equipment
(7) Rescue and first aid equipment
(8) Special purpose equipment, such as portable foam-making equipment
(9) Personnel protective equipment

A.4.7.1.1 For information on performance standards for industrial fire brigade apparatus operators, see NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications*; Chapters 2 through 6 of NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*; or other performance standards.

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A.4.7.1.5 On existing fire apparatus where there is an insufficient number of seats available for the number of members assigned to or expected to ride on that piece of apparatus, alternate means of transportation that provide seated and belted positions should be used.

A.5.2.1 Training and education objectives can be accomplished in the same session.

A.5.2.3 Live training fire field safety recommendations are as follows:

(1) Site selection preparation: Select an open area with a safe clearance from important buildings, dry vegetation, and storage containers holding flammable liquids and gases and compressed gases.
(2) Safety procedures: The following procedures should be followed:
    (a) Smoking should be permitted only in designated areas.
    (b) Fuel and ignition sources should be separated by safe distances.
    (c) If high winds or other adverse weather conditions present a hazard to members or adjacent property, live fire training should not be conducted.
    (d) Only appropriate ignition sources should be used.
    (e) When participating in an evolution, each student should utilize a charged extinguisher.
    (f) Fire attack should be from the upwind side.
    (g) Care should be taken to ensure that members are not placed at risk of being exposed to the products of combustion.
    (h) For Class B fires, at least two portable extinguishers of the applicable size and rating should be available for each evolution.
    (i) Participants should retreat from an extinguished fire in an organized manner, always being alert for possible reflash or rekindle.
(3) Fire training evolutions: Evolutions should be commensurate with the size of fires that the members are expected to extinguish in their normal response duties.
(4) Student clothing: Individuals participating in field evolutions should be attired in the type of clothing they would normally wear during the performance of their day-to-day job function.
(5) Instructors: The instructor should perform the following functions:
    (a) Guide each student while he or she is approaching, extinguishing, and retreating from each live fire training evolution
    (b) Provide for the proper supervision of members who are not participating in the current evolution
(6) Fuels: Fuels and handling procedures should meet the following criteria:
    (a) Flammable liquids should not be used as accelerants to ignite Class A training fires.
    (b) Only approved safety containers should be used to dispense combustible liquids used as accelerants.
    (c) The person fueling and lighting the fire should be properly instructed and should wear appropriate protective clothing.
    (d) A qualified person equipped with a charged handline or appropriate extinguisher should stand by in any case where a combustible liquid is being used to light a training fire.

A.6.3.2.1 Based on site-specific hazards, the authority having jurisdiction can choose either structural or proximity thermal protective clothing. In most situations, structural fire-fighting clothing will provide an appropriate level of protection. However, in special circumstances, proximity clothing can be used to provide an additional level of protection from high levels of radiant heat.

A.7.3.6 Radios can be used for communication on the fireground; however, they cannot be the sole tool for accounting for one's partner in the interior of a structure fire.

One of the two individuals located outside the hot zone can be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any fire fighters working at the incident. Nothing in this subsection is meant to preclude fire fighters from performing emergency rescue activities before industrial fire brigade team members have assembled.

Separate teams of two or more who remain outside the structure are not required for each team operating in the interior of a structure fire. If a structure is so large that accountability cannot be maintained from a single entry point, or rapid rescue is not possible, additional teams of at least two members should be assigned to appropriate divisions or sectors in accordance with the incident management system for the site.

Annex B Informational References

B.1 Referenced Publications. The following documents or portions thereof are referenced within this standard for informational purposes only and are thus not part of the requirements of this document unless also listed in Chapter 2.

B.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 10, *Standard for Portable Fire Extinguishers*, 2002 edition.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2003 edition.

NFPA 1021, *Standard for Fire Officer Professional Qualifications*, 2003 edition.

NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications*, 2002 edition.

NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications*, 2001 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2002 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System*, 2002 edition.

NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*, 2003 edition.

NFPA 1961, *Standard on Fire Hose*, 2002 edition.

NFPA 1962, *Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose*, 2003 edition.

NFPA *Industrial Fire Hazards Handbook*, third edition.

B.1.2 Other Publications.

B.1.2.1 U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402.

Title 29, Code of Federal Regulations, Part 1910, Chapter XVII, Subpart L, "Fire Protection."

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Title 29, Code of Federal Regulations, Part 1910.134, "Respiratory Protection."

Title 29, Code of Federal Regulations, Part 1910.156.

B.1.2.2 Other Publications. *Merriam-Webster's Collegiate Dictionary,* 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

B.2 Informational References. The following documents or portions thereof are listed here as informational resources only. They are not a part of the requirements of this document.

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 2002 edition.

B.3 References for Extracts. The following documents are listed here to provide reference information, including title and edition, for extracts given throughout the nonmandatory sections of this standard as indicated by a reference in brackets [ ] following a section or paragraph. These documents are not a part of the requirements of this document unless also listed in Chapter 2 for other reasons.

NFPA 600, *Standard on Industrial Fire Brigades*, 2005 edition.

NFPA 1521, *Standard for Fire Department Safety Officer*, 2002 edition.

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