

NFPA® 1403

Standard on Live Fire Training Evolutions

2012 Edition



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NFPA® 1403

Standard on

Live Fire Training Evolutions

2012 Edition

This edition of NFPA 1403, *Standard on Live Fire Training Evolutions*, was prepared by the Technical Committee on Fire Service Training. It was issued by the Standards Council on December 13, 2011, with an effective date of January 2, 2012, and supersedes all previous editions.

This edition of NFPA 1403 was approved as an American National Standard on January 2, 2012.

Origin and Development of NFPA 1403

The ongoing training of fire fighters is the cornerstone of good fire protection in today's world. However, the benefits derived from live fire training can be negated by the injuries and deaths suffered by fire fighters under unsafe and poorly supervised training conditions.

Following a tragic training accident in 1982, which resulted in the deaths of two fire fighters, the Committee on Fire Service Training was urged to address the issue of live fire training evolutions in structures. The committee proceeded to develop NFPA 1403 in order to provide recognized safe practices for conducting such training evolutions.

The first edition, titled *Live Fire Training Evolutions in Structures*, was issued in 1986. It was well received and served as the basis for live fire training evolutions throughout the United States. The document was updated in a 1992 edition. In the 1997 revision, the committee combined NFPA 1403 and NFPA 1406, *Outside Live Fire Training Evolutions*, into a single document.

The committee appointed a task group to review the functionality of the 1997 edition in preparation for the 2002 revision. The task group recommended a general updating of the standard. Changes were made to reflect increased experience with live fire training evolutions. The previous numbering of chapters and paragraphs was changed to reflect requirements in the 2000 edition of the *Manual of Style for NFPA Technical Committee Documents*.

The 2007 edition updated training requirements for live fire training structures, exterior props, and Class B fires. This edition also contained several editorial changes.

For the 2012 edition, the committee has added a new Chapter 4, to address general requirements to which all live fire training evolutions must adhere for safety, and that were previously located in individual chapters. The committee has also further clarified the requirements for emergency medical services, allowable types of Class A products, instructor duties, and the role of the fire control team. A new requirement has been added that mandates that each burn room have a burn plan in place to limit building damage and injuries to fire fighters. The inspection and maintenance requirements for live fire training structures have also been revised.



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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 all fire service training techniques, operations, and procedures to develop maximum efficiency and proper utilization of available personnel. Such activities can include training guides for fire prevention, fire suppression, and other missions for which the fire service has responsibility.



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NFPA 1403**Standard on****Live Fire Training Evolutions****2012 Edition**

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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.

Changes other than editorial are indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. These rules are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet (•) between the paragraphs that remain.

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 extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex E. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. 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 E.

Chapter 1 Administration**1.1* Scope.**

1.1.1 This standard shall contain the minimum requirements for training all fire suppression personnel engaged in fire-fighting operations under live fire conditions.

1.1.2 The minimum requirements for training shall comprise a basic system that can be adapted to local conditions to serve as a standard mechanism for live fire training.

1.2* Purpose.

1.2.1 The purpose of this standard shall be to provide a process for conducting live fire training evolutions to ensure that they are conducted in safe facilities and that the exposure to health and safety hazards for the fire fighters receiving the training is minimized.

1.2.2 Live fire training is intended to provide the safest and best experience possible under both realistic and controlled circumstances.

1.3 Application.

1.3.1 All live fire training shall be conducted in compliance with the current edition of this standard.

1.3.2 Procedures for live fire training evolutions that involve ground cover or wildland fires shall not be covered in this standard.

1.3.3* Procedures for suppression of fires set for the sole purpose of training individuals for fire cause and origin investigation shall not be covered in this standard.

1.3.4 Live fire training shall only be conducted using standard operating procedures (SOPs) developed by the authority having jurisdiction in compliance with this standard.

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 30, *Flammable and Combustible Liquids Code*, 2012 edition.

NFPA 58, *Liquefied Petroleum Gas Code*, 2011 edition.

NFPA 59, *Utility LP-Gas Plant Code*, 2012 edition.

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 2008 edition.

NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications*, 2012 edition.

NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2012 edition.

NFPA 1407, *Standard for Training Fire Service Rapid Intervention Crews*, 2010 edition.

NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2007 edition.

NFPA 1975, *Standard on Station/Work Uniforms for Emergency Services*, 2009 edition.

NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, 2007 edition.

NFPA 1982, *Standard on Personal Alert Safety Systems (PASS)*, 2007 edition.

2.3 Other Publications.

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

2.4 References for Extracts in Mandatory Sections.

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 2008 edition.

NFPA 1410, *Standard on Training for Initial Emergency Scene Operations*, 2010 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2007 edition.

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* 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.

3.2.2 Shall. Indicates a mandatory requirement.

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

3.2.4 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 Acquired Prop. A piece of equipment such as an automobile that was not designed for burning but is used for live fire training evolutions.

3.3.2 Backdraft. A deflagration resulting from the sudden introduction of air into a confined space containing oxygen-deficient products of incomplete combustion.

3.3.3 Combustible. Capable of burning, generally in air under normal conditions of ambient temperature and pressure, unless otherwise specified. Combustion can occur in cases where an oxidizer other than oxygen in air is present (e.g., chlorine, fluorine, or chemicals containing oxygen in their structure).

3.3.4 Conduction. Heat transfer to another body or within a body by direct contact.

3.3.5 Convection. Heat transfer by circulation within a medium such as a gas or a liquid.

3.3.6 Deflagration. Propagation of a combustion zone at a velocity that is less than the speed of sound in the unreacted medium.

3.3.7 Demonstration. The act of showing a skill.

3.3.8 Emergency Medical Services. The provision of treatment, such as first aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other pre-hospital procedures, including ambulance transportation, to patients. [1500, 2007]

3.3.9 Evolution. A set of prescribed actions that result in an effective fireground activity. [1410, 2010]

3.3.10 Flameover (Rollover.) The condition in which unburned fuel (pyrolysate) from the originating fire has accumulated in the ceiling layer to a sufficient concentration (i.e., at or above the lower flammable limit) that it ignites and burns. Flameover can occur without ignition of or prior to the ignition of other fuels separate from the origin.

3.3.11 Flashover. A transition phase in the development of a compartment fire in which surfaces exposed to thermal radiation reach ignition temperature more or less simultaneously and fire spreads rapidly throughout the space, resulting in full room involvement or total involvement of the compartment or enclosed space.

3.3.12 Fuel Load. The total quantity of combustible contents of a building, space, or fire area, including interior finish and trim, expressed in heat units or the equivalent weight in wood.

3.3.13 Instructor. An individual qualified by the authority having jurisdiction to deliver fire-fighter training, who has the training and experience to supervise students during live fire training evolutions.

3.3.14 Instructor-in-Charge. An individual qualified as an instructor and designated by the authority having jurisdiction to be in charge of the live fire training evolution.

3.3.15 Live Fire. Any unconfined open flame or device that can propagate fire to the building, structure, or other combustible materials.

3.3.16 Participant. Any student, instructor, safety officer, visitor, or other person who is involved in the live fire training evolution within the operations area.

3.3.17 Personal Accountability Report (PAR). A report requested by and communicated to the incident commander from fire crews operating at a scene as to their location and situation.

3.3.18 Personal Protective Clothing. The full complement of garments fire fighters are normally required to wear while on emergency scene, including turnout coat, protective trousers, fire-fighting boots, fire-fighting gloves, a protective hood, and a helmet with eye protection. [1001, 2008]

3.3.19 Personal Protective Equipment. Consists of full personal protective clothing, plus a self-contained breathing apparatus (SCBA) and a personal alert safety system (PASS) device. [1001, 2008]

3.3.20 Pyrolysate. Product of decomposition through heat; a product of a chemical change caused by heating.

3.3.21 Radiation. Heat transfer by way of electromagnetic energy.

3.3.22 Safety Officer. An individual appointed by the authority having jurisdiction as qualified to maintain a safe working environment at all live fire training evolutions.

3.3.23 Student. Any person who is present at the live fire training evolution for the purpose of receiving training.

3.3.24 Training Structure.

3.3.24.1 Acquired Structure. A building or structure acquired by the authority having jurisdiction from a property owner for the purpose of conducting live fire training evolutions.

3.3.24.2* Live Fire Training Structure. A structure specifically designed for conducting live fire training evolutions on a repetitive basis.

3.3.25 Ventilation-Controlled Fire. A fire in which the heat release rate or growth is controlled by the amount of air available to the fire.

Chapter 4 General

4.1 Application. All live fire training evolutions shall comply with this chapter and the appropriate chapter for the type of training being performed.

4.1.1 Strict safety practices shall be applied to all structures selected for live fire training evolutions.

4.2 Permits.

4.2.1 All required permits to conduct live fire training evolutions shall be obtained.

4.2.2 The permits specified in this chapter shall be provided to outside, contract, or other separate training agencies by the authority having jurisdiction (AHJ) upon the request of those agencies.

4.2.3 The runoff from live fire shall comply with the requirements of the AHJ.

4.3 Student Prerequisites.

4.3.1* Prior to being permitted to participate in live fire training evolutions, the student shall have received training to meet the minimum job performance requirements for Fire Fighter I in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, related to the following subjects:

- (1) Safety
- (2) Fire behavior
- (3) Portable extinguishers
- (4) Personal protective equipment
- (5) Ladders
- (6) Fire hose, appliances, and streams
- (7) Overhaul
- (8) Water supply
- (9) Ventilation
- (10) Forcible entry
- (11) Building construction

4.3.2* Students participating in a live fire training evolution who have received the required minimum training from other than the AHJ shall not be permitted to participate in any live fire training evolution without first presenting prior written evidence of having successfully completed the prescribed minimum training to the levels specified in 4.3.1.

4.4 Safety Officer.

4.4.1 A safety officer shall be appointed for all live fire training evolutions.

4.4.2* All live fire training instructors and safety officers shall be trained on the application of the requirements contained in this standard.

4.4.3 The safety officer shall have the authority, regardless of rank, to intervene and control any aspect of the operations when, in his or her judgment, a potential or actual danger, potential for accident, or unsafe condition exists.

4.4.4 The responsibilities of the safety officer shall include, but not be limited to, the following:

- (1) Prevention of unsafe acts
- (2) Elimination of unsafe conditions

4.4.5 The safety officer shall provide for the safety of all persons on the scene, including students, instructors, visitors, and spectators.

4.4.6 The safety officer shall not be assigned other duties that interfere with safety responsibilities.

4.4.7 The safety officer shall be knowledgeable in the operation and location of safety features available for the live fire training structure or prop, such as emergency shutoff switches, gas shutoff valves, and evacuation alarms.

4.4.8* Additional safety personnel, as deemed necessary by the safety officer, shall be located to react to any unsafe or threatening situation or condition.

4.5* Extreme Weather. The training session shall be curtailed, postponed, or canceled, as necessary, to reduce the risk of injury or illness caused by extreme weather conditions.

4.6 Instructor in Charge and Instructors.

4.6.1 The instructor-in-charge shall have received training to meet the minimum job performance requirements for Fire Instructor I in NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications*.

4.6.2 The instructor-in-charge shall be responsible for full compliance with this standard.

4.6.3 It shall be the responsibility of the instructor-in-charge to coordinate overall fireground activities to ensure correct levels of safety.

4.6.4 The instructor-in-charge shall assign the following personnel:

- (1) One instructor to each functional crew, each of which shall not exceed five students
- (2) One instructor to each backup line
- (3) One additional instructor for each additional functional assignment

4.6.5 The instructor-in-charge shall provide for rest and rehabilitation of participants operating at the scene, including any necessary medical evaluation and treatment, food and fluid replenishment, and relief from climatic conditions. (*See Annex D.*)

4.6.5.1* Instructors shall be rotated through duty assignments.

4.6.6 All instructors shall be qualified by the AHJ to deliver live fire training.

4.6.7 Additional instructors shall be designated when factors such as extreme temperatures or large groups are present, and classes of long duration are planned.

4.6.8 Prior to the ignition of any fire, instructors shall ensure that all protective clothing and equipment specified in this chapter are being worn according to manufacturer's instructions.

4.6.9 Instructors shall take a personal accountability report (PAR) when entering and exiting the structure or prop during an actual attack evolution conducted in accordance with this standard.

4.6.10 Instructors shall monitor and supervise all assigned students during the live fire training evolution.

4.6.11 Awareness of weather conditions, wind velocity, and wind direction shall be maintained, including a final check for possible changes in weather conditions immediately before actual ignition.

4.6.12 Training Instructors on How to Use Specialty Props.

4.6.12.1 The instructors and the safety officer responsible for conducting live fire training evolutions with a gas-fueled training system or with other specialty props (such as flashover simulator) shall be trained in the complete operation of the system and the props.

4.6.12.2 The training of instructors and the safety officer shall be performed by an individual authorized by the gas-fueled training system and specialty prop manufacturer or by others qualified to perform this type of training.

4.7 Fire Control Team

4.7.1 A fire control team shall consist of a minimum of two personnel.

4.7.1.1 One person who is not a student or safety officer shall be designated as the "ignition officer" to ignite, maintain, and control the materials being burned.

4.7.1.1.1 The ignition officer shall be a member of the fire control team.

4.7.1.2* One member of the fire control team shall be in the area to observe the ignition officer ignite and maintain the fire, and to recognize, report, and respond to any adverse conditions.

4.7.2 The decision to ignite the training fire shall be made by the instructor-in-charge in coordination with the safety officer.

4.7.3 The fire shall be ignited by the ignition officer.

4.7.4 The fire control team shall wear full personal protective clothing, including SCBA, when performing this control function.

4.7.5 A charged hose line shall be available when the fire control team is igniting or tending to any fire.

4.7.6 Fires shall not be ignited without an instructor visually confirming that the flame area is clear of personnel being trained.

4.8 Personal Protective Clothing.

4.8.1 All students, instructors, safety personnel, and other personnel shall wear all protective clothing and equipment specified in this chapter according to manufacturer's instructions whenever they are involved in any evolution or fire suppression operation during the live fire training evolution.

4.8.2* All participants shall be inspected by the safety officer prior to entry into a live fire training evolution to ensure that the protective clothing and SCBA are being worn correctly and are in serviceable condition.

4.8.3 Protective coats, trousers, hoods, footwear, helmets, and gloves shall have been manufactured to meet the requirements of NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*.

4.8.4 SCBA shall have been manufactured to meet the requirements of NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*.

4.8.5* Where station or work uniforms are worn by any participant, the station or work uniform shall have been manufactured to meet the requirements of NFPA 1975, *Standard on Station/Work Uniforms for Emergency Services*.

4.8.6 Personal alarm devices shall have been manufactured to meet the requirements of NFPA 1982, *Standard on Personal Alert Safety Systems (PASS)*.

4.8.7* All students, instructors, safety personnel, and other personnel participating in any evolution or operation of fire suppression during the live fire training evolution shall breathe from an SCBA air supply whenever they operate under one or more of the following conditions:

- (1) In an atmosphere that is oxygen deficient or contaminated by products of combustion, or both
- (2) In an atmosphere that is suspected of being oxygen deficient or contaminated by products of combustion, or both
- (3) In any atmosphere that can become oxygen deficient, contaminated, or both
- (4) Below ground level

4.9 Communication.

4.9.1 A method of fireground communications shall be established to enable coordination among the incident commander,

the interior and exterior sectors, the safety officer, and external requests for assistance.

4.9.2* A building evacuation plan shall be established, including an evacuation signal to be demonstrated to all participants in an interior live fire training evolution.

4.10 Emergency Medical Services (EMS).

4.10.1 Basic life support (BLS) emergency medical services shall be available on site to handle injuries.

4.10.1.1 For acquired structures, BLS emergency medical services with transport capabilities shall be available on site to handle injuries.

4.10.2 A parking area for an ambulance or an emergency medical services vehicle shall be designated and located where it will facilitate a prompt response in the event of personal injury to participants in the evolution.

4.10.3 Written reports shall be completed and submitted on all injuries and on all medical aid rendered.

4.11* Water Supply.

4.11.1 The instructor-in-charge and the safety officer shall determine the rate and duration of waterflow necessary for each individual live fire training evolution, including the water necessary for control and extinguishment of the training fire, the water supply necessary for backup line(s) to protect personnel, and any water needed to protect exposed property.

4.11.2 Each hose line and backup line(s) shall be capable of delivering a minimum of 95 gpm (360 L/min).

4.11.3 Backup line(s) shall be provided to ensure protection for personnel on training attack lines.

4.11.4 The minimum water supply and delivery for the live fire training evolutions shall meet the criteria identified in NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*.

4.11.5 A minimum reserve of additional water in the amount of 50 percent of the fire flow demand, determined in accordance with 4.11.1, shall be available to handle exposure protection or unforeseen situations.

4.11.5.1 The requirements of 4.11.5 do not apply to permanently sited gas-fueled training systems.

4.11.6* Except under the conditions of 4.11.6.1, separate water sources shall be utilized for the supply of attack lines and backup lines in order to preclude the loss of both water supply sources at the same time.

4.11.6.1* A single water source shall be sufficient at a training center facility where the water system has been engineered to provide adequate volume for the evolutions conducted and a backup power source or backup pumps, or both, are in place to ensure an uninterrupted supply in the event of a power failure or malfunction.

4.11.7 There shall be room provided around all props so that there is space for all attack line(s) as well as backup line(s) to operate freely.

4.12 Fuel Materials.

4.12.1* The fuels that are utilized in live fire training evolutions shall only be wood products.