Excerpted from NFPA 1403 – Standard on Live Fire Training Evolutions

Chapter 4 General

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.

4.12.1.1 Fuel-fired buildings and props are permitted to use the appropriate fuels for the design of the building or prop.

4.12.2 Pressure-treated wood, rubber, plastic, polyurethane foam, upholstered furniture, and chemically treated or pesticide-treated straw or hay shall not be used.

4.12.3 Flammable or combustible liquids, as defined in NFPA 30, Flammable and Combustible Liquids Code, shall not be used in live fire training evolutions.

4.12.3.1 Combustible liquid with a flash point above 100°F (38°C) shall be permitted to be used in a live fire training structure or prop that has been specifically engineered to accommodate a defined quantity of the fuel.

4.12.4 Unidentified materials, such as debris found in or around the structure or prop that could burn in unanticipated ways, react violently, or create environmental or health hazards, shall not be used.

4.12.5 Propane lighters, butane lighters, fusees (safety flares), kitchen-type matches, and similar devices are permitted to be used to ignite training fires if the device is removed immediately after ignition of the training fire.

4.12.6* Fuel materials shall be used only in the amounts necessary to create the desired fire size.

4.12.7 The fuel load shall be limited to avoid conditions that could cause an uncontrolled flashover or backdraft.

4.12.8* The instructor-in-charge and the safety officer shall assess the selected fire room environment for factors that can affect the growth, development, and spread of fire.

4.12.9* The instructor-in-charge and the safety officer shall document fuel loading, including all of the following:

(1) Fuel material
(2) Wall and floor coverings and ceiling materials
(3) Type of construction of the structure, including type of roof and combustible void spaces
(4) Dimensions of the room

4.12.10* The training exercise shall be stopped immediately when the instructor-in-charge or the safety officer determines through ongoing assessment that the combustible nature of the environment represents a potential hazard.

4.12.10.1 An exercise stopped as a result of an assessed hazard according to 4.12.10 shall continue only when actions have been taken to reduce the hazard.

4.12.11* The use of flammable gas, such as propane and natural gas, shall be permitted only in live fire training structures specifically designed for their use.

4.12.11.1 Liquefied versions of the gases specified in 4.12.11 shall not be permitted inside the live fire training structure.

4.12.11.2* All props that use pressure to move fuel to the fire shall be equipped with remote fuel shutoffs outside of the safety perimeter but within sight of the prop and the entire field of attack for the prop.

4.12.11.3 During the entire time the prop is in use, the remote shutoff shall be continuously attended by safety personnel who are trained in its operation and who have direct communications with the safety officer and instructors.

4.12.11.4 Liquefied petroleum gas props shall be equipped with all safety features as described in NFPA 58, Liquefied Petroleum Gas Code, and NFPA 59, Utility LP-Gas Plant Code.

4.12.11.5 Where the evolution involves the failure of a safety feature, the failed part shall be located downstream from the correctly functioning safety feature.

4.12.11.6 Where flammable or combustible liquids are used, measures shall be taken to prevent runoff from contaminating the surrounding area.

4.12.11.6.1 There shall be oil separators for cleaning the runoff water.

4.12.11.7* Vehicles used as props for live fire training shall have all fluid reservoirs, tanks, shock absorbers, drive shafts, and other gas-filled closed containers removed, vented, or drained prior to any ignition.

4.12.11.8 For flammable metal fires, there shall be a sufficient quantity of the proper extinguishing agent available so that all attack crews have the required supply as well as a 150 percent reserve for use by the backup crews.

4.12.11.9 All possible sources of ignition, other than those that are under the direct supervision of the ignition officer, shall be removed from the operations area.

4.13 Parking/Staging.

4.13.1 Areas for the staging, operating, and parking of fire apparatus that are used in the live fire training evolution shall be designated.

4.13.2 An area for parking fire apparatus and vehicles that are not a part of the evolution shall be designated so as not to interfere with fireground operations.

4.13.3 If any of the apparatus described in 4.13.2 is in service to respond to an emergency, it shall be located in an area that will facilitate a prompt response.

4.13.4 Where required or necessary, parking areas for police vehicles or for the press shall be designated.

4.13.5 Ingress and egress routes shall be designated, identified, and monitored during the training evolutions to ensure their availability in the event of an emergency.

4.14 Visitors and Spectators.

4.14.1 All spectators shall be restricted to an area outside the operations area perimeter established by the safety officer.

4.14.2 Control measures shall be posted to indicate the perimeter of the operations area.

4.14.3 Visitors who are allowed within the operations area perimeter shall be escorted at all times.

4.14.4 Visitors who are allowed within the operations area perimeter shall be equipped with and shall wear appropriate protective clothing.

4.14.5 Control measures shall be established to keep pedestrian traffic in the vicinity of the training site clear of the operations area of the live burn.

4.15 Preburn Plan/Briefing.

4.15.1 A preburn plan shall be prepared and shall be utilized during the preburn briefing sessions.

4.15.1.1 All features of the training areas shall be indicated on the preburn plan.

4.15.2 Prior to conducting actual live fire training evolutions, a preburn briefing session shall be conducted by the instructor-in-charge with the safety officer for all participants.

4.15.3 All facets of each evolution to be conducted shall be discussed.

4.15.4 Assignments shall be made for all crews participating in the training session.

4.15.5 The location of the manikin shall not be required to be disclosed, provided that the possibility of victims is discussed in the preburn briefing.

4.15.6 Prior to conducting any live fire training, all participants shall have a knowledge of and familiarity with the prop or props being used for the evolution.

4.15.7 Prior to conducting any live fire training, all participants shall be required to conduct a walk-through of the acquired structure, burn building, or prop in order to have a knowledge of and familiarity with the layout of the acquired structure, building, or prop and to facilitate any necessary evacuation.

4.15.8 Property adjacent to the training site that could be affected by the smoke from the live fire training evolution, such as railroads, airports or heliports, and nursing homes, hospitals, or other similar facilities, shall be identified.

4.15.8.1 The persons in charge of the properties described in 4.15.8 shall be informed of the date and time of the evolution.

4.15.9 Streets or highways in the vicinity of the training site shall be surveyed for potential effects from live fire training evolutions.

4.15.9.1* Safeguards shall be taken to eliminate possible hazards to motorists.

Chapter 5 Acquired Structures

5.1 Structures and Facilities.

5.1.1* Any acquired structure that is considered for a structural fire training exercise shall be prepared for the live fire training evolution.

5.1.1.1 Buildings that cannot be made safe as required by this chapter shall not be utilized for interior live fire training evolutions.

5.1.2 Adjacent buildings or property that might become involved shall be protected or removed.

5.1.3* Preparation shall include application for and receipt of required permits and permissions.

5.1.4* Ownership of the acquired structure shall be determined prior to its acceptance by the AHJ.

5.1.5 Evidence of clear title shall be required for all structures acquired for live fire training evolutions.

5.1.6* Written permission shall be secured from the owner of the structure in order for the fire department to conduct live fire training evolutions within the acquired structure.

5.1.7 A clear description of the anticipated condition of the acquired structure at the completion of the evolution(s) and the method of returning the property to the owner shall be put in writing and shall be acknowledged by the owner of the structure.

5.1.8* Proof of insurance cancellation or a signed statement of nonexistence of insurance shall be provided by the owner of the structure prior to acceptance for use of the acquired structure by the AHJ.

5.1.9 The permits specified in this chapter shall be provided to outside, contract, or other separate training agencies by the AHJ upon the request of those agencies.

5.1.10 A search of the acquired structure shall be conducted to ensure that no unauthorized persons, animals, or objects are in the acquired structure immediately prior to ignition.

5.1.11 No person(s) shall play the role of a victim inside the acquired structure.

5.1.12 Only one fire at a time shall be permitted within an acquired structure.

5.2 Hazards.

5.2.1 In preparation for live fire training, an inspection of the structure shall be made to determine that the floors, walls, stairs, and other structural components are capable of withstanding the weight of contents, participants, and accumulated water.

5.2.2* All hazardous storage conditions shall be removed from the structure or neutralized in such a manner as to not present a safety problem during use of the structure for live fire training evolutions.

5.2.3 Closed containers and highly combustible materials shall be removed from the structure.

5.2.3.1 Oil tanks and similar closed vessels that cannot be removed shall be vented to prevent an explosion or overpressure rupture.

5.2.3.2 Any hazardous or combustible atmosphere within the tank or vessel shall be rendered inert.

5.2.4 All hazardous structural conditions shall be removed or repaired so as to not present a safety problem during use of the structure for live fire training evolutions.

5.2.4.1 Floor openings shall be covered to be made structurally sound.

5.2.4.2 Missing stair treads and rails shall be repaired or replaced.

5.2.4.3 Dangerous portions of any chimney shall be removed.

5.2.4.4 Holes in walls and ceilings shall be patched.

5.2.4.5* Roof ventilation openings that are normally closed but can be opened in the event of an emergency shall be permitted to be utilized.

5.2.4.6* Low-density combustible fiberboard and other highly combustible interior finishes shall be removed.

5.2.4.7* Extraordinary weight above the training area shall be removed.

5.2.5* All hazardous environmental conditions shall be removed before live fire training evolutions are conducted in the structure.

5.2.5.1 All forms of asbestos deemed hazardous shall be removed by an approved manner and documentation provided to the AHJ.

5.2.6 Debris creating or contributing to unsafe conditions shall be removed.

5.2.7 Any toxic weeds, insect hives, or vermin that could present a potential hazard shall be removed.

5.2.8 Trees, brush, and surrounding vegetation that create a hazard to participants shall be removed.

5.2.9 Combustible materials, other than those intended for the live fire training evolution, shall be removed or stored in a protected area to preclude accidental ignition.

5.3 Utilities.

5.3.1 Utilities shall be disconnected.

5.3.2 Utility services adjacent to the live burn site shall be removed or protected.

5.4 Exits.

5.4.1 Exits from the acquired structure shall be identified and evaluated prior to each training burn.

5.4.2 Participants of the live fire training shall be made aware of exits from the acquired structure prior to each training burn.

5.4.3 Fires shall not be located in any designated exit paths.

5.5 Rapid Intervention Crew (RIC).

A RIC trained in accordance with NFPA 1407, Standard for Training Fire Service Rapid Intervention Crews, shall be provided during a live fire training evolution.