

# **Live Fire Training Evolutions**



## **Instructor Rules of Operation**

## Foreword

SWNIFRA Inc. takes pride in providing innovative training that addresses the needs of fire service professionals of today, and tomorrow. *What* is accomplished is as important as *how* it is accomplished and all training conducted by the Monroe Fire School shall be accomplished safely. Any training involving live fire presents specific hazards and raises the level of risk; not only to the students, but to all those who are participating in the training.

## Origin and Development

NFPA 1403, Standard on Live Fire Training Evolutions 2007 Edition, serves as the foundation for Monroe Fire School's Rules of Operation. Some of the safety requirements outlined in this or associated documents are above and beyond what NFPA 1403 requires. During the school, multiple live fire training evolutions are being conducted concurrently – many in close proximity of other training evolutions. The elevated level of activity and complex setup of the overall operation, results in a higher level of risk; thus, SWNIFRA Inc. and partnering organizations require additional safety measures (to NFPA 1403) to address the hazards and minimize the risks associated with conducting multiple live fire classes.

**Background** A safety committee was formed in late 2009 following the 2009 Monroe Fire School in which several safety and communications issues were identified. The committee was assigned with the task of determining the policies, procedures, and guidelines necessary for ensuring the safety of fire school participants and developing a method of communicating the safety expectations to instructors.


While NFPA 1403 provides a standard, the contents of the standard are subject to copyright and distribution restrictions. Further, not all instructors are aware of the standards existence. The committee resolved this issue by referencing key points contained within the standard and compiling those points with SWNIFRA Inc.'s specific safety rules. This document is a product of the committee's efforts and has been developed to communicate the rules of operation involved with any class containing live fire and that is presented on behalf of the Monroe Fire School.

### \*\*\*NOTICE\*\*\*

This document is not intended to replace or duplicate the NFPA 1403 standard nor should it be used as a substitution. This document contains key items of the NFPA 1403 standard and additional requirements that may affect the setup of the class. This document may be used as a quick reference to NFPA 1403; however, the document does not distinguish between those safety requirements that derive from NFPA 1403 or those that have been developed by SWNIFRA Inc.

**APPROVAL**

**Adopted** These rules of operation for live fire training evolutions are hereby adopted by the SWNIFRA Inc. Board of Directors on February 28<sup>th</sup>, 2010 and approved by:

  
SWNIFRA Inc., President - Joseph Sutherland

**Revisions** Approved revisions involving any amendments, modifications, and deletions since the original date and adoption include:

Date	Version #	Signature of Approval by SWNIFRA Inc. President
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## OVERVIEW

- General Requirements** The requirements that apply to ALL live fire evolutions. Additional rules and requirements apply based on the location of the evolution and the type of structure being used.
- Acquired Structures** Pertains to those evolutions that are conducted in an acquired structure. *See Definitions in the General Requirements Section for a NFPA 1403 definition.*
- Live Fire Training Structure** This section outlines the requirements for evolutions that are conducted in a live fire training structure. These requirements pertain to those classes assigned to the burn tower at The MERIT Center.
- Attachments** There may also be other requirements, terms, and conditions of use that are specific to a particular training site. Any such requirements have been attached to this document and said requirements shall be strictly adhered to by instructors and participants.
- Agreement and Acknowledgement** The instructor-in-charge and all co-instructors involved with the class shall sign the agreement at the end of this document. Additionally, the instructor-in-charge shall sign any other forms of agreement necessary for the training site in which he/she will be conducting the class. Failure to submit all applicable agreements as instructed shall result in cancellation of the class.

**All live fire evolutions shall be conducted in compliance with NFPA 1403, Standard for Live Fire Training Evolutions 2007 Edition.**

Instructors shall contact the fire school coordinator in regards to any questions about the requirements contained within this document. It is imperative that the instructor know the requirements prior to conducting the class. Failure to comply with any requirement identified in this document and/or applicable Chapters of NFPA 1403 may result in the termination of the class and/or removal of the instructor from the training premises.

## GENERAL REQUIREMENTS

*Note: see the NFPA 1403 Standard for a complete list of requirements.*

### DEFINITIONS

*Note: see Chapter 3 of the NFPA 1403 Standard for a complete list of definitions.*

- Acquired Prop** A piece of equipment such as an automobile that was not designed for burning but is used for live fire training evolutions.
- Evolution** A set of prescribed actions that result in an effective fire ground activity.
- Fireground Emergency** Any event in which a firefighter becomes distressed and whose well being is in jeopardy – either real or perceived – if the event isn't intervened.
- Instructor** An individual qualified by the SWNIFRA Inc. to deliver fire fighter training, who has the training and experience to supervise students during live fire training evolutions.
- Instructor-in-Charge** An individual qualified as an instructor and designated by the SWNIFRA Inc. to be in charge of the live fire training evolution.
- Live Fire** Any unconfined open flame or device that can propagate fire to the building or other combustible materials.
- Participant** Any student, instructor, safety officer, visitor, or other person who is involved in the live fire training evolution within the operations area.
- Safety Officer** An individual appointed by the SWNIFRA Inc. as qualified to maintain a safe working environment at all live fire training evolutions.
- Student** Any person who is present at the live fire training evolution for the purpose of receiving training.
- Training Structures** Acquired Structure: A structure acquired by the SWNIFRA, Inc. from a property owner for the purpose of conducting live fire training evolutions.
- Live Fire Training Structure: a structure specifically designed for conducting live fire training evolutions on a repetitive basis.

## INSTRUCTIONAL PERSONNEL

**Responsibility** It shall be the responsibility of the instructor-in-charge to coordinate overall fireground activities and to ensure the appropriate levels of safety are provided for.

**Instructor Assignments** The instructor-in-charge shall assign the following personnel:

1. One instructor to each functional crew, which shall not exceed five students
2. One instructor to each backup line
3. Additional personnel to backup lines to provide mobility
4. One additional instructor for each additional functional assignment

**Ignition Officer** One person who is not a student shall be designated as the "ignition officer" to control materials being burned.

*Note: The ignition officer may be assigned instructional duties provided that the assignment doesn't distract or otherwise prevent the individual from maintaining control of the fire.*

**Other Personnel** Additional personnel may be needed to supervise and/or direct other operations such as sector officers and interior safety officers.

## SAFETY OFFICERS

SWNIFRA Inc. will provide at least one safety officer for each class. Additional safety personnel, as deemed necessary by the safety officer, shall be located strategically within the structure to react to any unplanned or threatening situation or condition.

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

Any ruling by the Safety Officer is final and he or she can dismiss any student who, in their belief, is acting in an unsafe manner.

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

1. Prevention of unsafe acts
2. Elimination of unsafe conditions

The safety officer shall provide for the safety of all persons on the scene including students, instructors, visitors, and spectators. The safety officer shall not be assigned other duties that interfere with safety responsibilities.

**Other** Additional safety personnel may be assigned to sectors or parts of the evolution where an increased concern for safety is present. Classes at The

MERIT Center will be monitored for safety by MERIT Center Coordinators who are in addition to SWNIFRA Inc.'s safety staff. See The MERIT Center Rules.

## FUELS & IGNITIONS

**Fuel Characteristics** The fuels that are utilized in live fire training evolutions shall have known burning characteristics that are as controllable as possible.

**Fuel Materials** Ordinary Class A combustibles only. Acceptable materials include: pine excelsior, wooden pallets, straw, hay, and other ordinary combustibles. Pressure-treated wood, rubber, and plastic, and straw or hay treated with pesticides or harmful chemicals shall not be used. Flammable or combustible liquids shall not be used. SWNIFRA Inc. will provide approved fuel materials.

*Note: Propane torches, flares, and other incendiary devices may be used during ignition provided that they are removed before the fire develops and the evolution commences.*

**Fuel Load** Fuel materials shall be used only in the amounts necessary to create the desired fire size. The fuel load shall be limited to avoid conditions that could cause an uncontrolled flashover or backdraft.

**Ignition** Prior to the ignition of any fire, instructors shall ensure that all required protective clothing and equipment are being worn according to manufacturer's instructions.

All ignitions shall be coordinated through the ignitions officer, instructor-in-charge, and the safety officer.

A charged hose line shall accompany the ignition officer when he or she is igniting any fire.

**Fire Location** Fires shall not be located in any designated exit paths.

## WATER SUPPLY

SWNIFRA Inc. shall be responsible to provide the Instructor-in-Charge with the necessary fire apparatus, water supply, hose, and operators, and the logistics to coordinate the delivery of water to the scheduled classes of the Monroe Fire School. Supply shall include both primary and backup sources as required by current NFPA standards.

The instructor-in-charge shall determine the rate and duration of water flow necessary for each live fire training evolution, including the water necessary for control and extinguishment of the training fire, the supply necessary for backup lines to protect personnel, and any water needed to protect exposed property.

## HOSE LINES

For the purpose of this school, there shall be two (2) classifications of hose lines: supply and working.

**Supply lines** Those lines that supply water to the fire apparatus from the source.

**Working lines** Those lines being used as part of the evolution for fire control and/or protection. There shall be four types of working lines:

1. Attack lines – are those used to actively suppress a fire or that are planned to be used to suppress the fire.
2. Back-up lines – are those being used for supporting the attack line crew(s).
3. Safety lines – are those kept outside the structure, but at the ready in case of emergency.
4. Exposure lines – are those hose lines dedicated for the protection of exposures.

All lines must be capable of sustaining a minimum fire flow of 95 gpm.

Either the back-up line or the safety line must be supplied from a source that is separate from the attack line.

All working lines must be staffed with a minimum of two personnel per line and ready for use PRIOR to the evolution commencing.

**Number of Lines** The instructor-in-charge of the live fire training evolutions shall determine, prior to each specific evolution, the number of training attack lines and backup lines that are necessary. Note that minimum requirements exist for both acquired structures and live fire training structures.

## PERSONAL PROTECTIVE EQUIPMENT

**Turnouts** Any participant who is actively involved in a live fire operation – interior or exterior – shall be equipped with protective coat, trousers, hood, footwear, helmet, and gloves that have been manufactured and meet the requirements of NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting – or the current standard.

**SCBA** 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.

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

**Inspection** 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.

Wherever an SCBA is required, no facial hair will be allowed. This includes any facial hair other than mustaches. Protective hoods over beards are not safety approved. The Safety Officer will inspect each student for compliance with this requirement and will have the final say as to whether or not a student will be allowed to participate.

## PLANNING & PREBURN ITEMS

**Preburn Briefing** Prior to the conduct of actual live fire training evolutions, a preburn briefing session shall be conducted for all participants, in which all facets of each evolution to be conducted are discussed and assignments for all crews participating in the training session are given.

**Evacuation Plan** A building evacuation plan shall be established, including an evacuation signal to be demonstrated to all participants.

**Ingress/Egress** Points of ingress and egress including routes shall be designated, identified, and monitored during the training evolutions to ensure their availability in the event of an emergency.

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

**Preburn Walk-Thru** Prior to the conduct of any live fire training, all participants shall be required to conduct a walk-through of the acquired structure in order to have a knowledge of and familiarity with the layout of the acquired structure and to facilitate any necessary evacuation of the acquired structure.

**Communications** A method of fireground communications shall be established to enable coordination among the incident commander (instructor-in-charge), the interior and exterior sectors, the safety officer, and external requests for assistance.

A radio must be assigned to each functional team or be assigned to the instructor who is accompanying the team.

## LIVE BURNS WITH PLANNED RESCUE

**Victims** The use of live persons as victims is strictly prohibited. Only mannequins may be used to simulate victims. Likewise, students must be made aware that the simulation of victims consists of only mannequins and not actual persons.

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

**Simulated vs. Actual** The instructor-in-charge shall identify a standard for differentiating simulated emergencies versus an actual fireground emergency. The standard shall be communicated to all participants and shall include specific terminologies and signals for distress.

## FIREGROUND EMERGENCIES

**Contingency Plan** The instructor-in-charge shall develop and communicate a plan to handle any fireground emergencies – both expected and unforeseen.

**Distress Signal** A common term and procedure for signaling distress shall be identified to all class participants and the safety officer assigned to the class shall be made aware of said term and procedure.

## REHAB

Each training location has a system for rehab. SWNIFRA Inc. shall provide for rest and rehabilitation of members operating at the scene, including any necessary medical evaluation and treatment, food and fluid replenishment, and relief from climatic conditions. For the purpose of planning class evolutions, the instructor should figure on sending a student to rehab for every two bottles of air that he/she consumes. The SWNIFRA Inc. rehab plan is based on National Fire Protection Association (NFPA) 1584, *Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises*.

## ACQUIRED STRUCTURES

This section contains the requirements for live fire evolutions that are conducted in an acquired structure. Note that these requirements are in addition to the general requirements. It shall be the responsibility of the instructor-in-charge to coordinate overall acquired structure fireground activities to ensure correct levels of safety.

*Note: see Chapter 4 of the NFPA 1403 Standard for a complete list of requirements.*

### STRUCTURE PREP

Buildings that cannot be made safe shall not be utilized for interior live fire training evolutions.

**Responsibility** It is the responsibility of the instructor-in-charge to prepare his/her corresponding structure.

**General Hazards**

- Debris creating or contributing to unsafe conditions shall be removed.
- Floor openings shall be covered.
- Missing stair treads and rails shall be repaired or replaced.
- Dangerous portions of any chimney shall be removed.
- Holes in walls and ceilings shall be patched.

**Structural Components** All hazardous structural conditions shall be removed or repaired so as to not present a safety problem during use.

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

**Inspection** The structure shall be inspected for hazards by the safety officer(s) prior to the commencement of any live fire evolutions.

### FIRE CONDITIONS & BEHAVIOR

**Fire Evolutions** Only one fire at a time shall be permitted within an acquired structure.

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

## HOSE LINES

**Number of Lines** At a minimum, an attack line, a back-up line, and a safety line must be present and staffed anytime that fire is present during interior operations.

## “SMOKE” EVOLUTIONS

Training evolutions where live fire is used for the sole purpose of creating smoke is still considered a live fire training evolution; however, the safety line may be omitted during smoke evolutions provided that ALL of the following conditions are met:

- The fire is kept confined to a container (such as a barrel).
- The fire is kept in a smoldering state and growth is restricted to the area of origin.
- The fire is not allowed to free burn.
- The amount of heat released is kept controlled as to avoid surrounding materials from being ignited.
- The structure is vented as necessary to release any heat AND to prevent fire from developing in the thermal layer.
- The ignitions officer remains at the fire with an attack line and continuously monitors conditions.
- The backup line is supplied from a separate water source as the attack line.

All other requirements still apply during smoke evolutions.

*Note: Participants – including instructors – must wear structural turnout gear and SCBA during smoke evolutions.*

## LOSS OF CONTROL

It is the responsibility of the instructor-in-charge to maintain control of the fire at all times. Loss of control is unlikely provided that all the rules and standards identified by this document have been followed. Nonetheless, certain situations may occur where attempts to maintain or regain control would put personnel at unnecessary and/or undue risk.

**Risk Assessment** In the event that control of the fire is lost or the instructor-in-charge becomes concerned that loss of control is imminent, the instructor-in-charge shall:

- Notify the safety officer immediately
- Change the mode of operations to defensive if offensive control tactics to regain control are deemed unsafe by the instructor-in-charge or safety officer.

The instructors of the class shall NOT put themselves or their students at risk to save the structure.

**Regroup** In the event that control is lost, the class may not resume until SWNIFRA Inc. safety staff and any other safety personnel have reviewed the event with the

instructor-in-charge. After the review, safety staff will make a determination as to whether the class will be permitted to resume. If the class is permitted to resume, the instructor-in-charge shall review the event with his/her students prior to resuming any evolutions.

## **“BURN DOWN” OF STRUCTURE**

Some structures may not be permitted to be burned down until after all classes have concluded. Some of the structures will be burned down under the supervision and direction of other personnel after the school has concluded.

The instructor-in-charge may not initiate the burning down of any structure without first gaining approval from a SWNIFRA Inc. safety officer.

**Procedures** If the instructors are permitted to perform the burn down, then the following procedures shall be followed:

1. All working lines shall be arranged as necessary to protect exposures.
2. The instructor-in-charge shall verify that the building is clear of all participants by visual inspection of each room and interior area.
3. Access to the structure shall be restricted to personnel necessary for ignition and protection of those performing ignition.
4. The instructor-in-charge shall perform a personnel accountability report to verify all participants are accounted for.

Each step of the above process shall be coordinated with the safety officer.

## NON-GAS LIVE FIRE TRAINING STRUCTURE

This section contains the requirements for live fire evolutions that are conducted in a training structure that meets the definition of a non-gas live fire training structure. Note that these requirements are in addition to the general requirements.

*Note: see Chapter 6 of the NFPA 1403 Standard for a complete list of requirements.*

### FACILITY USE AND OPERATION

- Authority** The owners, or otherwise operators, of the training structure shall have complete and final authority over all activities that involve the use of the structure.
- Terms & Conditions of Use** The instructor-in-charge shall adhere to and follow any rules, procedures, or other directives intended to regulate how the training structure is used. Failure to comply with the terms and conditions of use, or disregarding the instructions from those charged with supervising the operation of the training structure WILL result in the immediate termination of the class.
- Documents** The authority having jurisdiction over the training structure shall provide the instructor-in-charge with all necessary documents that contain direction and instructions for use of the training structure.
- Training & Instructions** Use of the training structure may require the instructor-in-charge and his/her co-instructors to complete a brief training on how to use and operate the training structure.

### FACILITY INSPECTION

- AHJ of Facility** The AHJ over the facility shall be responsible for ensuring that all of the training structures controls, structural components, safeguards, and protective linings are inspected per NFPA 1403 requirements.
- Instructor-in-Charge** Prior to conducting any evolution, the instructor-in-charge shall be responsible for ensuring, that all controls, doors, and windows are in working order, and that any safety mechanisms have not been compromised.

### OTHER

All other items shall be directly identified and referenced by the AHJ over the facility.