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OFFICE OF THE STATE FIRE MARSHAL
Statewide Training and Education Advisory Committee
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Date: July 12, 2019

Attachment 15

To: Ronny J. Coleman, Chairman
Statewide Training and Education Advisory Committee
c/o State Fire Training

From: Kevin Conant, Fire Service Training Specialist III

SUBJECT/AGENDA ACTION ITEM:
FSTEP – Instructor: Live Fire Training – Fixed Facility

Recommended Actions:
Information/Discussion

Background Information:

This curriculum is being presented for the first time to STEAC for information, discussion and providing feedback to staff. This is a new course and is a prerequisite requirement for instructors in learning what and how to teach the new FSTEP Fire Control 3: Structural Fire Fighting course.

The concept of developing new FSTEP course curriculum is with the purpose of continuing education and professional development, which was approved by STEAC on April 18, 2014. Accordingly, stakeholders identified the need for the creation of an updated structural live fire training course.

A cadre of experienced subject matter experts with extensive technical expertise in structural live fire training were selected from various agencies and backgrounds with the mission to further develop and validate the content for this FSTEP course.

Cadre Leadership

Kevin Conant, Fire Service Training Specialist III, John Black, Battalion Chief, Santa Clara County Fire Department, Allison Shaw, Cadre Editor, Sacramento State.

Development/Validation Cadre Members

Tim Adams, Battalion Chief, Anaheim Fire Department; Norm Alexander, Captain, Yocha Dehe Fire Department; David Baldwin, Battalion Chief Sacramento Fire Department; Tim Beard, Captain, Sacramento Metro Fire Department; John Flatebo, Firefighter, Corona Fire Department; Josh Janssen, Battalion Chief, CAL FIRE-BDU; James Mendoza, Captain, San Jose Fire Department; Jake Pelk, Captain, Central County FD; Jeff Seaton, Captain, San Jose FD; Mike Taylor, Assistant Chief, Sacramento FD; Kevin Tidwell, Captain, Turlock FD.

Several of the cadre members are State Fire Training Registered Instructors and all have extensive operational experience with structural live fire training. The development of the course required several multi-day sessions, over the course of three years, with additional work by the editor, cadre members and cadre lead to add the finishing touches of editing the course plans. Because this is an FSTEP Course, the development of a Certification Training Standards (CTS) was not required. However, Terminal Learning Objectives (TLO) were established and the supporting Enabling Learning Objectives (ELO) were developed from the authority of the NFPA 1001 Standard for Fire Fighter Professional Qualifications (2019), NFPA 1403: Standard on Live Fire Training Evolutions (2018); FIRESCOPE ICS 500, Structure Fire Operations (2015); and FIRESCOPE ICS 910 Fire Fighter Incident Safety and Accountability Guidelines (2013) and several others references aided as supporting documents in creating the Course Plan.

Analysis/Summary of Issue:

1. The FSTEP Instructor: Live Fire Training – Fixed Facility (2018) is a 24-hour course, including 13:45 (hours:minutes) of lecture/discussion and 10:15 (hours:minutes) of application/skills.
2. NFPA 1001 Standard for Fire Fighter Professional Qualifications (2019) and NFPA 1403 Standard on Live Fire Training Evolutions (2018) have addressed significant research and development in the study of fire dynamics, chemistry and physics, structural fire behavior and structural fire attack tactics, providing the knowledge and skills that prepare a fire fighter in locating, controlling, and extinguishing an interior structure fire.
3. These NFPA standards identify the requirement that all firefighters shall demonstrate a live fire job performance requirement, while improving the process and procedure for conducting live fire training evolutions, ensuring the training objectives are achieved and the exposure to health and safety hazards are mitigated and risk is minimized.
4. This course prepares the instructor for the most common format of delivering structural live fire training using fixed facilities, such as gas-fire and non-gas fired live fire training structures and mobile enclosed live fire training props. An optional course, Instructor: Live Fire Training – Acquired Structure is addressed in a separate staff report.
5. In addressing risk management for the live fire training environment, the NFPA standards increased the minimum requirements for those instructing to include that the instructor-in-charge meet the requirements for Instructor II, the identification and use of a safety officer and increased the required minimum training of the students.
6. Due to the increased emphasis on fire behavior, flow path, fire dynamics, chemistry and physics, additional props, instructor demonstrations and skills exercises were added.
7. This course is intended to serve as the roll-out course for all existing and new FSTEP Fire Control 3: Structural Fire Fighting instructors.



Instructor: Live Fire Training - Fixed Facility

Course Plan

Course Details

Description: This course provides the knowledge and skills that prepare an instructor to teach fire fighters how to locate, control, and extinguish an interior structure fire in a fixed facility. Key learning areas include an overview of the Fire Control 3: Structural Fire Fighting course plan; an introduction to live fire training; preburn planning; fire dynamics; set up and walk through; live fire training evolutions; and postburn procedures.

Designed For: Individuals who wish to conduct NFPA-compliant live fire training or qualify to teach State Fire Training's Fire Control 3: Structural Fire Fighting course

Authority: NFPA 1403: Standard on Live Fire Training Evolutions (2018)
California Health and Safety Code 41801(b)
Cal/OSHA (Title 8 CCR 3395)

Prerequisites: Fire Control 3: Structural Fire Fighting, or Fire Control 3A (2009), or Fire Control 3B (2009)
Authorization to attend training from fire agency or ALA/ARTP
Verification of meeting NFPA 1403 (2018 / 4.3.1) live fire training prerequisite requirements (SFT Fire Fighter I certification waives this requirement)
Current SCBA fit test documentation
Cal/OSHA compliant structural PPE
Completed release of liability form

Standard: Attend all class sessions and complete all mandatory activities and skills

Hours: Discussion: 13.75 hours (13 hours and 45 minutes)
Application: 10.25 hours (10 hours and 15 minutes)

Instructional Hours (Total): 24 hours

Maximum Class Size: 20

Instructor Level:	Primary instructor
Instructor/Student Ratio:	Two primary instructors at all times Additional requirements (per NFPA 1403) <ul style="list-style-type: none">• One instructor for each functional crew of five students• One instructor for each backup line• One additional instructor for each additional functional assignment
Restrictions:	See Facilities, Equipment, and Personnel requirements (page 5)
SFT Designation:	FSTEP

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Required Resources

Instructor Resources

To teach this course, instructors need:

- NFPA 1403: Standard on Live Fire Training Evolutions (current edition)
- NFPA 1582: Standard on Comprehensive Occupational Medical Programs for Fire Departments (current edition)
- NFPA 1583: Standard on Health-Related Fitness Programs for Fire Department Members (current edition)
- NFPA 1584: Rehabilitation Process for Members During Emergency Operations and Training Exercises (current edition)
- Title 8 California Code of Regulations (T8 CCR) Section 3395 – Heat Illness Prevention Standard
- *Live Fire Training: Principles and Practice* (Jones & Bartlett Learning, 1st ed. revised, ISBN: 978-1-284-04123-1)
- *3D Fire Fighting: Training, Techniques, and Tactics* (Fire Protection Publications, Oklahoma State University, 1st ed., ISBN: 0-87939-258-4)

Additional recommended resources:

- *Enclosure Fires* (Lars-Göran Bengtsson)
Available for download at: <https://www.msb.se/en/Products/Publications/Publications-from-the-SRSA/Enclosure-fires/>

Online Instructor Resources

The following instructor resources are available online at

<http://osfm.fire.ca.gov/training/resources>

- Fire Control 3: Structural Fire Fighting course plan (and supporting documentation)
 - Instructor Demonstration 1 – Dust Explosion
 - Instructor Demonstration 2 – Combustion
 - Instructor Demonstration 3 – Pyrolysis
 - Props and Structures – Matrix
 - Props and Structures – Acquired Structure
 - Props and Structures – Container (Class A)
 - Props and Structures – Fixed Facility (Class A)
 - Props and Structures – Gas-Fired Prop
 - Props and Structures – Scalable Burn Prop
 - Skills Exercise 1 – Combustion
 - Skills Exercise 2 – Risk Assessment and Door Entry
 - Skills Exercise 3 – Stretching, Flaking, and Advancing and Attack Line
 - Skills Exercise 4 – Water Application
 - Skills Exercise 5 – Fire Attack

- Skills Exercise 6 – Transitional Fire Attack
- Skills Exercise 7 – Interior Attic Fire Attack
- Skills Exercise 8 – Below Grade (Basement) Fire Attack
- Skills Exercise 9 – VEIS
- Skills Exercise 10 – Ventilation
- Skills Exercise 11 – Portable Water Extinguisher Attack
- Documents
 - Cal/OSHA Employer Sample Procedures for Heat Illness Prevention
 - Firefighter Exposure to Smoke Particulates
 - FIRESCOPE – ICS 910: Firefighter Incident Safety and Accountability Guidelines
 - Impact of Fire Attack Utilizing Interior and Exterior Steams on Firefighter Safety and Occupational Survival: Full Scale Experiments
 - Impact of Fire Attack Utilizing Interior and Exterior Streams on Firefighter Safety and Occupational Survival: Water Mapping
 - Impact of Ventilation on Fire Behavior in Legacy and Contemporary Residential Construction (section 9.11 Pushing Fire, page 203)
 - ILFTFF - Live Fire Training Burn Plan Outline
- Videos
 - Art of Reading Smoke Vol1 Sample (Fire Engineering, November 2, 2016)
 - Christmas Tree Fire Safety (LinglestownFireCo35 / June 25, 2007)
 - Four Compartment Fire Behavior Burn Box (State Fire Training / 2018)
 - New vs. Old Room Fire Final UL (jarhead 96 / December 17, 2010)
 - Normalisation of Deviance – IAFF – Part I (Mike Mullane)
 - Normalisation of Deviance – IAFF – Part II (Mike Mullane)
 - Oxidation: The Chemical Process of Fire (FireNerd / 2018)
 - Pyrolysis: Decomposition of Solid Substances with Heat (Fire Gear)
 - Single Compartment Fire Behavior Burn Box (State Fire Training / 2018)
 - What is Fire Pyrolysis? (Fire Training / June 6, 2015)
 - Whoosh Box Fire Behavior Burn Box (State Fire Training / May 2018)
 - UL: Modern vs. Legacy Fuel (Firehouse / November 6, 2015)
- Activities
 - Activity 6-4: Building Fuel Packages for Fire Behavior Evolutions
 - Activity 6-4: Building Fuel Packages for Fire Attack Evolutions

Student (Instructor Trainee) Resources

To participate in this course, all instructor trainees need:

- NFPA 1403: Standard on Live Fire Training Evolutions (current edition)
- *Live Fire Training: Principles and Practice*
(Jones & Bartlett Learning, 1st Edition Revised, ISBN: 978-1-284-04123-1)
- A copy of his or her agency's heat and illness prevention plan
- Full structural PPE and SCBA

Instructor trainees participating in this course through their academy or agency in-house training will have all documentation, PPE, and SCBA verification provided by the AHJ.

Instructor trainees participating in this course through open enrollment must provide:

- Authorization to attend the training, including a statement of insurance for participant
 - Submit a letter verifying demonstrated competency in donning SCBA, donning PPE, and hose handling skills
 - If the class will be coordinated through a community college, the college may provide additional insurance for participants and instructional staff
- Current SCBA fit test documentation
- A minimum of Cal/OSHA compliant PPE in good repair (provided by the participant's agency)
- Release of liability

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

Equipment*

- **Apparatus:** A minimum of one fully outfitted NFPA compliant engine (type I or type 3)
- **Appliances and tools:** Thermal imager (optional); nozzle selection (determined by AHJ) capable of flowing a minimum 95 gallons per minute (GPM)
- **Extinguishers:** Pressurized water extinguisher; water-pressurized garden sprayer
- **Fuels:** Class A materials (non-gas-fired props); Class B fuel (gas-fired props) per manufacturer specifications
- **Hose:** 1", 1½", or 1¾" fire hose; 2½" or 3" fire hose
- **Hand tools:** Flat head axe; Halligan tool; hydrant wrench; pick head axe; long handle tool (pike pole, roof hook, rubbish hook); sledgehammer; flashlight
- **Ladders:** 10' folding ladder; 14' roof ladder; 24' extension ladder
- **Power tools:** Blower; chainsaw; generator; air compressor with fittings (or equivalent)
- **Props:** Scalable props adequate to demonstrate principles outlined in Unit 5: Fire Dynamics
- **Protective equipment/clothing:** Full set of protective clothing for structural fire fighting for each student, including: bunker pants, coat, and boots; gloves and helmet; flash hood; face piece; self-contained breathing apparatus (SCBA), two fully-charged air cylinders, and manufacturer-approved SCBA sanitizing agent and cleaning agent; personal alert safety system (PASS)
- **Salvage equipment/materials:** Salvage covers or Visqueen; brooms; scoop shovels; buckets; tubs
- **Simulation equipment/materials:** Live fire training structure compliant with NFPA 1403 (2018); smoke-generating equipment (synthetic/Class A); burn barrels (modified for smoke or crib set)

- **Other supplies/equipment:** Radios; fuel and supplies for power equipment; cleaning and decontamination supplies and equipment; handheld propane torch; dumpster; power cords; lights; hammer; nails; staple gun; nail gun (optional); circular saw; reciprocating saw; fuses/road flares; construction spray paint; tape measure; drill, bits, and screws
- **Rehabilitation:** Shade; water; chairs; SCBA refill capabilities (extra cylinders or refill as needed); decontamination body wipes; soap and water; brushes
- **Water supply:** Adequate water supply per NFPA 1403 (2018) requirements

* See NFPA 1403 (2018 or current edition) for additional equipment and tool requirements.

Facilities

- Standard classroom equipped for 20 students
- Whiteboards or easel pads with appropriate writing implements
- Projector with appropriate laptop connections
- Wi-Fi/Internet access (recommended)
- At least one of the following:
 - A non-gas-fired live fire training structure
 - A gas-fired live fire training structure
 - Must also have enough space to burn models (required when a gas-fired live training structure is the only available option)

Personnel*

- Two primary instructors at all times
- Additional requirements (per NFPA 1403)
 - One instructor for each functional crew of five students
 - One instructor for each backup line
 - One additional instructor for each additional functional assignment

* See NFPA 1403 (2018) paragraph 4.7 for additional information about required personnel.

Time Table

Segment	Lecture	Application (Activity/Skill)	Formative Assessment	Unit Total
Unit 1: Introduction				
Topic 1-1: Orientation and Administration	0.5	0	0	
Unit 1 Totals	0.5	0	0	0.5
Unit 2: Introduction to Fire Control 3: Structural Fire Fighting				
Topic 2-1: Fire Control 3: Structural Fire Fighting Course Plan	0.25	0	0	
Topic 2-2: Fire Control 3: Structural Fire Fighting Instructor Requirements	0.25	0	0	
Topic 2-3: Fire Control 3: Structural Fire Fighting Student Requirements	0.25	0	0	
Unit 2 Totals	0.75	0	0	0.75
Unit 3: Introduction to Live Fire Training				
Topic 3-1: NFPA Standards and Legal Considerations	1.0	0	0	
Topic 3-2: Cardiovascular and Thermal Strain of Fire Fighting	0.25	0	0	
Topic 3-3: Developing and Incident within an Incident (IWI) Plan	0.25	0	0	
Unit 3 Totals	1.5	0	0	1.5
Unit 4: Preburn Planning				
Topic 4-1: Conducting an Initial Site Evaluation	0.25	0.25	0	
Topic 4-2: Developing a Comprehensive Burn Plan ("Burn Book")	1.0	0.5	0	
Topic 4-3: Conducting Preburn Preparations	0.5	0.5	0	
Topic 4-4: Preparing a Training Structure	0.5	0.5	0	
Unit 4 Totals	2.25	1.75	0	4.0
Unit 5: Fire Dynamics				
Topic 5-1: Fire Chemistry and Physics	1.5	1.0	0	
Topic 5-2: Fire Growth and Development	1.0	0	0	
Topic 5-3: Characteristics of Smoke	0.25	0	0	
Topic 5-4: Water as an Extinguishing Agent	0.75	0	0	

Segment	Lecture	Application (Activity/Skill)	Formative Assessment	Unit Total
Topic 5-5: Fire Control 3 Classroom Instructor Demonstrations	0	0.75	0	
Topic 5-6: Fire Control 3 Fireground Instructor Demonstrations	1.25	0	0	
Unit 5 Totals	4.75	1.75	0	6.5
Unit 6: Set Up and Walk Through				
Topic 6-1: Implementing an Incident Action Plan	0.25	0.5	0	
Topic 6-2: Securing a Water Supply	0.25	0	0	
Topic 6-3: Conducting an Instructor Briefing and Preburn Walk Through	0.5	0	0	
Topic 6-4: Building Fuel Packages	0.5	1.0	0	
Topic 6-5: Conducting a Student Preburn Walk Through	0.25	0.25	0	
Unit 6 Totals	1.75	1.75	0	3.5
Unit 7: Delivering Live Fire Training Evolutions				
Topic 7-1: Operating as Instructor in Charge (Command and Control)	0.25	0	0	
Topic 7-2: Operating as Safety Officer	0.25	0	0	
Topic 7-3: Implementing Student Rotations	0.25	0	0	
Topic 7-4: Implementing the 2 In/2 Out or RIC Requirement	0.25	0	0	
Topic 7-5: Igniting Fuel Packages	0.25	0	0	
Topic 7-6: Executing and Evaluating Required Fire Control 3 Skills Exercises	0	2.00	0	
Topic 7-7: Executing and Evaluating Optional Fire Control 3 Skills Exercises	0	3.0	0	
Unit 7 Totals	1.25	5.00	0	7.5
Unit 8: Postburn Procedures				
Topic 8-1: Postburn Procedures	1.0	0	0	
Unit 8 Totals	1.0	0	0	1.0
Summative Assessment				
There is no summative assessment	0	0	0	
Assessment Totals	0	0	0	0
Course Totals	13.75	10.25	0	24:00

Note: Course totals do not reflect time for lunch (1 hour) or breaks (10 minutes per each 50 minutes of instruction or assessment).

Note: Skills and activity time will vary depending on the number of students in the program. It is important to remember that the suggested skill hours are for up to 20 students.

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Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, an instructor trainee will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements.

Enabling Learning Objectives

1. Identify facility requirements
 - Restroom locations
 - Food locations
 - Smoking locations
 - Emergency procedures
2. Identify classroom requirements
 - Start and end times
 - Breaks
 - Electronic device policies
 - Special needs and accommodations
 - Other requirements as applicable
3. Review course syllabus
 - Course objectives
 - Calendar of events
 - Course requirements
 - Student evaluation process
 - Assignments
 - Activities
 - Required student resources
 - Class participation requirements

Discussion Questions

1. Determined by instructor

Activities

1. Determined by instructor

Instructor Notes

1. None

Unit 2: Introduction to Fire Control 3: Structural Fire Fighting

Topic 2-1: Fire Control 3: Structural Fire Fighting Course Plan

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a course plan, will be able to identify the goals and objectives for students enrolled in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course.

Enabling Learning Objectives

1. Identify the Course Details
2. Identify the Required Resources
 - Textbooks and documents
 - Equipment
 - Personnel
 - NFPA 1403 requirements
 - Authority having jurisdiction (AHJ) requirements
3. Describe key terminology
 - Terminal learning objective
 - Enabling learning objective
 - Instructor Demonstration
 - Skills Exercise
4. Identify the Units and Topics
5. Identify the Props and Structures documents
6. Identify the Instructor Demonstrations
7. Identify the Skills Exercises
 - Required exercises
 - Recommended exercises

Discussion Questions

1. How does a terminal learning objective differ from an enabling learning objective?

Activities

1. Determined by instructor

Instructor Notes

1. Distribute a copy of the Fire Control 3: Structural Fire Fighting course plan and all supporting documents to all instructor trainees.
2. Instructor Demonstrations are covered in more detail in Unit 5: Fire Dynamics.
3. Skills Exercises are covered in more detail in Unit 7: Delivering Live Fire Training Evolutions.

Topic 2-2: Fire Control 3: Structural Fire Fighting Instructor Requirements

Terminal Learning Objective

At the end of this topic, an instructor trainee, given instructor requirements, will be able to identify the State Fire Training (SFT) requirements for becoming a registered SFT Fire Control 3: Structural Fire Fighting instructor.

Enabling Learning Objectives

1. Identify desirable traits of a live fire training instructor
 - Intrinsic motivation
 - Lifelong learner
 - Humility
 - Good listener
 - Respected by peers
 - Communication skills
 - Problem-solving skills
 - Aptitude for science
2. Identify SFT requirements for Fire Control 3: Structural Fire Fighting instructors
 - Certification
 - SFT certified Fire Fighter II
 - SFT primary instructor qualifications
 - *State Fire Training Procedures Manual*
 - Coursework
 - Fire Control 3: Structural Fire Fighting (2019) or Fire Control 3A (2009) or Fire Control 3B (2009)
 - S-404 Safety Officer or GEL-954 Safety Officer
 - From FEMA, NWCG, or SFT
 - ICS-300: Intermediate ICS for Expanding Incidents
 - Instructor: Live Fire Training - Fixed Facility
 - Required of all Fire Control 3: Structural Fire Fighting instructors
 - Instructor: Live Fire Training - Acquired Structure
 - Only required for those who wish to teach Fire Control 3: Structural Fire Fighting using an acquired structure for live fire training evolutions
 - Teaching
 - Teach Fire Control 3: Structural Fire Fighting (2019) two times under the supervision of a registered instructor
 - Instructor trainee task book
 - Initiated on the final day of Instructor: Live Fire Training - Fixed Facility
 - The mechanism through which instructor trainees demonstrate proficiency of the knowledge and skills identified and described in Instructor: Live Fire Training – Fixed Facility
 - Each task must be performed twice
 - The two instances must occur during two different courses

- The same evaluator cannot sign off on the same task twice
 - Task books must be completed within three years of initiation
 - Experience
 - Full-time paid fire fighter performing suppression duties within a recognized fire agency in California for a minimum of three years
 - Part-time/volunteer fire fighter performing suppression duties within a recognized fire agency in California for a minimum of six years
 - Authority having jurisdiction (AHJ) verification
 - A letter from the instructor trainee’s AHJ verifying the individual’s qualifications to deliver live fire training

Discussion Questions

1. Determined by instructor

Activities

1. Determined by instructor

Instructor Notes

1. See examples for correct and incorrect task book performance and signatures.

Correct: Task completed during two separate courses and evaluated by two separate individuals.

1. Assemble a comprehensive burn plan (“burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
b. Identify components of a live fire burn plan (“burn book”)	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ

Incorrect: Task completed twice during one course and evaluated by two separate individuals.

1. Assemble a comprehensive burn plan (“burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials

a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
b. Identify components of a live fire burn plan ("burn book")	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ

Incorrect: Task completed during two separate courses and evaluated by the same individual.

1. Assemble a comprehensive burn plan ("burn book") that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS
b. Identify components of a live fire burn plan ("burn book")	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS

Topic 2-3: Fire Control 3: Structural Fire Fighting Student Requirements

Terminal Learning Objective

At the end of this topic, an instructor trainee, given the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan, will be able to describe student enrollment requirements.

Enabling Learning Objectives

1. Identify requirements for student participation in Fire Control 3: Structural Fire Fighting
 - Authorization to attend training from fire agency or ALA/ARTP
 - Verification of meeting prerequisite requirements
 - SFT Fire Fighter I certification waives this requirement
 - Current SCBA fit test documentation
 - Cal/OSHA compliant structural PPE
 - Components
 - Required use
 - Capabilities and limitations
 - Completed release of liability form

Discussion Questions

1. Are there any circumstances under which you would let a student who does not meet the course prerequisites participate in live fire training?

Activities

1. Determined by instructor

Instructor Notes

1. None

Unit 3: Introduction to Live Fire Training

Topic 3-1: NFPA Standards and Legal Considerations

Terminal Learning Objective

At the end of this topic, an instructor trainee, given laws, standards, policies, and procedures, will be able to implement live fire training in accordance with NFPA 1403, Cal/OSHA, and authority having jurisdiction (AHJ) requirements.

Enabling Learning Objectives

1. Identify the significance of NFPA standards
2. Describe the contents of NFPA 1403
3. Describe how to apply NFPA 1403 to Fire Control 3: Structural Fire Fighting
 - Instructor preparation
 - Student qualifications
 - Site requirements
 - Safety requirements
 - Inspections and notifications
4. Identify legal requirements associated with live fire training
 - Cal/OSHA
 - Property owner
 - AHJ
 - Local air pollution control district (APCD) or air quality management district (AQMD)

Discussion Questions

1. How is the current edition of NFPA 1403 different from the previous edition?
2. What are the minimum staffing roles required by NFPA 1403 for live fire training?
3. What legal requirements need to be considered when conducting live fire training with:
 - Fixed facilities?
 - Acquired facilities?

Activities

1. Given a copy of NFPA 1403 and a specific chapter assignment, have students break into small groups, review their assigned chapter, and report back to group on the key paragraphs.

Instructor Notes

1. Use the activity to have students direct the learning for ELO 2.

Topic 3-2: Cardiovascular and Thermal Strain of Fire Fighting

Terminal Learning Objective

At the end of this topic, an instructor trainee, given PPE and a live fire training evolution, will be able to minimize thermal and cardiovascular strain during live fire training.

Enabling Learning Objectives

1. Describe why aerobic fitness is necessary to perform fire fighting activity
2. Describe cardiovascular and thermal responses to fire fighting
3. Describe how fire fighting activity and turnout gear impact cardiovascular and thermal strain
4. Describe how weather impacts cardiovascular and thermal strain
5. Describe warning signs for heat illnesses that may occur in live fire training and activity
6. Describe how to prevent injuries and heat illness during fire fighting training and activity
7. Describe the risk factors for cardiovascular disease
8. Describe the importance of modifiable risk factors for cardiovascular disease and ways to decrease those factors
9. Describe the goals of on-site rehabilitation
10. Describe the dangers associated with exposure to smoke and particulate matter
11. Describe the importance of proper on-site decontamination, hygiene, gear cleaning, and showers

Discussion Questions

1. What are some signs of rhabdomyolysis or other heat-related injuries/illnesses on the training ground?
2. What strategies can prevent thermal insult during live fire training?
3. What cooling activities can you perform to reduce thermal insult during live fire training?

Activities

1. Determined by instructor

Instructor Notes

1. Standards to reference during this topic:
 - NFPA 1582: Standard on Comprehensive Occupational Medical Programs for Fire Departments
 - NFPA 1583: Standard on Health-Related Fitness Programs for Fire Department Members
 - NFPA 1584: Rehabilitation Process for Members During Emergency Operations and Training Exercises
 - Title 8 California Code of Regulations (T8 CCR) Section 3395 – Heat Illness Prevention Standard
2. Give students a copy of Cal/OSHA's Employer Sample Procedures for Heat Illness Prevention (current edition).
 - See Online Instructor Resources
3. Use instructor trainee agency heat and illness prevention plans as examples.

Topic 3-3: Developing an Incident Within an Incident (IWI) Plan

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a proposed live fire training evolution, will be able to develop and communicate an incident within an incident (IWI) plan for a live fire training evolution in accordance with NFPA standards and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Identify factors that contribute to an IWI, line of duty injury, or death during live fire training
2. Describe how to mitigate common factors that can lead to line of duty injury and death during live fire training
3. Describe the purpose of the IWI plan
4. Describe the relationship between the instructor and the AHJ hosting the live fire training when responding to an IWI
 - Consistent open communication
 - Instructor shall follow the AHJ's policies and procedures
 - Agree to and document IWI plan
 - Share IWI plan with all live fire training participants
5. Describe how respond to an IWI, serious injury, or line of duty death
 - Broadcast "emergency traffic"/"mayday" and stop training
 - Initiate notifications
 - Emergency services
 - AHJ
 - Secure the scene
 - Secure and document evidence
 - PPE
 - Ignition material
 - Fuel package
 - Applicable equipment
 - Collect personal statements
 - Prohibit participants from leaving training site
 - Activate Critical Incident Stress Debriefing/Management (CISD)
 - Initiate notifications
 - Cal/OSHA (Occupational Health and Safety Administration)
 - Law enforcement
 - AHJ's risk management program
 - Serious Accident Review Team (SART)
 - Control information flow
 - Request public information officer (PIO) support
 - Release only pertinent information
 - Control information release (public, press, social media)
 - Document everything

Discussion Questions

1. How has a line of duty injury or death impacted you or your agency?
2. Why is it important to have an IWI plan in place before live fire training?
3. How does your agency handle cell phones and helmet cameras during an IWI?
4. What actions and events need to be documented during and after an IWI?

Activities

1. Given a line of duty injury or death report from *Live Fire Training: Principles and Practice*, NIOSH, or another source, have instructor trainees work in small groups to analyze the report and identify the factors that contributed to the injury or death. Have instructor trainees create a presentation to share with the group (on that day or as a homework assignment to present the next day).

Instructor Notes

1. Have instructor trainee watch all or portions of the following videos to demonstrate why avoiding complacency and lowered standards is crucial to safety:
 - Normalisation of Deviance – IAFF - Part I (Mike Mullane)
 - Normalisation of Deviance – IAFF – Part II (Mike Mullane)
2. Supporting documentation for ELO 5
 - FIRESCOPE – ICS 910: Firefighter Incident Safety and Accountability Guidelines

Unit 4: Preburn Planning

Topic 4-1: Conducting an Initial Site Evaluation

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a proposed live fire training evolution, will be able to evaluate fixed facility training sites in order to select a site that fulfills the training objectives with minimal mitigation requirements in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Identify the requirements of a viable live fire training site
 - Water supply
 - Structural integrity of building or prop
 - Maintenance and five-year inspection records
 - Visual damage inspection
 - Site preparation and cleanup
 - Space for logistics
 - Staging area
 - Burn area
 - Rehabilitation area
 - Parking
2. Describe conditions that could impact site use
 - Inadequate water supply
 - Exposure concerns

- Hazards
 - Weather
 - Public or political impact
 - Environmental impact
 - Smoke mitigation
 - Run off plan
 - Location or proximity
 - Sensitive populations
 - Protected buildings
 - Transportation corridors
3. Identify site evaluation communication and notification needs
 - Determined by AHJ
 - Vary by prop and facility type
 4. Identify site evaluation documentation needs
 - Determined by AHJ
 - Vary by prop and facility type

Discussion Questions

1. Why is it important to conduct an initial site evaluation?
2. What conditions might deter you from using a live fire training site?
 - What solutions might mitigate these conditions?
3. In your jurisdiction, who needs to be notified before you conduct a live fire training evolution?

Activities

1. Given a potential site (physical location or by video) and a proposed training assignment, have students conduct a site evaluation to answer the following questions.
 - Does it meet the requirements of a viable live fire training site for the assignment?
 - Are there any concerns?
 - What solutions could mitigate these concerns?

Instructor Notes

1. ELO 1: NFPA 1403 has a “Live Structural Fire Training Facility Inspection” document to use for evaluating a building’s structural integrity.
2. The proposed training assignments for the instructor trainee activity should come from the Instructor Demonstrations or Skills Exercises from Fire Control 3: Structural Fire Fighting.

Topic 4-2: Developing a Comprehensive Burn Plan (“Burn Book”)

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a live fire training evolution, will be able to assemble a comprehensive burn plan (often referred to as a “burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe the purpose of a live fire burn plan
 - Ensures that no part of the training process is overlooked
 - Promotes fire and life safety
 - Fulfills NFPA, SFT, and AHJ requirements
 - Demonstrates due diligence
 - Limits liability
2. Identify the components of a live fire burn plan (“burn book”)
 - SFT course-related documents
 - Burn information
 - Written plans
 - Incident Action Plan (IAP)
 - Incident Within an Incident (IWI) (emergency plan)
 - Preburn
 - Smoke
 - Rehabilitation
 - Visual plans
 - Property/site
 - Building
 - Prop
 - Permits
 - Notifications
 - Insurance
 - Permissions/approvals
 - Checklists
 - Maps
 - Policies
 - Reports
 - Critical correspondence
3. Identify records-retention requirements for burn plans
 - SFT policies
 - AHJ policies
 - Exposure
 - Time of employment + 30 years (Title 8 CCR Section 3204)
 - Medical records = 30 years (OSHA)
 - Injury / Line of duty death
 - Cal/OSHA 300 Log = 5 years
 - Cal/OSHA 301 Incident Report = 5 years
 - Medical records = 30 years (OSHA)

Discussion Questions

1. What is the purpose of a comprehensive burn plan?
2. What should you include in a burn plan?

3. How long are you required to keep the burn plan after training?

Activities

1. Determined by instructor

Instructor Notes

1. Use the Live Fire Training Burn Plan Outline document as an example. Distribute it to the students to use as a checklist when developing their own burn book.
2. ELO 3: OSHA recordkeeping requirements (29 CFR 1904)
3. Bring sample burn books for instructor trainees to review.

Topic 4-3: Conducting Preburn Preparations

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a live fire training evolution, will be able to develop a preburn plan and conduct preburn planning requirements in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Identify basic components of a preburn plan
 - Site plan drawings including all exposures
 - Floor plan detailing all rooms, hallways, exterior openings
 - Command post location
 - Apparatus positions
 - Hose and backup line positions
 - Emergency escape route locations
 - Emergency evacuation assembly area location
 - Ingress and egress routes for emergency vehicles
2. Describe preburn planning requirements
 - Develop preburn plan
 - Identify required number of instructors
 - Identify proper fuel loads
 - Determine available water supply
 - Additional requirements per NFPA 1142
 - Percentage involved
 - Exposure calculation
 - Additional floors
 - Determine required fire flow for the training prop or facility and exposure buildings
 - National Fire Academy (NFA) fire flow calculation = $(\text{length} \times \text{width})/3 \times \text{percent involvement}$
 - Iowa rate of flow formula = $(\text{length} \times \text{width} \times \text{height})/100$
 - Determine required reserve flow (50 percent of fire flow)
 - Obtain apparatus pumps that meet or exceed required fire flow for building and exposures
 - Establish separate water sources for attack and backup hose lines
 - Obtain periodic weather reports

- Designate and mark parking areas
- Establish communication plan and obtain radios
- Establish medical plan
- Establish decontamination plan
- Complete any other AHJ requirements

Discussion Questions

1. How do you determine appropriate water supply?
2. How do you determine the appropriate instructor numbers for a live fire training evolution?

Activities

1. Determined by instructor

Instructor Notes

1. Most of the ELO content comes from “Preburn Planning” on the “Live Fire Evolution Sample Checklist” from NFPA 1403.

Topic 4-4: Preparing a Training Structure

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a live fire training evolution, will be able to prepare a training prop or structure for live fire training in order to fulfill training objectives in accordance with NFPA standards and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe how to prepare a training structure for live fire training
 - Complete visual damage inspection
 - Secure utilities
 - Check and operate windows and doors, open or close as needed
 - Check and operate other training structure components
 - Implement Cal/OSHA fall protection requirements
 - Remove unnecessary interior and exterior debris
 - Eliminate or mitigate hazards
 - Toxic materials
 - Hives and vermin
 - Trees, brush, and surrounding vegetation
 - Any other exterior and interior hazards
 - Prepare fuel package
 - Initiate startup procedures (gas-fired props)
 - Complete any other AHJ requirements
 - Complete required documentation

Discussion Questions

1. How much time does it take to prepare the training facilities or props in your AHJ?
2. Who approves fuel packages in your AHJ?
 - How do you document a fuel package?

3. What type of structural integrity issues need to be mitigated before qualifying a fixed facility?

Activities

1. Determined by instructor

Instructor Notes

1. Most of the ELO content comes from “Training Structure Preparation” on the “Live Fire Evolution Sample Checklist” from NFPA 1403.

Topic 4-5: Operating and Maintaining Gas-Fired Props and Facilities

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a gas-fired prop or facility, will be able to describe how to operate and maintain a gas-fired prop in accordance with NFPA 1403, manufacturer specifications, and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe how to operate gas-fired props or facilities
 - NFPA requirements
 - AHJ requirements
 - Manufacturer specifications
2. Describe the burning characteristics of gas-fired props or facilities
3. Identify common safety features of gas-fired props or facilities
4. Identify logistical needs of using gas-fired props or facilities for live fire training
 - Personnel
 - Fuel requirements
 - Calibration procedures
5. Describe how to maintain gas-fired props or facilities

Discussion Questions

1. How do you become authorized to operate a gas-fired prop or facility?
2. What are the benefits and limitations of gas-fired props or facilities?

Activities

1. Determined by instructor

Instructor Notes

1. None

Unit 5: Fire Dynamics

Topic 5-1: Fire Chemistry and Physics

Terminal Learning Objective

At the end of this topic, an instructor trainee, given terminal and enabling learning objectives, will be able to teach students how to identify, define, and describe fire science concepts and appropriately apply them to interior structural fire fighting activities in

accordance with content identified in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan.

Enabling Learning Objectives

1. Define terminology associated with fire chemistry
 - Fire
 - Energy
 - Pyrolysis
 - Smoldering
 - Flaming combustion
 - Conservation of mass
2. Describe differences between energy and temperature
 - British Thermal Unit (BTU)/joule
 - Celsius, Fahrenheit, Kelvin
3. Describe the concept of power
 - Joule/second = watt
 - Heat release rate (HRR)
4. Describe how physical states of matter influence fire behavior
 - All matter is made of atoms
 - States of matter
 - Gases
 - No fixed volume
 - Atoms spaced far apart and not fixed (can be compressed)
 - Heated gases expand, cooled gases contract
 - Flammable range
 - Too lean (lower explosive and flammability limit)
 - Too rich (upper explosive and flammability limit)
 - Vapor density
 - Solids
 - Fixed volume
 - Atom spaced very close to each other and fixed
 - Pyrolysis
 - Surface area to mass ratio
 - Physical arrangement of fuel
 - Types
 - Physical orientation and proximity
 - Liquids
 - Fixed volume
 - Atoms spaced very close, but not fixed
 - Flashpoint
 - Fire point
 - Ignition
 - Piloted

- Auto
 - Vaporization
- 5. Identify products of combustion
 - Heat
 - Smoke
 - Vapors
 - Particles
 - Gases
 - “Toxic twins”
 - Hydrogen cyanide
 - Carbon monoxide
- 6. Identify methods of heat transfer
 - Conduction
 - Convection
 - Radiation
- 7. Describe the impact of oxygen concentration on life safety and fire growth
- 8. Identify the components of the fire triangle and fire tetrahedron

Discussion Questions

1. What is the difference between temperature and energy?
2. How does heat transfer affect turnouts?
3. What actions can you take to minimize heat transfer?
4. How does opening a door affect the flammability of smoke?

Activities

1. Determined by instructor

Instructor Notes

1. Use the following demonstrations from the Fire Control 3: Structural Fire Fighting course plan to illustrate fire science concepts. Engage instructor trainees in individual demonstrations as appropriate. Instructor trainees will have a chance to replicate these demonstrations in Topic 5-5: Fire Control 3 Classroom Instructor Demonstrations.
 - Solids
 - Instructor Demonstration 1: Dust Explosion
 - Instructor Demonstration 3: Pyrolysis
 - Pyrolysis videos:
 - What is Fire Pyrolysis? (Fire Training / June 6, 2015)
 - Pyrolysis: Decomposition of Solid Substances with Heat (Fire Gear)
 - Christmas Tree Fire Safety (LinglestownFireCo35 / June 25, 2007)
 - Gases
 - Video: Whoosh Box Fire Behavior Burn Box (State Fire Training / May 2018)
 - Combustion
 - Instructor Demonstration 2: Combustion
 - Video: Oxidation: The Chemical Process of Fire (FireNerd / 2018)

Topic 5-2: Fire Growth and Development

Terminal Learning Objective

At the end of this topic, an instructor trainee, given terminal and enabling learning objectives, will be able to teach students how to identify and describe fire growth and development concepts and appropriately apply them to interior structural fire fighting activities in accordance with content identified in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan.

Enabling Learning Objectives

1. Describe the stages of fire
 - Traditional/legacy (time vs. temperature curve)
 - Ignition
 - Incipient stage
 - Fire plume
 - “Mushrooming” (ceiling jet)
 - Hot gas layer
 - Thermal layering
 - Relative underpressure
 - Inlet/intake
 - Relative overpressure
 - Outlet/exhaust
 - Neutral plane
 - Growth stage
 - Thermal radiation (radiant heat flux to the ground)
 - Rollover/flameover
 - Possible flashover
 - Fully developed
 - Decay
 - Ventilation-limited (time vs. temperature curve)
 - Ignition
 - Incipient
 - Growth
 - Early decay
 - Oxygen depleted
 - Ventilation event (usually fire fighter intervention)
 - Rapid fire growth
 - Fully developed
 - Decay
 - Fuel depleted
2. Identify factors that influence fire behavior
 - Fuel
 - Amount
 - Type

- Arrangement
- Air
 - Available oxygen
 - Wind velocity
- Weather
 - Temperature
 - Humidity
 - Wind
- Fire compartment
 - Construction
 - Thermal properties of the enclosure
 - Energy efficiency
 - Building design/floor plans
 - Square footage and cubic footage
 - Ceiling height
 - Size, number, and arrangement of ventilation openings
 - Fuel type
 - Carbohydrates (cellulosics)
 - Hydrocarbons
 - Heat of combustion
 - Fuel loading
 - Contents vs. structure fire
- Burn regime
 - Vent limited / air controlled / air limited
 - Fuel limited / fuel controlled
- 3. Describe hostile fire events
 - Fire gas ignition
 - Rollover
 - Flashover
 - Thermal radiation feedback
 - Smoke explosion
 - Backdraft
 - Gravity current
 - Black fire

Discussion Questions

1. How do different construction techniques, materials, furnishings, and interiors impact fire behavior?
2. How does a vent-limited fire growth curve differ from a traditional/legacy fire growth curve?
 - How would you reduce the heat-release rate for each type of fire growth curve?

Activities

1. Determined by instructor

Instructor Notes

1. Demonstrate the fire growth and development principles introduced in this topic using a scalable burn prop, Class A container, or fixed facility. Engage instructor trainees in individual demonstrations as appropriate. See the following props and structures documents for overviews and guidelines:
 - Props and Structures Matrix
 - Container (Class A)
 - Fixed Facility (Class A)
 - Gas-Fired Prop
 - Scalable Burn Prop
2. ELO 2 – Recommended videos
 - New vs. Old Room Fire Final UL (jarhead 96 / December 17, 2010)
 - UL: Modern vs. Legacy Fuel (Firehouse / November 6, 2015)

Topic 5-3: Characteristics of Smoke

Terminal Learning Objective

At the end of this topic, an instructor trainee, given terminal and enabling learning objectives, will be able to teach students how to read smoke emanating from a structure and use that reading to identify pre-phenomena conditions, fire location, and spread during interior structural fire fighting activities, in accordance with content identified in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan.

Enabling Learning Objectives

1. Describe the composition of smoke
 - Particulates
 - Gases
 - Aerosols
2. Describe the attributes of smoke
 - Volume
 - Velocity
 - Turbulent vs. laminar
 - Density
 - Color
3. Identify the hazards of smoke
 - Cold smoke
 - Black fire
 - Smoke as fuel
 - Flammability range
 - Smoke as poison
 - Carbon monoxide (CO)
 - Hydrogen cyanide (HCN)

Discussion Questions

1. How can recognizing the attributes of smoke assist in tactical decision making?

2. What impact do CO and HCN have on fire fighters and occupants?
3. How do you avoid exposure to CO and HCN?

Activities

1. Determined by instructor

Instructor Notes

1. Recommended resources
 - Video: Art of Reading Smoke Vol1 Sample (Fire Engineering, November 2, 2016)
 - DVD: The Art of Reading Smoke
 - Dave Dodson / DVD or streaming video / PennWell (www.pennwellbooks.com)
 - Article: Firefighters Exposure to Smoke Particulates
 - See Online Instructor Resources
2. Reference the characteristics of smoke during demonstrations using a scalable burn prop, Class A container, or fixed facility. Engage instructor trainees in individual demonstrations as appropriate.

Topic 5-4: Water as an Extinguishing Agent

Terminal Learning Objective

At the end of this topic, an instructor trainee, given terminal and enabling learning objectives, will be able to teach students how to identify and describe concepts related to water as an extinguishing agent and apply them to interior structural fire fighting activities in accordance with content identified in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan.

Enabling Learning Objectives

1. Identify concepts associated with water as an extinguishing agent
 - Heat
 - Latent heat of vaporization
 - Sensible heat
 - Specific heat of water
 - Specific heat of steam
2. Describe how water and steam impact the fire tetrahedron
 - Removes (transfers) heat (heat)
 - Stops pyrolysis (fuel)
 - Reduces oxygen percentage (oxygen)
 - Interrupts chemical chain reaction (chemical chain reaction)
3. Describe gas cooling
 - Droplet size
 - Hang time
 - Flow rate
 - Attack angle
 - Cone angle
 - Application duration

4. Describe surface cooling
 - Stop pyrolysis
 - Extinguish smoldering combustion
5. Describe cooling capacity
 - Raising water to vaporization temperature
 - Vaporization of water
6. Describe gas expansion and contraction
 - Fire gas/smoke
 - Steam

Discussion Questions

1. Can you push fire with water application?
 - Why or why not?
2. What value does steam production have in fire attack?
3. Why is it important to achieve full extinguishment?

Activities

1. Determined by instructor

Instructor Notes

1. Recommended resources for Discussion Question 1
 - Video: Scientific Research for the Development of More Effective Tactics: Governors Island Experiments (July 2012)
(<https://ulfirefightersafety.org/resources.html#training/scientific-research-for-the-development-of-more-effective-tactics-governors-island-experiments>)
 - Document: Impact of Ventilation on Fire Behavior in Legacy and Contemporary Residential Construction (section 9.11 Pushing Fire, page 203)
 - See Online Instructor Resources
 - Fire Safety Research Institute (FSRI) Study: Impact of Fire Attack Utilizing Interior and Exterior Steams on Firefighter Safety and Occupational Survival: Full Scale Experiments
 - See Online Instructor Resources
 - Fire Safety Research Institute (FSRI) Study: Impact of Fire Attack Utilizing Interior and Exterior Streams on Firefighter Safety and Occupational Survival: Water Mapping
 - See Online Instructor Resources
2. Reference using water as an extinguishing agent during demonstrations using a scalable burn prop, Class A container, gas-fired prop or fixed facility. Engage instructor trainees in individual demonstrations as appropriate.

Topic 5-5: Fire Control 3 Classroom Instructor Demonstrations

Terminal Learning Objective

At the end of this topic, an instructor trainee, given the Fire Control 3: Structural Fire Fighting course plan Instructor Demonstrations and associated equipment and materials, will be able to demonstrate principles of fire dynamics in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe how to set up and demonstrate Instructor Demonstration 1: Dust Explosion
2. Describe how to set up and demonstrate Instructor Demonstration 2: Combustion
3. Describe how to set up and demonstrate Instructor Demonstration 3: Pyrolysis

Discussion Questions

1. Determined by instructor

Activities

1. Divide instructor trainees into groups. Have different groups set up and demonstrate/teach the Fire Control 3: Structural Fire Fighting course plan Instructor Demonstrations to the class.
 - Instructor Demonstration 1: Dust Explosion
 - Instructor Demonstration 2: Combustion
 - Instructor Demonstration 3: Pyrolysis

Instructor Notes

1. None

Topic 5-6: Fire Control 3 Fireground Instructor Demonstrations

Terminal Learning Objective

At the end of this topic, an instructor trainee, given the Fire Control 3: Structural Fire Fighting course plan and associated equipment and materials, will be able to demonstrate principles of fire dynamics in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe how to set up and demonstrate the principles taught in Topic 2-2: Fire Growth and Development
2. Describe how to set up and demonstrate the principles taught in Topic 2-3: Characteristics of Smoke
3. Describe how to set up and demonstrate the principles taught in Topic 2-4: Water as an Extinguishing Agent
4. Describe how to set up and demonstrate the principles taught in Topic 3-4: Identify Flow Paths and Manage Air Tracks

Discussion Questions

1. Determined by instructor

Activities

1. Determined by instructor

Instructor Notes

1. The topic numbers and titles listed in the ELOs above correspond to the Fire Control 3: Structural Fire Fighting course plan, not this course plan.
2. Use scalable props on the fireground to teach the instructor trainees how to demonstrate these principles when teaching the Fire Dynamics unit of Fire Control 3: Structural Fire Fighting. Allow time for a question and answer session after each demonstration.

- Video Resources
 - Whoosh Box Fire Behavior Burn Box (State Fire Training / 2018)
 - Single Compartment Fire Behavior Burn Box (State Fire Training / 2018)
 - Four Compartment Fire Behavior Burn Box (State Fire Training / 2018)

Unit 6: Set Up and Walk Through

Topic 6-1: Implementing an Incident Action Plan

Terminal Learning Objective

At the end of this topic, an instructor trainee, given ICS forms and live fire training evolutions, will be able to develop and implement an incident action plan (IAP) for a live fire training course in accordance with the policies and the procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe how to complete the ICS forms that make up an IAP
 - ICS 201: Incident Briefing
 - ICS 204: Assignment List
 - ICS 205: Incident Radio Communications Plan
 - ICS 206: Medical Plan
 - ICS 215: Operational Planning Worksheet
 - ICS 215A: Incident Action Plan Safety Analysis

Discussion Questions

1. How does the complexity of a live fire training course impact an IAP?
2. How does the IAP differ from the comprehensive burn plan (“burn book”)?

Activities

1. Given a proposed live fire training course with multiple evolutions, divide the class into groups and have each group complete one ICS form. Have students share their results with the group.

Instructor Notes

1. None

Topic 6-2: Securing a Water Supply

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a prop or facility and a live fire training evolution, will be able to secure a water supply with sufficient rate and duration for control and extinguishment of the training fire, backup lines to protect personnel, and protection of exposed property.

Enabling Learning Objectives

1. Describe minimum water supply requirements for live fire training evolutions including water for:
 - Control and extinguishment of training fire

- Backup line(s) to protect personnel
 - Protecting exposed property
2. Identify hose line placement for live fire training evolutions based on:
 - Training objectives
 - Fuel package
 - Number of evolutions/training stations running simultaneously
 - Exposure protection
 - Unforeseen situations
 3. Identify conditions that allow for a single source water supply

Discussion Questions

1. Who is responsible for the ensuring adequate water supply?

Activities

1. Determined by instructor

Instructor Notes

1. None

Topic 6-3: Conducting an Instructor Briefing and Preburn Walk Through

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a live fire training evolution, will be able to conduct an instructor briefing and a preburn walk through with all instructors and personnel supporting the live fire training evolution in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe the instructor walkthrough process
 - Identify crew and instructor assignments
 - Incident commander
 - Safety officer
 - Medical team
 - "2 in/2 out"
 - Instructor in charge
 - Instructor(s)
 - Instructor trainee(s)
 - Fire control team
 - Ignition officer
 - Water supply officer
 - Pump operator(s)
 - Logistics
 - Instructor in charge briefs all participating instructors
 - Incident action plan (IAP)
 - Incident within an incident plan (IWI)
 - Training structure/prop layout
 - Crew and instructor assignments

- Participant rotations
- Safety officer briefs all participating instructors
 - Safety plan
 - Current and anticipated weather
 - Evacuation signal and procedures
 - Review final “Go/No-Go Checklist”
 - Check PPE
 - Check training communications channels
 - Review decontamination plan
- Initiate site plan
 - Command post
 - Logistics
 - Food/water
 - SCBA air
 - Restrooms/hand washing
 - Apparatus
 - Position vehicles
 - Deploy hose lines
 - Rehabilitation/medical
 - Shade/hydration
 - Decontamination
- Issue final notifications and approvals
 - Communications center
 - Adjoining jurisdictions (if applicable)
 - Law enforcement (if applicable)
 - Impacted populations

Discussion Questions

1. What types of weather would impact the decision to burn?
2. When do you make the final “go/no-go” decision?

Activities

1. Determined by instructor

Instructor Notes

1. None

Topic 6-4: Building Fuel Packages

Terminal Learning Objective

At the end of this topic, an instructor trainee, given fuel materials, a prop or facility, and a live fire training evolution, will be able to build a fuel load that is sufficient in material, size, and scale for the prop or facility and meets the objectives of the live fire training evolution.

Enabling Learning Objectives

1. Identify authorized fuel materials per NFPA 1403
2. Identify unauthorized fuel materials per NFPA 1403

3. Identify factors (openings, building materials, room size, etc.) that impact fire growth development and spread
 - Select fuel loads to avoid uncontrolled flashover or backdraft conditions
4. Identify appropriate locations for fuel packages
5. Describe how to build fuel packages that are the appropriate type, orientation, and size to meet live fire training evolution objectives

Discussion Questions

1. What are the impacts of placing fuel packages near entrances or exits?
2. What factors impact the type and size of fuels used to make fuel packages?

Activities

1. Activity 6-4: Building Fuel Packages for Fire Behavior Evolutions
2. Activity 6-4: Building Fuel Packages for Fire Attack Evolutions

Instructor Notes

1. For ELO 5, consider breaking the class into groups to address fuel packages appropriate for different types of props and facilities using photos and examples.

Topic 6-5: Conducting a Student Preburn Walk Through

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a live fire training evolution, will be able to conduct a preburn walk through with all students participating the live fire training evolution in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe preburn “walkthrough” procedures
 - Brief all participants
 - Training objectives
 - Training structure/prop layout
 - Demonstrate door and window operations
 - Crew and instructor assignments
 - Participant rotations
 - Safety briefing
 - Evacuation signal and procedures
 - Decontamination procedures
 - Check all hose lines
 - Sufficient size for area of fire involvement
 - Adequate number for personnel
 - Charged and test flowed
 - Supervised by qualified instructors
 - Position necessary tools and equipment
 - Check participants
 - All equipment properly worn
 - SCBA with adequate volume

- Communications check per communications plan
- 2. Identify NFPA 1403 standards related to playing the role of a victim during live fire training
 - No person shall be a victim
 - Rescue mannequins in fire fighter PPE shall be specially marked

Discussion Questions

1. Who is responsible for performing PPE checks on Fire Control 3: Structural Fire Fighting students prior to entry into a live fire area?
2. Under what circumstances can you use people as victims during live fire training?
3. What is your AHJ's evacuation signal?

Activities

1. Determined by instructor

Instructor Notes

1. Most of the ELO content comes from "Preburn Procedures" on the "Live Fire Evolution Sample Checklist" from NFPA 1403.

Unit 7: Delivering Live Fire Training Evolutions

Topic 7-1: Operating as Instructor in Charge (Command and Control)

Terminal Learning Objective

At the end of this topic, an instructor trainee, given an incident action plan and live fire training evolutions, will be able to operate as the "instructor in charge" of a live fire training course, supervising instructors and maintaining unity of command and span of control.

Enabling Learning Objectives

1. Describe the qualifications of an instructor in charge
 - NFPA 1403
2. Describe the roles and responsibilities of an instructor in charge
 - Assign instructors to functional crews, backup lines, and functional assignments
 - Rest and rehabilitation of participants and instructors
 - Medical monitoring of participants and instructors
 - Instructor assignments and rotation schedule
 - Verify instructor qualifications to deliver live fire training
 - Assign extra instructors to mitigate extreme weather, large class size, or long class duration
 - Maintain awareness of weather conditions
 - Perform final weather check before ignition
 - Additional requirements for conducting live fire training evolutions with flow path and ventilation-controlled conditions
3. Describe the roles and responsibilities of an instructor
 - Verify PPE is worn according to manufacturers instructions
 - Monitor and supervise students during live fire evolutions

Discussion Questions

1. What are the roles and responsibilities of the instructor in charge?
2. Is the instructor in charge also the incident commander?
3. What is the difference between an instructor and an instructor in charge?

Activities

1. Determined by instructor

Instructor Notes

1. None

Topic 7-2: Operating as Safety Officer

Terminal Learning Objective

At the end of this topic, an instructor trainee, given an incident action plan and live fire training evolutions, will be able to operate as the safety officer for a live fire training course so that hazards and associated risks are identified, unsafe acts are prevented, and unsafe conditions are mitigated.

Enabling Learning Objectives

1. Describe the qualifications of a safety officer
 - NFPA 1403
2. Describe the roles and responsibilities of a safety officer
 - Review the comprehensive burn plan (“burn book”)
 - Review the IAP
 - Review the IWI plan
 - Review the medical plan
 - Review the personnel rehabilitation plan
 - Review the decontamination plan
 - Ensure accountability of personnel
 - Prevent unsafe acts
 - Eliminate unsafe conditions
3. Describe specialized training required for a live fire training safety officer
 - Gas-fired props
 - Flow path and ventilation-controlled conditions

Discussion Questions

1. Can a safety officer have other assignments during live fire training?
2. When would it be appropriate to have more than one safety officer during live fire training?

Activities

1. Determined by instructor

Instructor Notes

1. Although there is no formal activity for this learning objective, the instructor trainees can practice operating as a safety officer during any live fire activities or demonstrations conducted as part of this course.

Topic 7-3: Implementing Student Rotations

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a live fire training evolution, will be able to plan, communicate, and oversee student rotations for a live fire training evolution in a manner that provides the greatest opportunity for meeting objectives while minimizing student risk.

Enabling Learning Objectives

1. Describe how to plan student rotations
 - Impacted by number of students
 - Impacted by training objectives
 - Impacted by prop or facility
2. Describe when to communicate rotations with students
 - Prior to IDLH conditions
3. Describe what to communicate to students
 - Timing
 - Tasks
 - Travel routes
 - Primary and secondary egress
 - Order of operations
 - Emergency plans
 - Emergency assembly point
 - Hazards and risks
 - Postburn procedures
 - Meeting location
 - Decontamination
4. Describe conditions to watch for during a live fire training evolution
 - Panic
 - PPE malfunction or failure
 - Low air alarms
 - Excessive heat release
 - Unintended fire conditions

Discussion Questions

1. Under what conditions should an instructor interrupt a live fire training evolution?
2. What procedures does your agency follow for PPE or SCBA malfunction or failure?

Activities

1. Determined by instructor

Instructor Notes

1. Although there is no formal activity for this learning objective, the instructor trainees can practice implementing student rotations during any live fire activities or demonstrations conducted as part of this course.

Topic 7-4: Implementing the “2 In/2 Out” or RIC Requirement

Terminal Learning Objective

At the end of this topic, an instructor trainee, given laws, regulations, and a live fire training evolution, will be able to implement the “2 in/2 out” or rapid intervention crew/company (RIC) requirement during a live fire training evolution.

Enabling Learning Objectives

1. Identify legislation that sets “2 in/2 out” requirements
 - 29 CFR 1910.134(g)(4)(i)
2. Identify conditions that require a “2 out” team
3. Describe the roles and responsibilities of the “2 out” team
4. Identify the type of PPE worn by the “2 out” team
5. Identify appropriate staging locations for the “2 out” team

Discussion Questions

1. Under what conditions would you activate the “2 out” team?
2. How are RIC and “2 out” teams similar or different?

Activities

1. Determined by instructor

Instructor Notes

1. Although there is no formal activity for this learning objective, the instructor trainees can practice to implement the “2 in/2 out” or rapid intervention crew/company (RIC) requirement during any live fire activities or demonstrations conducted as part of this course.

Topic 7-5: Igniting Fuel Packages

Terminal Learning Objective

At the end of this topic, an instructor trainee, given NFPA 1403, fuel materials, and an ignition source, will be able to ignite, maintain, and control a live fire and verbally describe the roles and responsibilities of an ignition officer.

Enabling Learning Objectives

1. Identify the members of a fire control team
2. Describe the role and responsibilities of an ignition officer
3. Describe the roles and responsibilities of the other members of a fire control team
4. Describe required PPE for the fire control team
5. Describe hose line requirements for the fire control team
6. Identify the makes the decision to ignite
7. Identify who ignites the fuel package
8. Describe how to light fuel packages based on:
 - Fuel type
 - Physical arrangement
 - Lighting sequence
 - Training objectives
9. Identify safety considerations associated with ignition

- Ensure flame area is clear of personnel prior to ignition
- Alternate ignition officer responsibilities after each ignition

Discussion Questions

1. To whom does the ignition officer report?
2. What is the minimum number of members for a fire control team?

Activities

1. Have students practice ignition using the fuel packages developed during Activity 6-4: Building Fuel Packages for Fire Behavior Evolutions and Activity 6-4: Building Fuel Packages for Fire Attack Evolutions.

Instructor Notes

1. None

Topic 7-6: Executing and Evaluating Required Fire Control 3 Skills Exercises

Terminal Learning Objective

At the end of this topic, an instructor trainee, given demonstrations of Fire Control 3: Structural Fire Fighting course plan Skills Exercises and associated equipment and materials, will be able to set up and evaluate students completing the required Fire Control 3: Structural Fire Fighting Skills Exercises in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Identify the objectives a student must meet in order to successfully complete Skills Exercise 2: Risk Assessment and Door Entry
2. Describe how to set up Skills Exercise 2: Risk Assessment and Door Entry
3. Identify the objectives a student must meet in order to successfully complete Skills Exercise 3: Stretching, Flaking, and Advancing an Attack Line
4. Describe how to set up Skills Exercise 3: Stretching, Flaking, and Advancing an Attack Line
5. Identify the objectives a student must meet in order to successfully complete Skills Exercise 4: Water Application
6. Describe how to set up Skills Exercise 4: Water Application
7. Identify the objectives a student must meet in order to successfully complete Skills Exercise 5: Fire Attack
8. Describe how to set up Skills Exercise 5: Fire Attack

Discussion Questions

1. Determined by instructor

Activities

1. Determined by instructor

Instructor Notes

1. Demonstrate how to set up and teach each required Fire Control 3: Structural Fire Fighting student skills exercise.
2. Allow time for a questions and answer session after each demonstration.

Topic 7-7: Executing and Evaluating Optional Fire Control 3 Skills Exercises

Terminal Learning Objective

At the end of this topic, an instructor trainee, given demonstrations of Fire Control 3: Structural Fire Fighting course plan Skills Exercises and associated equipment and materials, will be able to set up and evaluate students completing the optional Fire Control 3: Structural Fire Fighting Skills Exercises in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Identify the objectives a student must meet in order to successfully complete Skills Exercise 6: Transitional Fire Attack
2. Describe how to set up Skills Exercise 6: Transitional Fire Attack
3. Identify the objectives a student must meet in order to successfully complete Skills Exercise 7: Interior Attic Fire Attack
4. Describe how to set up Skills Exercise 7: Interior Attic Fire Attack
5. Identify the objectives a student must meet in order to successfully complete Skills Exercise 8: Below Grade (Basement) Fire Attack
6. Describe how to set up Skills Exercise 8: Below Grade (Basement) Fire Attack
7. Identify the objectives a student must meet in order to successfully complete Skills Exercise 9: VEIS
8. Describe how to set up Skills Exercise 9: VEIS
9. Identify the objectives a student must meet in order to successfully complete Skills Exercise 10: Ventilation
10. Describe how to set up Skills Exercise 10: Ventilation
11. Identify the objectives a student must meet in order to successfully complete Skills Exercise 11: Portable Water Extinguisher Attack
12. Describe how to set up Skills Exercise 11: Portable Water Extinguisher Attack

Discussion Questions

1. Determined by instructor

Activities

1. Determined by instructor

Instructor Notes

1. Demonstrate how to set up and teach each optional Fire Control 3: Structural Fire Fighter student skills exercise.
2. Allow time for a questions and answer session after each demonstration.

Unit 8: Postburn Procedures

Topic 8-1: Postburn Procedures

Terminal Learning Objective

At the end of this topic, an instructor trainee, given a live fire training evolution, will be able to conduct postburn procedures in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).

Enabling Learning Objectives

1. Describe postburn procedures
 - Account for all personnel
 - Overhaul remaining fires
 - Decontaminate, inspect, and rehabilitate
 - Personnel
 - PPE
 - Equipment
 - Inspect training facilities for stability and hazards
 - Secure training facilities
 - Conduct training critique (after action review/AAR)
 - Complete records and reports
 - Demobilize resources and personnel
 - Complete any other AHJ requirements
 - Release property to owner
 - Close out notifications

Discussion Questions

1. Why is it important to check the students' gear before and after live fire training?
2. How do you document an injury acquired during training?
3. What steps can you take to minimize exposure during decontamination?
4. What records and reports are required after a burn?

Activities

1. Determined by instructor

Instructor Notes

1. Most of the ELO content comes from "Postburn Procedures" on the "Live Fire Evolution Sample Checklist" from NFPA 1403.

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Instructor: Live Fire Training Fixed Facility

Instructor Task Book [Month Year]



California Department of Forestry and Fire Protection
Office of the State Fire Marshal
State Fire Training

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Purpose and Process

Purpose

The State Fire Training Instructor: Live Fire Training – Fixed Facility instructor trainee task book is a performance-based document. It lists the minimum Job Performance, Certification, Education, and Position requirements a candidate must meet in order to teach Fire Control 3: Structural Fire Fighting.

Initiation and Completion Process

Candidate Responsibilities

The candidate is the individual pursuing instructor registration.

The candidate shall:

1. Complete the “Candidate” and “Task Book Initiation Requirements” sections on the Task Book Initiation page.
 - Please print.
2. Complete a block on the Signature Verification page with an original wet-ink signature.
3. Complete all Experience requirements.
4. Complete all Position requirements.
5. Obtain the registered instructor’s signature as approval to open the task book using the “Task Book Initiation Approval” section on the Task Book Initiation page.
 - A candidate may not obtain evaluation signatures for any job performance requirements completed prior to the initiation approval date.
6. Sign and date the “Candidate” verification section on the Review and Approval page with an original wet-ink signature.
7. Complete all Job Performance Requirements.
 - Ensure that an evaluator initials, signs, and dates each task to verify completion.
8. Obtain his or fire chief’s original wet-ink signature on the “Candidate’s Fire Chief” verification section on the Review and Approval page.
9. Create and retain a physical or scanned digital copy of the complete task book.
10. Submit the completed task book and any supporting documentation to State Fire Training when registering to instruct Fire Control 3: Structural Fire Fighting.

It is the candidate’s responsibility to routinely check the State Fire Training website for updates and addendums to open task books. When State Fire Training issues an update or addendum to an open task book, that update, or addendum is required for task book completion.

A candidate should not submit a task book until he or she has completed all requirements and obtained all signatures. State Fire Training will reject and return an incomplete task book.

Final Draft

Evaluator Responsibilities

An evaluator is any individual who verifies that the candidate can satisfactorily execute a job performance requirement.

A qualified evaluator is a State Fire Training Registered Instructor in Fire Control 3: Structural Fire Fighting.

An instructor task book may have more than one evaluator.

All evaluators shall:

1. Complete a block on the Signature Verification page with an original wet-ink signature.
2. Review and understand the candidate's instructor task book requirements and responsibilities.
3. Verify the candidate's successful completion of one or more job performance requirements through observation or review.
 - A candidate may not obtain evaluation signatures for any job performance requirements completed prior to the initiation approval date.
 - Sign all appropriate lines in the instructor task book with an original wet-ink signature or approved digital signature (e.g. DocuSign or Adobe Sign; a scanned copy of a signature is not acceptable) to record demonstrated performance of tasks.

Registered Instructor Responsibilities

The State Fire Training Registered Instructor of the Instructor: Live Fire Training – Fixed Facility course is the individual who reviews and confirms the completion of a candidate's task book initiation requirements.

The registered instructor shall:

1. Review and understand the candidate's instructor task book requirements and responsibilities.
2. Verify that the candidate has met all requirements and prerequisites prior to initiating the candidate's task book.
3. Open the candidate's task book by signing the "Task Book Initiation Approval" section on the Task Book Initiation page with a wet-ink signature.

Fire Chief (or Fire Technology Director) Responsibilities

The fire chief (or authorized designee) is the individual who reviews and confirms the completion of a candidate's instructor task book.

The fire chief (or authorized designee) shall:

4. Review and understand the candidate's instructor task book requirements and responsibilities.
5. Verify that the candidate has met all requirements and prerequisites.
6. Verify that the candidate has obtained the appropriate signatures to verify successful completion of each job performance requirement.
7. Sign and date the "Fire Chief" verification section on the Review and Approval page with an original wet-ink signature.
 - If signing as an authorized designee, verify that your signature is on file with State Fire Training.

Submission and Review Process

A candidate should not submit a task book until he or she has completed all requirements and obtained all signatures. State Fire Training will reject and return an incomplete task book.

Submit the completed task book and any supporting documentation to State Fire Training.

Office of the State Fire Marshal
State Fire Training
Attn: Instructor Registration
2251 Harvard Street, Suite 400
Sacramento, CA 95815

State Fire Training reviews all submitted task books.

If the task book is complete, State Fire Training will authorize the task book and retain a digital copy of the authorized task book in the candidate's career file.

If the task book is incomplete, State Fire Training will return the task book with a notification indicating what needs to be completed prior to resubmission.

Completion of this instructor task book is one step in the instructor registration process. Please refer to the *State Fire Training Procedures Manual* for the complete list of qualifications required to teach Fire Control 3: Structural Fire Fighting.

Task Book Initiation

The instructor trainee task book may be initiated on the final day of the Instructor: Live Fire Training – Fixed Facility course.

Each JPR shall be conducted, reviewed, and validated after the candidate initiates the task book.

This task book must be completed within three years of initiation.

Candidate

Name: _____

SFT ID Number: _____

Fire Agency: _____

Task Book Initiation Requirements

The following requirements must be completed prior to opening this task book.

Certification

Fire Fighter II or Company Officer

Complete

Instructor II, or Current Registered Instructor with State Fire Training

Education

ICS-300

Complete

Safety Officer, S-404, or Safety Officer, L-954, or FDSOA Incident Safety Officer

Fire Control 3B: Structural Fire Fighting in Live-fire Simulators (2009) or;

Fire Control 3: Structural Fire Fighting (2018)

Instructor: Live Fire Training – Fixed Facility (2018)

Position

Fire Fighter for three (3) years full-time, or six (6) years volunteer.

Complete

Task Book Initiation Approval

SFT Registered Instructor: _____
Registered Instructor Live Fire Training Fixed Facility Printed Name

I, the undersigned, am the person authorized to verify the candidate has successfully completed the Instructor: Live Fire Training – Fixed Facility course and verify the candidate’s task book requirements and to initiate this task book in partial fulfillment of the requirements to teach Fire Control 3: Structural Fire Fighting. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements to open the task book documented herein are true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documents may be cause for rejection.

Registered Instructor Live Fire Training Fixed Facility Signature

Date

Signature Verification

The following individuals are SFT registered Fire Control 3: Structural Fire Fighting instructors and have the authority to verify portions of this instructor task book using the signature recorded below.

Please print except for the Signature line. Print and add additional signature pages as needed.

Name: _____	Name: _____
Job Title: _____	Job Title: _____
Organization: _____	Organization: _____
Signature: _____	Signature: _____
Name: _____	Name: _____
Job Title: _____	Job Title: _____
Organization: _____	Organization: _____
Signature: _____	Signature: _____
Name: _____	Name: _____
Job Title: _____	Job Title: _____
Organization: _____	Organization: _____
Signature: _____	Signature: _____
Name: _____	Name: _____
Job Title: _____	Job Title: _____
Organization: _____	Organization: _____
Signature: _____	Signature: _____
Name: _____	Name: _____
Job Title: _____	Job Title: _____
Organization: _____	Organization: _____
Signature: _____	Signature: _____

Task Book Requirements

Job Performance Requirements

This instructor task book includes the training objectives included in the Instructor Live Fire Training – Fixed Facility course plan, which is based on NFPA 1403: Standard on Live Fire Training Evolutions (2018).

The candidate must complete each job performance requirement (JPR) in accordance with the standards of the authority having jurisdiction (AHJ) or the National Fire Protection Association (NFPA), whichever is more restrictive.

Each task must be performed twice.

- The two instances must occur during two different courses.
- The same evaluator cannot sign off on the same task twice.

Examples of correct and incorrect evaluation:

Correct: Task completed during two separate courses and evaluated by two separate individuals.

1. Assemble a comprehensive burn plan (“burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
b. Identify components of a live fire burn plan (“burn book”)	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ

Incorrect: Task completed twice during one course but evaluated by two separate individuals.

1. Assemble a comprehensive burn plan (“burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
b. Identify components of a live fire burn plan (“burn book”)	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ

Incorrect: Task completed during two separate courses but evaluated by the same individual.

1. Assemble a comprehensive burn plan (“burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS
b. Identify components of a live fire burn plan (“burn book”)	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS

Job Performance Requirements

Introduction to Fire Control 3: Structural Fire Fighting

2. Identify the goals and objectives for students enrolled in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify Course Details						
b. Identify Required Resources						
c. Identify key terminology						
d. Identify Units and Topics						
e. Identify Props and Structures documents						
f. Identify Instructor Demonstrations						
g. Identify Skills Exercises						
3. Identify the State Fire Training (SFT) requirements for becoming a registered SFT Fire Control 3: Structural Fire Fighting instructor.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify desirable traits of live fire training instructors						
b. Identify SFT requirements for Fire Control 3: Structural Fire Fighting instructors						

4. Describe student requirements for enrollment in Fire Control 3: Structural Fire Fighting	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Authorization to attend training from fire agency or ALA/ARTP						
b. Verification of meeting prerequisite requirements						
c. Current SCBA fit test documentation						
d. Cal/OSHA compliant structural PPE						
e. Completed release of liability form						

Introduction to Live Fire Training

5. Implement live fire training in accordance with NFPA 1403, Cal/OSHA, and authority having jurisdiction (AHJ) requirements.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify significance of NFPA standards						
b. Describe contents of NFPA 1403						
c. Describe how to apply NFPA 1403 to Fire Control 3: Structural Fire Fighting						
d. Identify legal requirements associated with live fire training						

6. Minimize thermal and cardiovascular strain during live fire training.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe why aerobic fitness is necessary to perform fire fighting activity						
b. Describe cardiovascular and thermal responses to fire fighting						
c. Describe how fire fighting activity and turnout gear impact cardiovascular and thermal strain						
d. Describe how weather impacts cardiovascular and thermal strain						
e. Describe warning signs for heat illnesses that may occur in live fire training and activity						
f. Describe how to prevent injuries and heat illness during fire fighting training and activity						
g. Describe risk factors for cardiovascular disease						
h. Describe importance of modifiable risk factors for cardiovascular disease and ways to decrease those factors						
i. Describe goals of on-site rehabilitation						
j. Describe dangers associated with exposure to smoke and particulate matter						
k. Describe importance of proper on-site decontamination, hygiene, gear cleaning, and showers						

7. Develop and communicate an incident within an incident (IWI) plan for a live fire training evolution in accordance with NFPA standards and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify factors that contribute to an IWI, line of duty injury, or death during live fire training						
b. Describe how to mitigate common factors that can lead to line of duty injury and death during live fire training						
c. Describe purpose of IWI plan						
d. Describe relationship between instructor and AHJ hosting the live fire						
e. Describe how respond to an IWI, serious injury, or line of duty death						

Preburn Planning

8. Evaluate fixed facility training sites in order to select a site that fulfills the training objectives with minimal mitigation requirements in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify requirements of a viable live fire training site						
b. Describe conditions that could impact site use						
c. Identify site evaluation communication and notification needs						
d. Identify site evaluation documentation needs						

9. Assemble a comprehensive burn plan (“burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
d. Describe purpose of a live fire burn plan						
e. Identify components of a live fire burn plan (“burn book”)						
f. Identify records-retention requirements for burn plans						
10. Develop a preburn plan and conduct preburn planning requirements in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify basic components of a preburn plan						
b. Describe preburn planning requirements						
11. Prepare a training prop or structure for live fire training in order to fulfill training objectives in accordance with NFPA standards and the policies and procedures of the authority having jurisdiction (AHJ).	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe how to prepare a training structure for live fire training						

12. Describe how to operate and maintain a gas-fired prop in accordance with NFPA 1403, manufacturer specifications, and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe how to operate gas-fired props or facilities						
b. Describe burning characteristics of gas-fired props or facilities						
c. Identify common safety features of gas-fired props or facilities						
d. Identify logistical needs of gas-fired props or facilities for live fire training						
e. Describe how to maintain gas-fired props or facilities						

Fire Dynamics

13. Teach students how to identify, define, and describe fire science concepts and appropriately apply them to interior structural fire fighting activities in accordance with content identified in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Define terminology associated with fire chemistry						
b. Describe differences between energy and temperature						
c. Describe concept of power						
d. Describe how physical states of matter influence fire behavior						
e. Identify products of combustion						
f. Identify methods of heat transfer						

g. Describe impact of oxygen concentration on life safety and fire growth						
h. Identify components of fire triangle and fire tetrahedron						
14. Teach students how to identify and describe fire growth and development concepts and appropriately apply them to interior structural fire fighting activities in accordance with content identified in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe stages of fire						
b. Identify factors that influence fire behavior						
c. Describe hostile fire events						
15. Teach students how to read smoke emanating from a structure and use that reading to identify pre-phenomena conditions, fire location, and spread during interior structural fire fighting activities, in accordance with content identified in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe composition of smoke						
b. Describe attributes of smoke						
c. Identify hazards of smoke						

16. Teach students how to identify and describe concepts related to water as an extinguishing agent and apply them to interior structural fire fighting activities in accordance with content identified in the State Fire Training (SFT) Fire Control 3: Structural Fire Fighting course plan.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify concepts associated with water as an extinguishing agent						
b. Describe how water and steam impact fire tetrahedron						
c. Describe gas cooling						
d. Describe surface cooling						
e. Describe cooling capacity						
17. Demonstrate principles of fire dynamics in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe how to set up and demonstrate Instructor Demonstration 1: Dust Explosion						
b. Describe how to set up and demonstrate Instructor Demonstration 2: Combustion						
c. Describe how to set up and demonstrate Instructor Demonstration 3: Pyrolysis						
d. Describe how to set up and demonstrate the principles taught in Topic 2-2: Fire Growth and Development						
e. Describe how to set up and demonstrate the principles taught in Topic 2-3: Characteristics of Smoke						
f. Describe how to set up and demonstrate the principles taught in Topic 2-4: Water as an Extinguishing Agent						
g. Describe how to set up and demonstrate the principles taught in Topic 3-4: Identify Flow Paths and Manage Air Tracks						

Set Up and Walk Through

18. Develop and implement an incident action plan (IAP) for a live fire training course in accordance with the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe how to complete an ICS 201: Incident Briefing form						
b. Describe how to complete an ICS 204: Assignment List form						
c. Describe how to complete an ICS 205: Incident Radio Communications Plan form						
d. Describe how to complete an ICS 206: Medical Plan form						
e. Describe how to complete an ICS 215: Operational Planning Worksheet form						
f. Describe how to complete an ICS 215A: Incident Action Plan Safety Analysis form						
19. Secure a water supply with sufficient rate and duration for control and extinguishment of the training fire, backup lines to protect personnel, and protection of exposed property.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe minimum water supply requirements for live fire training evolutions						
b. Identify hose line placement for live fire training evolutions						
c. Identify conditions that allow for a single source water supply						

20. Conduct an instructor briefing and a preburn walk through with all instructors and personnel supporting the live fire training evolution in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe how to identify crew and instructor assignments						
b. Describe how instructor in charge briefs all participating instructors						
c. Describe how safety officer briefs all participating instructors						
d. Describe how to initiate site plan						
e. Describe how to Issue final notifications and approvals						
21. Build a fuel load that is sufficient in material, size, and scale for the prop or facility and meets the objectives of the live fire training evolution.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify authorized fuel materials per NFPA 1403						
b. Identify unauthorized fuel materials per NFPA 1403						
c. Identify factors that impact fire growth development and spread						
d. Identify appropriate locations for fuel packages						
e. Describe how to build fuel packages that are the appropriate type, orientation, and size to meet live fire training evolution objectives						
f. Identify authorized fuel materials per NFPA 1403						

22. Conduct a preburn walk through with all students participating the live fire training evolution in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe how to brief all participants						
b. Describe how to check all hose lines						
c. Describe how to position necessary tools and equipment						
d. Describe how to check participants						
e. Describe how to conduct a communications check per communications plan						
f. Describe how to check all hose lines						
g. Identify NFPA 1403 standards related to playing the role of a victim during live fire training						

Delivering Live Fire Training Evolutions

23. Operate as the “instructor in charge” of a live fire training course, supervising instructors and maintaining unity of command and span of control.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe qualifications of an instructor in charge						
b. Describe roles and responsibilities of an instructor in charge						
c. Describe roles and responsibilities of an instructor						

24. Operate as the safety officer for a live fire training course so that hazards and associated risks are identified, unsafe acts are prevented, and unsafe conditions are mitigated.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe qualifications of a safety officer						
b. Describe roles and responsibilities of a safety officer						
c. Describe specialized training required for a live fire training safety officer						
25. Plan, communicate, and oversee student rotations for a live fire training evolution in a manner that provides the greatest opportunity for meeting objectives while minimizing student risk.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe how to plan student rotations						
b. Describe when to communicate rotations with students						
c. Describe what to communicate to students						
d. Describe conditions to watch for during a live fire training evolution						
26. Implement the “2 in/2 out” or rapid intervention crew/company (RIC) requirement during a live fire training evolution.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify legislation that sets “2 in/2 out” requirements						
b. Identify conditions that require a “2 out” team						
c. Describe roles and responsibilities of the “2 out” team						
d. Identify type of PPE worn by the “2 out” team						
e. Identify appropriate staging locations for the “2 out” team						

27. Ignite, maintain, and control a live fire and verbally describe the roles and responsibilities of an ignition officer.	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify members of a fire control team						
b. Describe role and responsibilities of an ignition officer						
c. Describe roles and responsibilities of the other members of a fire control team						
d. Describe required PPE for the fire control team						
e. Describe hose line requirements for the fire control team						
f. Identify who makes the decision to ignite						
g. Identify who ignites the fuel package						
h. Describe how to light fuel packages						
i. Identify safety considerations associated with ignition						

28. Set up and evaluate students completing the required Fire Control 3: Structural Fire Fighting Skills Exercises in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify objectives a student must meet in order to successfully complete Skills Exercise 2: Risk Assessment and Door Entry						
b. Describe how to set up Skills Exercise 2: Risk Assessment and Door Entry						
c. Identify objectives a student must meet in order to successfully complete Skills Exercise 3: Stretching, Flaking, and Advancing an Attack Line						
d. Describe how to set up Skills Exercise 3: Stretching, Flaking, and Advancing an Attack Line						
e. Identify objectives a student must meet in order to successfully complete Skills Exercise 4: Water Application						
f. Describe how to set up Skills Exercise 4: Water Application						
g. Identify objectives a student must meet in order to successfully complete Skills Exercise 5: Fire Attack						
h. Describe how to set up Skills Exercise 5: Fire Attack						
29. Set up and evaluate students completing the optional Fire Control 3: Structural Fire Fighting Skills Exercises in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify objectives a student must meet in order to successfully complete Skills Exercise 6: Transitional Fire Attack						
b. Describe how to set up Skills Exercise 6: Transitional Fire Attack						

c. Identify objectives a student must meet in order to successfully complete Skills Exercise 7: Interior Attic Fire Attack						
d. Describe how to set up Skills Exercise 7: Interior Attic Fire Attack						
e. Identify objectives a student must meet in order to successfully complete Skills Exercise 8: Below Grade (Basement) Fire Attack						
f. Describe how to set up Skills Exercise 8: Below Grade (Basement) Fire Attack						
g. Identify objectives a student must meet in order to successfully complete Skills Exercise 9: VEIS						
h. Describe how to set up Skills Exercise 9: VEIS						
i. Identify objectives a student must meet in order to successfully complete Skills Exercise 10: Ventilation						
j. Describe how to set up Skills Exercise 10: Ventilation						
k. Identify objectives a student must meet in order to successfully complete Skills Exercise 11: Portable Water Extinguisher Attack						
l. Describe how to set up Skills Exercise 11: Portable Water Extinguisher Attack						

Postburn Procedures

30. Conduct postburn procedures in accordance with NFPA 1403 and the policies and procedures of the authority having jurisdiction (AHJ).	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe how to account for all personnel						
b. Describe how to overhaul remaining fires						

c. Describe how to decontaminate, inspect, and rehabilitate						
d. Describe how to inspect training facilities for stability and hazards						
e. Describe how to secure training facilities						
f. Describe how to conduct training critique (after action review/AAR)						
g. Describe how to complete records and reports						
h. Describe how to demobilize resources and personnel						
i. Describe how to complete any other AHJ requirements						
j. Describe how to release property to owner						
k. Describe how to issue close out notifications						

Certification

The candidate meets the following requirements for certification.

- Fire Fighter II or Company Officer
- Instructor II or current SFT registered instructor

Education

The candidate meets the following requirements for education.

- ICS-300
- Safety Officer S-404, or Safety Officer, L-954, or FDSOA Incident Safety Officer
- Fire Control 3B: Structural Fire Fighting in Live-fire Simulators (2009), or Fire Control 3: Structural Fire Fighting (2018)
- Instructor: Live Fire Training – Fixed Facility

Position

The candidate meets the following qualifications for position. Performing in an acting capacity does not qualify.

Position	Agency	Appointment Date
Fire Fighter for three (3) years full-time, or six (6) years volunteer		

