



DEPARTMENT OF FORESTRY AND FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
State Fire Training Division
P.O. Box 944246
SACRAMENTO, CA 94244-2460
(916) 568-2911
Website: www.fire.ca.gov



Date: July 8, 2022

To: Statewide Training and Education Advisory Committee
State Board of Fire Services

From: Chris Fowler, Deputy State Fire Marshal III, Supervisor, CAL FIRE
Caryn Petty, Deputy State Fire Marshal III, Specialist, CAL FIRE

SUBJECT/AGENDA ACTION ITEM:

Fire Control 4: Ignitable Liquids and Gases (2022) Update

Recommended Actions:

Information/discussion

Background Information:

Update State Fire Training's Ignitable Liquids and Gases curriculum to align with industry best practices.

The update to the State Fire Training's Ignitable Liquids and Gases curriculum creates alignment with NFPA 1001. The designation of senior instructor has been eliminated in the new course, which follows the instructor requirements of other live fire curriculum in the State Fire Training catalog.

It was determined by the cadre that the course should be divided into two levels of instruction. This allows for more practical application of live fire skills and drills at the awareness level, while separating the more technical (pipeline, fixed facility) instruction into a technician level course.

Analysis/Summary of Issue Standard:

General

- SFT split Fire Control 4 (2015) content into two courses:
 - Fire Control 4A: Ignitable Liquids and Gases: Awareness/Operations
 - Fire Control 4B: Ignitable Liquids and Gases: Technician

Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations

Course Plan

- Course plan updated to the new template.
- Removed pipeline content.
- Aligned curriculum with NFPA 1001 (2019) paragraphs 5.3.1 and 5.3.3 to better reflect the training needs of entry-level fire service professionals.
- Removed a separate First Responder Hazmat Operational (FRO) course as prerequisite.
- Reduced course time from 16 hours to 12 hours (4 hours lecture / 8 hours application).
- Set maximum class size of 50.
- Removed Senior Instructor requirement.
- Changed instructor-to-student ratio from:
 - Skills: 1 registered senior instructor (cannot be included in the 1:5 student ratio), 1 registered primary instructor, and as many assistant instructors as needed to meet a 1:5 student ratio
 - to**
 - 1:5 (application/skills – a minimum of two Registered Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructors per active live fire prop and as many Fire Fighter Instructors as needed to meet the 1:5 student ratio).
- Updated course resources to current editions.
- Responsibility for a Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations training site with the required facilities, structures, work areas, materials, props, tools, and equipment of adequate size, type, and quantity to fully and safely support the cognitive and psychomotor training required to deliver the Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations curriculum shifted to AHJ delivering course.
- Equipment list updated to reflect minimum requirements per 10-person module.
- Personnel requirements updated to read:
 - Each active live fire prop requires a minimum of two Registered Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructors.
 - Fire Fighter Instructors may be used to meet the 1:5 student ratio if the active live fire prop Registered Fire Control 4A instructor requirement is already met.

Instructor Task Book (Instructor Requirements)

- Overall
 - Primary and Senior Instructor roles and responsibilities combined into single Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructor.
- Completion Timeline
 - Changed from two years to three years.
 - Removed requirement that candidate must submit within one year of completion.

- Prerequisites
 - Increased instructor level to OSFM Instructor 2 certification or Training Instructor 2 certification or Fire Instructor 2 certification to meet NFPA 1401 requirements.
 - Increased certification level to OSFM Fire Fighter 2 to meet NFPA requirements.
- Education
 - Added I-300 Intermediate ICS (CalEMA/CalOES, CDF/CAL FIRE, FEMA, FIREScope, NFA, NWCG, or SFT) as a requirement
 - Can use Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) **or** Fire Control 4: Controlling Ignitable Liquids and Gases (2015) **and** Hazardous Materials First Responder Operations (FRO) (IAFF, CSTI, or SFT)
- Experience
 - Changed from
 - Held the rank of Fire Fighter within a recognized fire agency in California performing suppression/rescue duties for a minimum of two (2) years
 - to**
 - Have a minimum of two (2) years' full-time or four (4) years' part-time/volunteer experience as a Fire Fighter performing suppression duties within a recognized California Fire Agency

Training Record

- Created a Training Record for both courses for students to use as verification of skills practiced and completed during the course.

Fire Control 4B: Ignitable Liquids and Gases Technician

Course Plan

- Used the pipeline content from the 2015 curriculum as a baseline and expanded to include transport vessels and bulk storage facilities.
- This course provides the skills and knowledge needed to identify the regulations, construction, operations, and hazards associated with ignitable liquid and gas transportation, bulk storage, and pipelines.
- Designed for all emergency personnel with responsibility for responding to ignitable liquid and gas emergencies associated with transportation, bulk storage, and pipelines.
- Prerequisites are Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) **or** Fire Control 4: Controlling Ignitable Liquids and Gases (2015).
- Total class time is 12 hours (7 hours lecture / 5 hours application).
- Maximum class size is 50.
- Instructor must be an SFT Registered Fire Control 4A: Ignitable Liquids and Gases Technician Instructor.
- Instructor-to-student ratio is 1:50 for lecture and 1:15 for Topic 5-2: Deploying Master Streams. (A minimum of one Registered Fire Control 4B: Ignitable Liquids and Gases Technician Instructor and as many Fire Fighter Instructors as needed to meet the 1:15 student ratio.)

Instructor Task Book (Instructor Requirements)

- There is no instructor task book requirement to teach Fire Control 4B: Ignitable Liquids and Gases Technician. This is primarily a cognitive course. Any skills required are covered by being a Registered Fire Control 4A instructor.
- To become a Registered Instructor, a candidate shall:
 - Be an SFT Registered Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructor
 - Complete Fire Control 4B: Ignitable Liquids and Gases Technician (2022)
 - Have three (3) years' full-time or six (6) years' part-time/volunteer experience as a Fire Fighter performing suppression duties within a recognized California Fire Agency
 - Provide a letter signed by their Fire Chief or authorized designee that verifies qualification to deliver Fire Control 4B: Ignitable Liquids and Gases Technician (2022) training

Training Record

- There is no Training Record for Fire Control 4B. It is primarily a cognitive course.



FIRE CONTROL 4: IGNITABLE LIQUIDS AND GASES (2022) Implementation Plan

Issued: XXXX 2022

OVERVIEW

This document is intended to provide information for all State Fire Training (SFT) stakeholders on the updated Fire Control 4: Ignitable Liquids and Gases (2022) curriculum and instructor requirements. Stakeholders are encouraged to study this information carefully and seek clarification from SFT if questions arise.

The Fire Control 4: Ignitable Liquids and Gases (2022) curriculum and instructor requirements will be phased in for the Fire Service Training and Education Program (FSTEP). SFT updated the 2015 course, focusing it on awareness and operations activities tied to the requirements in Fire Fighter 1, and moved the pipeline training into a second, technician-level course that also includes transportation and bulk storage emergencies.

SFT used National Fire Protection Association (NFPA) 30: Flammable and Combustible Liquids Code (2021) and the DOT *Emergency Response Guidebook* (ERG) in the development of this curricula. The course plans and associated course materials are now available on the SFT website.

IMPLEMENTATION

SFT recognizes that many candidates are vested in the current Fire Control 4 instructor development course and therefore, the existing Fire Control 4 (2015) curriculum will be available for those candidates during the transition period. Candidates entering the SFT system should enroll in the new Fire Control 4: Ignitable Liquids and Gases (2022) courses and comply with the new requirements.

New Curriculum	Hours
Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations	12 Hours
Fire Control 4B: Ignitable Liquids and Gases Technician	12 Hours

New Fire Control 4: Ignitable Liquids and Gases (2022) Curriculum..... January 1, 2023

Retirement of Fire Control 4 (2015) Curriculum June 30, 2023
Effective June 30, 2023, SFT will retire the FSTEP Fire Control 4 (2015) curriculum. On July 1, 2023, from the SFT course catalog and it will no longer be available.

INSTRUCTOR REQUIREMENTS

Instructor Registration..... January 1, 2023

Instructors for the Fire Control 4 (2022) courses must meet the SFT requirements for Registered Instructor. Instructors must have appropriate education and practical experience relating to the specific course content.

Instructor Task Book and Application

Instructor candidates shall complete a comprehensive instructor task book to attain instructor qualification. This Task Book includes all the job performance requirements (JPRs) contained in the professional qualification standards. The Fire Chief or authorized designee will verify the candidate's occupational experience by signing the task book upon completion.

Existing Registered Fire Control 4 (2105) Instructors January 1, 2023

Current Fire Control 4 (2015) Registered Instructors will be automatically authorized to teach the Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) and Fire Control 4B: Ignitable Liquids and Gases Technician (2022) courses. Existing instructors do not need to take any action. SFT will update Acadis to reflect this change.

In Process Fire Control 4 (2015) Instructor CandidatesDeadline December 31, 2023

- Candidates actively working on a Fire Control 4 (2015) Primary Instructor Task Book must submit their completed task book with the corresponding Task Book Update 22-1 postmarked on or before December 31, 2023. SFT will return any 2015 task book postmarked after December 31, 2023 and require the candidate to complete the 2022 version.
- Candidates actively working on a Fire Control 4 (2015) Senior Instructor Task Book should stop the process. SFT no longer registers Senior Instructors for Fire Control 4 courses.

New Registered Instructors January 1, 2023

Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructor (2022) shall:

- Be an SFT Registered Instructor
- Be an OSFM certified Fire Fighter 2
- Complete the following courses:
 - I-300 Intermediate ICS (CalEMA/CalOES, CDF/CAL FIRE, FEMA, FIREScope, NFA, NWCG, or SFT)
 - Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) or Fire Control 4 and HazMat First Responder Operations (IAFF, CSTI, SFT)
- Complete the Ignitable Liquids and Gases Awareness/Operations Instructor Task Book (2022)
- Have two (2) years' full-time **or** four (4) years' part-time/volunteer experience as a Fire Fighter performing suppression duties in a recognized California Fire Agency

- Provide a letter signed by their Fire Chief or authorized designee that verifies qualification to deliver Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) training

Fire Control 4B: Ignitable Liquids and Gases Technician Instructor (2022):

- Be an OSFM certified Fire Fighter 2
- Be an SFT Registered Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructor
- Complete Fire Control 4B: Ignitable Liquids and Gases Technician (2022)
- Have three (3) years' full-time or six (6) years' part-time/volunteer experience as a Fire Fighter performing suppression duties within a recognized California Fire Agency
- Provide a letter signed by their Fire Chief or authorized designee that verifies qualification to deliver Fire Control 4B: Ignitable Liquids and Gases Technician (2022) training

POTENTIAL AGENCY IMPACTS

Fire agencies desiring to use the Fire Control 4 (2022) curriculum as a requirement for their recruitment/promotion activities need to review the curriculum requirements to ensure all agency training needs are met. After review, fire agencies should update their job specifications and recruitment documentation to reflect the new course requirements.

Accredited Regional Training Programs (ARTP), Accredited Local Academies (ALA), community colleges, and all other local delivery venues should review the curriculum and seek approval from their curriculum committee/program sponsor, as appropriate. ARTPs should review the new Fire Control 4 (2022) curriculum and discuss potential impacts with their advisory committees.



Ignitable Liquids and Gases Awareness/Operations (2022)

Course Plan

Course Details

- Description:** This course provides the skills and knowledge needed to extinguish an ignitable liquid fire and control a flammable gas fire.
- Designed For:** All emergency personnel with responsibility for managing ignitable liquids and gases.
- Prerequisites:** The following topics from the State Fire Training Fire Fighter 1 curriculum must be completed: Fire Fighter Safety (Unit 2), Communications (Unit 3), Structural Fire Suppression (Unit 5), Suppression of Fires Outside of a Structure (Unit 7), and Hazardous Materials/WMD (Unit 9)
- One of the following courses may be used in place of Hazardous Materials/WMD (Unit 9): First Responder Hazmat Operational (FRO) (SFT), First Responder Operations (CTSI), Hazardous Materials Responder at the Core Operations Level: With Product Control, or PPE Mission Specific Competencies (IAFF)
- Standard:** Attend and participate in all course sections
Successful completion of all skills identified on the Training Record.
- Hours (Total):** 12 hours
(4 hours lecture / 8 hours application)
- Maximum Class Size:** 50
- Instructor Level:** SFT Registered Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructor
- Instructor/Student Ratio:** 1:50 (lecture)
1:5 (application/skills – a minimum of two Registered Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructors per active live fire prop and as many Fire Fighter Instructors as needed to meet the 1:5 student ratio)
- Restrictions:** See Equipment, Facilities, and Personnel requirements
- SFT Designation:** FSTEP

Table of Contents

Course Details	1
Required Resources	3
Instructor Resources	3
Online Instructor Resources	3
Student Resources	3
Facilities, Equipment, and Personnel.....	3
Time Table.....	6
Time Table Key.....	6
Unit 1: Introduction	8
Topic 1-1: Orientation and Administration.....	8
Unit 2: Ignitable Liquid Fires	9
Topic 2-1: Extinguishing an Ignitable Liquid Fire with Foam	9
Unit 3: Flammable Gas Fires	11
Topic 3-1: Controlling a Flammable Gas Fire	11
Acknowledgements.....	13
How to Read a Course Plan.....	14

Required Resources

Instructor Resources

To teach this course, instructors need:

- One of the following texts:
 - *Fundamentals of Fire Fighter Skills* (including Instructor's Toolkit DVDs) (Jones & Bartlett Learning, 4th edition, ISBN: 978-1-284-15133-6)
 - *Essentials of Fire Fighting and Fire Department Operations* (Stowell, Frederick M., Murnane, Lynne, Brady Publishing, a division of Pearson Education, 7th edition, ISBN: 978-087939657-2)
- *Emergency Response Guidebook* (NAERG)
 - Physical or digital access to current edition
- AHJ policies and procedures
- Personal protective equipment
 - Minimum requirements: full structural PPE with SCBA and spare SCBA bottle
- An Incident Action Plan (IAP) for course delivery

Online Instructor Resources

The following instructor resources are available online at

<https://osfm.fire.ca.gov/divisions/state-fire-training/fstep-curriculum/>

- Skills Exercise 1: Foam Operations
- Skills Exercise 2: Gas Cylinder Fires
- Skills Exercise 3: Gas Meter Fires
- Skills Exercise 4: Gas Fires Involving Valves, Flanges, and Piping

Student Resources

To participate in this course, students need:

- The textbook selected by the instructor
- *Emergency Response Guidebook* (NAERG)
 - Physical or digital access to current edition
- AHJ policies and procedures
- Personal protective equipment
 - Minimum requirements: full structural PPE with SCBA and spare SCBA bottle

Facilities, Equipment, and Personnel

Facilities

The following facilities are required to deliver this course:

- Standard learning environment or facility, which may include:
 - Dry erase board or paper easel chart
 - Markers, erasers
 - Amplification devices

- Projector and screen
- Laptop or tablet with presentation or other viewing software
- Internet access with appropriate broadband capabilities
- A Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations training site with the required facilities, structures, work areas, materials, props, tools, and equipment of adequate size, type, and quantity to fully and safely support the cognitive and psychomotor training required to deliver the Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations curriculum

Equipment

Student safety is of paramount importance when conducting the type of high-risk training associated with the Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations course. The equipment listed below is the minimum for the delivery of this course. The student is responsible for providing all personal protective equipment and SCBA and ensuring that it meets AHJ and site requirements.

The following equipment is required to deliver this course:

Per 10 Person Module	Equipment
As needed	Adequate hose lines (1½” width or larger)
As needed	Adequate foam capable nozzles
1	Eductor (must match nozzle)
1	B:C fire extinguisher
2	Water sources
As needed	Adequate water supply
As needed	Adequate Class B foam or foam substitute
1	Flammable liquid pan or equivalent
1	Gas cylinder prop or equivalent
1	Meter prop or equivalent
1	Valve, flange, and piping prop or equivalent
As needed	Adequate propane supply or flammable liquids
As needed	Valve shut-off tool (one per prop with valves)
10	Full PPE and SCBA (with adequate replacement air)
As needed	Communication equipment

Training Props

The following training props are required to deliver this course:

- Pan prop
- Cylinder prop
- Meter prop

- Valve, flange, and piping prop

The provider or agency assumes all responsibility, liability, and maintenance for the engineering design, strength, stability, and adequacy of all props. The provider or agency further assumes all responsibility, liability, and maintenance for all tools, equipment, and supplies used at the site for the delivery of a Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations class. This includes, but is not limited to, ladders, ropes, rescue hardware, and software.

Personnel

The following personnel are required to deliver this course:

- Each active live fire prop requires a minimum of two Registered Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructors
- Fire Fighter Instructors may be used to meet the 1:5 student ratio if the active live fire prop Registered Fire Control 4A Instructor requirement is already met
 - See *SFT Procedures Manual* for Fire Fighter Instructor qualifications

Time Table

Segment	Lecture	Application	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: Ignitable Liquid Fires			
Topic 2-1: Extinguishing an Ignitable Liquid Fire with Foam	1.75	4.0	
Unit 2 Totals	1.75	4.0	5.75
Unit 3: Flammable Gas Fires			
Topic 3-1: Controlling a Flammable Gas Fire	1.75	4.0	
Unit 3 Totals	1.75	4.0	5.75
Formative Assessments			
Determined by AHJ or educational institution	0.0	0.0	0.0
Summative Assessment			
Determined by AHJ or educational institution	0.0	0.0	0.0
Course Totals	4.0	8.0	12.0

Time Table Key

1. The Time Table documents the amount of time required to deliver the content included in the course plan.
2. Time is documented using the quarter system: 15 min. = .25 / 30 min. = .50 / 45 min. = .75 / 60 min. = 1.0.
3. The Course Totals do not reflect time for lunch (1 hour) or breaks (10 minutes per each 50 minutes of instruction or assessment). It is the instructor's responsibility to add this time based on the course delivery schedule.
4. Application (activities, skills exercises, and formative testing) time will vary depending on the number of students enrolled. The Application time documented is based on the maximum class size identified in the Course Details section.
5. The following is a breakdown of what a program might look like if there were fewer students. These estimates may need to be adjusted based on student abilities.
 - 40 – 50 Students = 260 hours
 - 30 – 40 Students = 180 hours
 - 20 – 30 Students = 120 hours
 - 1 – 20 Students = 60 hours

6. Summative Assessments are determined and scheduled by the authority having jurisdiction. These are not the written or psychomotor State Fire Training certification exams. These are in-class assessments to evaluate student progress and calculate course grades.

Draft

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, skills exercises, resources, evaluation methods, and participation requirements in the course syllabus.

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

Application

1. Have students complete all required registration forms.

Unit 2: Ignitable Liquid Fires

Topic 2-1: Extinguishing an Ignitable Liquid Fire with Foam

Terminal Learning Objective

At the end of this topic a student, given an assignment, an attack line, personal protective equipment, a foam proportioning device, a nozzle, foam concentrate, and a water supply, will be able to extinguish an ignitable liquid fire, operating as a member of a team, to identify escape routes and safety zones prior to advancing, select the correct type of foam concentrate for the given fuel and conditions, apply a properly proportioned foam stream to the surface of the fuel to create and maintain a foam blanket, extinguish the fire, prevent reignition, maintain team protection with a foam stream, and face hazards until the team successfully retreats to a safety zone.

Enabling Learning Objectives

1. Describe how foam prevents or controls a hazard
 - Separating
 - Cooling
 - Smothering
2. List principles by which foam is generated
 - Foam proportioner
 - Aeration
3. Identify causes of poor foam generation and their corrective measures
 - Incorrect ratios of water, concentrate, and air
 - Mismatched educator and nozzle
 - Air leaks in pick-up tube or hose connection
 - Improper flushing after maintenance or previous use
 - Kinked discharge hose line
 - Too much nozzle elevation
 - Too much hose between educator and nozzle
 - Incorrect inlet pressure to educator
 - Partially closed nozzle shut-off
 - Collapsed or obstructed pick-up tube
 - Pick-up tube too long
 - Improper internal flow meter calibration
4. Describe the difference between hydrocarbon and polar solvent fuels and the concentrates that work on each
 - Hydrocarbon fuels
 - Petroleum based
 - Combustible or flammable
 - Float on water
 - Polar solvent fuels
 - Flammable liquids
 - Mix readily with water

- Class B foam is utilized for both
5. Identify the characteristics, uses, and limitations of firefighting foams
 - Class A
 - Class B
 6. Discuss the advantages and disadvantages of using fog nozzles versus foam nozzles for foam application
 - Fog nozzle
 - Advantage: Produces low expansion short lasting foam, widely available on most apparatus
 - Disadvantage: May not create the same quality of foam as foam nozzles
 - Foam nozzle
 - Advantage: Most effective for generating low, medium, or high expansion foam
 - Disadvantage: Not as versatile as a fog nozzle and generally does not have the same reach
 7. Describe foam stream application techniques
 - Rain down
 - Roll in/on
 - Bank back
 8. List hazards associated with foam use
 - Can degrade PPE
 - Most are mildly corrosive
 - Environmental impacts
 - Health impacts
 9. Describe methods to reduce or avoid hazards
 - Maintain foam blanket to reduce risk of reignition
 - Avoid standing in pools of fuel or run-off water
 10. Prepare foam concentrate (or suitable substitute) supply for use
 11. Assemble foam stream components
 12. Demonstrate foam application techniques
 13. Approach and retreat from spills as part of a coordinated team

Discussion Questions

1. What types of foam are used during firefighting operations?
2. What are some limitations of foam use?
3. What are some hazards of foam use?
4. What are some alternative extinguishing agents and methods that can be used in conjunction with foam?

Application

1. Skills Exercise 1: Foam Operations

Instructor Resources

1. If unable to demonstrate foam application due to cost or environmental restrictions:
 - Use digital sources to review foam application.
 - Demonstrate using dish soap, bucket, and eductor.

Unit 3: Flammable Gas Fires

Topic 3-1: Controlling a Flammable Gas Fire

Terminal Learning Objective

At the end of this topic a student, given an assignment, a simulated gas fire outside of a structure, an attack line, personal protective equipment, and tools, will be able to control a flammable gas fire, operating as a member of a team, to maintain crew integrity; identify contents; identify escape routes and safety zones prior to advancing; close any open valves; extinguish flames only when leaking gas is eliminated, the cylinder is cooled, cylinder integrity is evaluated, and hazardous conditions are recognized and acted upon; and face the cylinder during approach and retreat.

Enabling Learning Objectives

1. Identify characteristics of pressurized flammable gases
2. List elements of a gas cylinder
3. Identify valve types and their operation
 - Target hazard specific
 - AHJ specific
4. Describe effects of heat and pressure on closed cylinders
5. Describe boiling liquid expanding vapor explosion (BLEVE) signs and effects
6. Describe methods for identifying contents
7. Describe how to identify escape routes and safety zones before approaching flammable gas cylinder fires
8. Describe how techniques used to control flammable gas fires in cylinders can apply to fire control in gas delivery and distribution systems
 - Meters
 - Pipes (above and below ground)
9. Describe water stream usage and demands for pressurized cylinder fires
 - Hand lines
 - Master streams
10. Describe what to do if the fire is prematurely extinguished
11. Describe alternative actions related to various hazards and when to retreat
12. Execute effective advances and retreats
 - Communication
 - Hose management
 - Avoid kinking
 - Ensure proper angle of attack
13. Apply various water application techniques
 - Single attack line
 - Coordinated dual lines
 - Avoid opposing hose streams
 - Master streams
 - Protection systems

14. Assess cylinder integrity and changing cylinder conditions
15. Operate control valves
16. Choose effective procedures when conditions change

Discussion Questions

1. What changes in conditions might occur during fire impingement on a gas cylinder?
2. What signs indicate a potential BLEVE?
3. What safety precautions should be taken in anticipation of a BLEVE?
4. What factors or conditions should a fire fighter consider when determining appropriate fire streams?
5. Why is it a problem if a venting tank fire is extinguished prematurely?
6. How do control tactics differ with a vapor leak versus a liquid leak?

Application

1. Skills Exercise 2: Gas Cylinder Fires
2. Skills Exercise 3: Gas Meter Fires
3. Skills Exercise 4: Gas Fires Involving Valves, Flanges, and Piping

Instructor Notes

1. None

Acknowledgements

State Fire Training appreciates the hard work and accomplishments of those who built the solid foundation on which this program continues to grow.

State Fire Training gratefully acknowledges the following individuals and organizations for their diligent efforts and contributions that made the development and publication of this document possible.

CAL FIRE

- Joe Tyler, Director
- Mike Richwine, State Fire Marshal
- Andrew Henning, Assistant Deputy Director: Fire and Life Safety, State Fire Training, Code Development and Analysis
- (Vacant), Chief of State Fire Training
- John Binaski, Chair, Statewide Training and Education Advisory Committee (STEAC); Chief, Clovis Fire Department

Cadre – 2022 Curriculum Development

Leadership

- Chris Fowler, Cadre Lead, Deputy State Fire Marshal III, Supervisor, CAL FIRE
- Allison L. Shaw, Editor, Sacramento State

Members

- Greg Belk, Deputy Chief, CAL FIRE
- Jason Davison, Battalion Chief, Nevada County Consolidated Fire District; Operations Section Chief, Nevada County, Sierra College Fire Academy
- Darrel “Charlie” Miller, Fire Chief, McCloud Fire Department; Adjunct Instructor, College of the Siskiyous
- Andrew J. Murtaugh, Training Lieutenant, San Francisco Fire Department; Adjunct Faculty, College of San Mateo Fire Academy
- Grant Tokiwa, Captain (retired), Vacaville Fire Department; Battalion Chief (retired), Chevron Richmond Refinery Fire Department

How to Read a Course Plan

A course plan identifies the details, logistics, resources, and training and education content for an individual course. Whenever possible, course content is directly tied to a national or state standard. SFT uses the course plan as the training and education standard for an individual course. Individuals at fire agencies, academies, and community colleges use course plans to obtain their institution's consent to offer course and provide credit for their completion. Instructors use course plans to develop syllabi and lesson plans for course delivery.

Course Details

The Course Details segment identifies the logistical information required for planning, scheduling, and delivering a course.

Required Resources

The Required Resources segment identifies the resources, equipment, facilities, and personnel required to deliver the course.

Unit

Each Unit represents a collection of aligned topics. Unit 1 is the same for all SFT courses. An instructor is not required to repeat Unit 1 when teaching multiple courses within a single instructional period or academy.

Topics

Each Topic documents a single Terminal Learning Objective and the instructional activities that support it.

Terminal Learning Objective

A Terminal Learning Objective (TLO) states the instructor's expectations of student performance at the end of a specific lesson or unit. Each TLO includes a task (what the student must be able to do), a condition (the setting and supplies needed), and a standard (how well or to whose specifications the task must be performed). TLOs target the performance required when students are evaluated, not what they will do as part of the course.

Enabling Learning Objectives

The Enabling Learning Objectives (ELO) specify a detailed sequence of student activities that make up the instructional content of a lesson plan. ELOs cover the cognitive, affective, and psychomotor skills students must master to complete the TLO.

Discussion Questions

The Discussion Questions are designed to guide students into a topic or to enhance their understanding of a topic. Instructors may add to or adjust the questions to suit their students.

Application

The Application segment documents experiences that enable students to apply lecture content through cognitive and psychomotor activities, skills exercises, and formative testing. Application experiences included in the course plan are required. Instructors may add additional application experiences to suit their student population if time permits.

Instructor Notes

The Instructor Notes segment documents suggestions and resources to enhance an instructor's ability to teach a specific topic.

CTS Guide Reference

The CTS Guide Reference segment documents the standard(s) from the corresponding Certification Training Standard Guide upon which each topic within the course is based. This segment is eliminated if the course is not based on a standard.

Skill Sheet

The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.

Foam Operations

Activity: Related to Topic 2-1: Extinguishing an Ignitable Liquid Fire with Foam

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 8 hours for skills practice and completion)

Description

This exercise measures a fire fighter's ability to operate as a member of a team to extinguish an ignitable liquid fire by identifying escape routes and safety zones prior to advancing, selecting the correct type of foam concentrate for the given fuel and conditions, applying a properly proportioned foam stream to the surface of the fuel to create and maintain a foam blanket, extinguishing the fire, preventing reignition, maintaining team protection, and facing hazards until the team successfully retreats to a safety zone.

Materials

- Adequate hose lines (1½" width or larger)
- Adequate foam capable nozzles
- Eductor (must match nozzle)
- B:C fire extinguisher
- Minimum of two (2) water sources
- Adequate water supply
- Adequate Class B foam or foam substitute
- Flammable liquid pan or equivalent
- Adequate propane supply or flammable liquids
- Full PPE and SCBA
- Communication equipment

Instructions

Working in groups, students will demonstrate the following foam operation skills:

1. Prepare foam concentrate supply for use
2. Assemble foam stream components
3. Approach the spill as part of a coordinated team
4. Demonstrate foam application techniques
 - Rain down
 - Roll in/on
 - Bank back
5. Retreat from spills as part of a coordinated team

Gas Cylinder Fires

Activity: Related to Topic 3-1: Controlling a Flammable Gas Fire

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 8 hours for skills practice and completion)

Description

This exercise measures a fire fighter's ability to operate as a member of a team to control a flammable gas cylinder fire by maintaining crew integrity, identifying contents, identifying escape routes and safety zones prior to advancing, closing any open valves, and extinguishing flames only when leaking gas is eliminated, the cylinder is cooled, cylinder integrity is evaluated, hazardous conditions are recognized and acted upon, and the cylinder is faced during approach and retreat.

Materials

- Adequate hose lines (1½" width or larger)
- Adequate nozzles
- B:C fire extinguisher
- Minimum of two (2) water sources
- Adequate water supply
- Gas cylinder prop or equivalent
- Adequate propane supply
- Full PPE and SCBA
- Communication equipment

Instructions

Working in groups, students will demonstrate the following skills:

1. Advance hoseline(s) toward gas cylinder(s)
2. Apply water application techniques
3. Assess cylinder integrity and changing cylinder conditions
4. Operate control valve(s)
5. Respond to changing incident conditions
6. Retreat hoseline(s)

Gas Meter Fires

Activity: Related to Topic 3-1: Controlling a Flammable Gas Fire

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 8 hours for skills practice and completion)

Description

This exercise measures a fire fighter's ability to operate as a member of a team to control a flammable gas meter fire by maintaining crew integrity, identifying contents, identifying escape routes and safety zones prior to advancing, closing any open valves, and extinguishing flames only when leaking gas is eliminated, meter integrity is evaluated, hazardous conditions are recognized and acted upon, and the meter is faced during approach and retreat.

Materials

- Adequate hose lines (1½" width or larger)
- Adequate nozzles
- B:C fire extinguisher
- Minimum of two (2) water sources
- Adequate water supply
- Meter prop or equivalent
- Adequate propane supply
- Full PPE and SCBA
- Communication equipment

Instructions

Working in groups, students will demonstrate the following skills:

1. Advance hoseline(s) toward meter
2. Apply water application techniques
3. Assess meter integrity and changing meter conditions
4. Operate control valve(s)
5. Respond to changing incident conditions
6. Retreat hoseline(s)

Gas Fires Involving Valves, Flanges, and Piping

Activity: Related to Topic 3-1: Controlling a Flammable Gas Fire

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 8 hours for skills practice and completion)

Description

This exercise measures a fire fighter's ability to operate as a member of a team to control a flammable gas fires involving valves, flanges, and piping by maintaining crew integrity; identifying contents; identifying escape routes and safety zones prior to advancing; closing any open valves; and extinguishing flames only when leaking gas is eliminated, valves, flanges, and piping integrity is evaluated, hazardous conditions are recognized and acted upon; and the valves, flanges, and piping is faced during approach and retreat.

Materials

- Adequate hose lines (1½" width or larger)
- Adequate nozzles
- B:C fire extinguisher
- Minimum of two (2) water sources
- Adequate water supply
- Valve, flange, and piping prop or equivalent
- Adequate propane supply
- Full PPE and SCBA
- Communication equipment

Instructions

Working in groups, students will demonstrate the following access and egress skills:

1. Advance hoseline(s) toward valve, flange, and piping prop
2. Apply water application techniques
3. Assess valve, flange, and piping integrity and changing conditions
4. Operate control valve(s)
5. Respond to changing incident conditions
6. Retreat hoseline(s)



Ignitable Liquids and Gases Technician (2022)

Course Plan

Course Details

- Description:** This course provides the skills and knowledge needed to identify the regulations, construction, operations, and hazards associated with ignitable liquid and gas transportation, bulk storage, and pipelines.
- Designed For:** All emergency personnel with responsibility for responding to ignitable liquid and gas emergencies associated with transportation, bulk storage, and pipelines.
- Prerequisites:** Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) or Fire Control 4: Controlling Ignitable Liquids and Gases (2015)
- Standard:** Attend and participate in all course sections
Successful completion of all skills identified on the Training Record
- Hours (Total):** 12 hours
(7 hours lecture / 5 hours application)
- Maximum Class Size:** 50
- Instructor Level:** SFT Registered Fire Control 4B: Ignitable Liquids and Gases Technician Instructor
- Instructor/Student Ratio:** 1:50 (lecture)
1:15 (Topic 5-2: Deploying Master Streams - a minimum of one Registered Fire Control 4B: Ignitable Liquids and Gases Technician Instructor and as many Fire Fighter Instructors as needed to meet the 1:15 student ratio)
- Restrictions:** See Equipment, Facilities, and Personnel requirements
- SFT Designation:** FSTEP

Table of Contents

Course Details	1
Table of Contents	2
Required Resources	3
Instructor Resources	3
Online Instructor Resources	3
Student Resources	3
Facilities, Equipment, and Personnel.....	3
Time Table.....	5
Time Table Key.....	6
Unit 1: Introduction	7
Topic 1-1: Orientation and Administration.....	7
Unit 2: Transportation Emergencies.....	8
Topic 2-1: Identifying Transportation Regulations	8
Topic 2-2: Identifying Transportation Operations and Hazards	10
Topic 2-3: Identifying Hazards Associated with Transporting Ignitable Liquids.....	12
Topic 2-4: Identifying Hazards Associated with Transporting Ignitable Gases	14
Unit 3: Bulk Storage Emergencies.....	16
Topic 3-1: Identifying Bulk Storage Regulations.....	16
Topic 3-2: Identifying Bulk Storage Construction and Hazards	17
Topic 3-3: Identifying Hazards Associated with Ignitable Liquid Bulk Storage.....	18
Topic 3-4: Identifying Hazards Associated with Ignitable Gas Bulk Storage	19
Unit 4: Pipeline Emergencies	20
Topic 4-1: Identifying Pipeline Regulations	20
Topic 4-2: Identifying Pipeline Operations and Hazards	21
Topic 4-3: Identifying Hazards Associated with Ignitable Liquid Pipeline Products.....	22
Topic 4-4: Identifying Hazards Associated with Ignitable Gas Pipeline Products.....	24
Unit 5: Application	26
Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires.....	26
Topic 5-2: Using Master Streams to Attack Ignitable Liquid and Gas Fires.....	27
Acknowledgements.....	28
How to Read a Course Plan.....	29

Required Resources

Instructor Resources

To teach this course, instructors need:

- One of the following two texts:
 - *Fundamentals of Fire Fighter Skills* (including Instructor's Toolkit DVDs) (Jones & Bartlett Learning, 4th edition, ISBN: 978-1-284-15133-6)
 - *Essentials of Fire Fighting and Fire Department Operations* (Stowell, Frederick M., Murnane, Lynne, Brady Publishing, a division of Pearson Education, 7th edition, ISBN: 978-087939657-2)
- *Pipeline Emergencies* (Noll, Gregory G., Hildebrand, Michael S., Red Hat Publishing Company, Inc., 3rd edition)
 - *Pipeline Emergencies* (3rd edition, [NASFM](#) – DVD)
 - *Liquefied Natural Gas* (2005, [NASFM](#) – DVD)
- *Emergency Response Guidebook* (NAERG)
 - Physical or digital access to current edition
- AHJ policies and procedures
- Structural personal protective equipment

Online Instructor Resources

The following instructor resources are available online at

<https://osfm.fire.ca.gov/divisions/state-fire-training/fstep-curriculum/>

- Skills Exercise 1: Planning Initial Actions for Ignitable Liquid and Gas Fires
- Skills Exercise 2: Deploying Master Streams

Student Resources

To participate in this course, students need:

- *Emergency Response Guidebook* (NAERG)
 - Physical or digital access to current edition
- AHJ policies and procedures
- Structural personal protective equipment

Facilities, Equipment, and Personnel

Facilities

The following facilities are required to deliver this course:

- Standard learning environment or facility, which may include:
 - Dry erase board or paper easel chart
 - Markers, erasers
 - Amplification devices
 - Projector and screen
 - Laptop or tablet with presentation or other viewing software

- Internet access with appropriate broadband capabilities
- A training site with the required facilities, structures, work areas, materials, props, tools, and equipment of adequate size, type, and quantity to fully and safely support the cognitive and psychomotor training required to deliver the Fire Control 4B: Ignitable Liquid and Gas Fire Technician curriculum

Equipment

Student safety is of paramount importance when conducting this course. The equipment listed below is the minimum for the delivery of this course. The student is responsible for providing all personal protective equipment and ensuring that it meets AHJ and site requirements.

The following equipment is required to deliver this course:

Per 15 Person Module	Equipment
1	Apparatus with deck gun (or equivalent)
1	Ground monitor
As needed	Adequate hose lines
As needed	Adequate nozzles
As needed	Adequate water supply
15	PPE
As needed	Communication equipment

Personnel

The following personnel are required to deliver this course:

- Topic 5-2: Deploying Master Streams - a minimum of one Registered Fire Control 4B: Ignitable Liquids and Gases Technician Instructor and as many Fire Fighter Instructors as needed to meet the 1:15 student ratio

Time Table

Segment	Lecture	Application	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: Transportation Emergencies			
Topic 2-1: Identifying Transportation Regulations	0.5	0.0	
Topic 2-2: Identifying Transportation Operations and Hazards	0.5	0.0	
Topic 2-3: Identifying Hazards Associated with Transporting Ignitable Liquids	0.5	0.0	
Topic 2-4: Identifying Hazards Associated with Transporting Ignitable Gases	0.5	0.0	
Unit 2 Totals	2.0	0.0	2.0
Unit 3: Bulk Storage Emergencies			
Topic 3-1: Identifying Bulk Storage Regulations	0.5	0.0	
Topic 2-2: Identifying Bulk Storage Construction and Hazards	0.5	0.0	
Topic 2-3: Identifying Hazards Associated with Ignitable Liquid Bulk Storage	0.5	0.0	
Topic 2-4: Identifying Hazards Associated with Ignitable Gas Bulk Storage	0.5	0.0	
Unit 3 Totals	2.0	0.0	2.0
Unit 4: Pipeline Emergencies			
Topic 4-1: Identifying Pipeline Regulations	0.5	0.0	
Topic 4-2: Identifying Pipeline Operations and Hazards	1.0	0.0	
Topic 4-3: Identifying Hazards Associated with Ignitable Liquid Pipeline Products	0.5	0.0	
Topic 4-4: Identifying Hazards Associated with Ignitable Gas Pipeline Products	0.5	0.0	
Unit 4 Totals	2.50	0.0	2.50
Unit 5: Application			
Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires	0.0	2.0	
Topic 5-2: Using Master Streams to Attack Ignitable Liquid and Gas Fires	0.0	3.0	
Unit 5 Totals	0.0	5.0	5.0
Formative Assessments			
Determined by AHJ or educational institution	0.0	0.0	0.0

Summative Assessment			
Determined by AHJ or educational institution	0.0	0.0	0.0
Course Totals	7.0	5.0	12.0

Time Table Key

1. The Time Table documents the amount of time required to deliver the content included in the course plan.
2. Time is documented using the quarter system: 15 min. = .25 / 30 min. = .50 / 45 min. = .75 / 60 min. = 1.0.
3. The Course Totals do not reflect time for lunch (1 hour) or breaks (10 minutes per each 50 minutes of instruction or assessment). It is the instructor’s responsibility to add this time based on the course delivery schedule.
4. Application (activities, skills exercises, and formative testing) time will vary depending on the number of students enrolled. The Application time documented is based on the maximum class size identified in the Course Details section.
5. The following is a breakdown of what a program might look like if there were fewer students. These estimates may need to be adjusted based on student abilities.
 - 40 – 50 Students = 260 hours
 - 30 – 40 Students = 180 hours
 - 20 – 30 Students = 120 hours
 - 1 – 20 Students = 60 hours
6. Summative Assessments are determined and scheduled by the authority having jurisdiction. These are not the written or psychomotor State Fire Training certification exams. These are in-class assessments to evaluate student progress and calculate course grades.

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, skills exercises, resources, evaluation methods, and participation requirements in the course syllabus.

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

Application

1. Have students complete all required registration forms.

Unit 2: Transportation Emergencies

Topic 2-1: Identifying Transportation Regulations

Terminal Learning Objective

At the end of this topic a student, given regulatory documents, will be able to identify regulations pertaining to transporting ignitable liquids and gases in accordance with state and federal requirements.

Enabling Learning Objectives

1. Describe modes of ignitable liquid and gas transportation
 - Rail cars
 - Road trailers
 - Cargo transport
2. Describe the primary federal agencies that regulate ignitable liquid and gas transportation
 - Federal Motor Carrier Safety Administration
 - Department of Transportation, Federal Railroad Administration
3. Describe the primary state agencies that regulate ignitable liquid and gas transportation
 - California Department of Motor Vehicles
4. Identify rules and regulations that govern the design, construction, operation, safety, and maintenance of ignitable liquid and gas transportation
 - Road
 - NFPA 385: Standard for Tank Vehicles for Flammable and Combustible Liquids (2022)
 - 49 Code of Federal Regulations (CFR) Part 390 (federal)
 - California Vehicle Code Section 31303 (state)
 - Rail
 - 49 Code of Federal Regulations (CFR) Part 174 (federal)
 - California Code of Regulations, Title 13, § 1160.2 - U.S. Department of Transportation Regulations (state)
5. Identify the primary causes of ignitable liquid and gas transportation incidents
6. Identify key players who may become involved in a major ignitable liquid and gas transportation emergency and describe their role in resolving the emergency
 - California Highway Patrol
 - Railroad representatives
 - California Fish and Wildlife
 - County Environmental Health

Discussion Questions

1. Who regulates ignitable liquid and gas transportation operations at the federal level?
2. Who regulates ignitable liquid and gas transportation operations in California?
3. What are the major causes of ignitable liquid and gas transportation incidents?

Application

1. Determined by instructor

Instructor Notes

1. None

Draft

Topic 2-2: Identifying Transportation Operations and Hazards

Terminal Learning Objective

At the end of this topic a student, given sample markers, labels and placards, and basic design and construction features, will be able to describe rail cars, road trailers, and cargo transport units by identifying markers, labels, and placards, and basic design and construction features.

Enabling Learning Objectives

1. Identify hazard classifications
2. Identify markings, labels, and placards
3. Describe rail tank car construction, fittings, and purpose
 - Pressure tank car
 - Non-pressure / low pressure tank car
 - Non-pressure / low pressure tank car (TC117, DOT117)
 - Other cars that may contain ignitable liquids and gases
 - Box car
4. Identify common markings on rail cars
 - Reporting marks and car number
 - Load limit (pounds or kilograms)
 - Empty weight of car
 - Placard
 - Tank qualification and pressure relief device information
 - Car specification
 - Commodity name
5. Describe general shapes and purposes of road trailers and cargo transport units
 - MC331, TC331, SCT331
 - MC338, TC338, SCT338, TC341, CGA341
 - DOT406, TC406, SCT306, MC306, TC306
 - DOT407, TC407, SCT307, MC307, TC307
 - Compressed gas/tube trailer
 - Intermodal tank
 - Other vehicles that may contain ignitable liquids and gases
 - Vacuum tanker
 - Mixed cargo
6. Identify where rail cars, road trailers, and cargo transport units are loaded and unloaded in the AHJ

Discussion Questions

1. Where are rail cars, road trailers, and cargo transport units loaded and off-loaded in your AHJ?
2. How do you determine whether a transportation vessel is pressurized or non-pressurized?

Application

1. Given photos, have students determine whether transportation vessels are pressurized or non-pressurized.
2. Given pictures of placards and an *Emergency Response Guidebook*, have students identify what they represent.

Instructor Notes

1. None

Topic 2-3: Identifying Hazards Associated with Transporting Ignitable Liquids

Terminal Learning Objective

At the end of this topic a student, given a list of liquid products and Safety Data Sheets (SDS), will be able to identify hazards associated with liquids transported by rail cars, road trailers, and cargo transport units in accordance with the SDS for each product.

Enabling Learning Objectives

1. Identify indicators of a leaking liquid
 - Visual
 - Olfactory
 - Auditory
2. Describe behavioral traits of various ignitable liquids
 - Flash point
 - Specific gravity
 - Vapor pressure
 - Flammable limits
 - BTUs
 - Flame spread
3. Describe AHJ emergency response plans for hazards associated with ignitable liquids
4. Describe incident priorities
 - Life safety
 - Incident stabilization
 - Property conservation
 - Environmental protection
5. Describe strategic considerations
 - Size up
 - Offensive mode
 - Defensive mode
 - Combination mode
6. Describe tactical considerations
 - Protective actions
 - Evacuation
 - Shelter in place
 - Air monitoring
 - Suppression
 - Hand line vs. master stream
 - Water vs. foam
 - Containment
 - Diking
 - Damming
 - Diverting
7. Describe how to terminate an incident
 - Decontamination

- Documentation

Discussion Questions

1. What is Bakken oil? What hazards are associated with it?
2. What hazards are associated with ignitable liquids transported by rail cars, road trailers, and cargo transport units?
3. Do your AHJ emergency response plans have any limitations? How could you address or mitigate them?
4. What factors determine whether you use an offensive or defensive strategy?
5. What factors determine whether you use a hand line or master stream?

Application

1. See Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires.

Instructor Notes

1. ELO3: Use plans from the AHJ to teach this objective. If the AHJ doesn't have them, bring multiple samples.

Topic 2-4: Identifying Hazards Associated with Transporting Ignitable Gases

Terminal Learning Objective

At the end of this topic a student, given a list of gas products and Safety Data Sheets (SDS), will be able to identify hazards associated with gases transported by rail cars, road trailers, and cargo transport units in accordance with the SDS for each product.

Enabling Learning Objectives

1. Identify indicators of a leaking gas
 - Visual
 - Olfactory
 - Auditory
2. Describe behavioral traits of various flammable and combustible gases
 - Flash point
 - Vapor density
 - Vapor pressure
 - Flammable limits
 - BTUs
 - Flame spread
3. Describe AHJ emergency response plans for hazards associated with flammable and combustible gases
4. Describe incident priorities
 - Life safety
 - Incident stabilization
 - Property conservation
 - Environmental protection
5. Describe strategic considerations
 - Size up
 - Offensive mode
 - Defensive mode
 - Combination mode
6. Describe tactical considerations
 - Protective actions
 - Evacuation
 - Shelter in place
 - Air monitoring
 - Suppression
 - Hand line vs. master stream
 - Water vs. foam
 - Ventilation
 - Configuration of space
 - Forced supply
 - Forced exhaust
 - Combination (supply/exhaust)

- Wind direction
 - Passive mitigation
7. Describe how to terminate an incident
 - Decontamination
 - Documentation

Discussion Questions

1. Why is a flammable gas incident potentially more dangerous than a flammable liquid incident?
2. What types of flammable and combustible gases are transported through your AHJ?
3. What are some common ignition sources that you can control or isolate?
4. What factors determine whether you use an offensive or defensive strategy?
5. What hazards are associated with ventilation?

Application

1. See Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires.

Instructor Notes

1. None

Unit 3: Bulk Storage Emergencies

Topic 3-1: Identifying Bulk Storage Regulations

Terminal Learning Objective

At the end of this topic a student, given regulatory documents, will be able to identify ignitable liquid and gas bulk storage regulations in accordance with state and federal requirements.

Enabling Learning Objectives

1. Describe the primary federal agencies that regulate bulk storage operations
 - Environmental Protection Agency (EPA)
2. Describe the primary state agencies that regulate bulk storage operations
 - CalEPA
 - Unified program oversight
 - CAL FIRE Office of the State Fire Marshal
 - Interpretation
 - Statutory authority for enforcement
 - Certified Unified Program Agencies (CUPA)
 - Implementation
 - Management
3. Identify the rules and regulations that govern the design, construction, operation, safety, and maintenance of bulk storage facilities
 - 40 Code of Federal Regulations (CFR) Chapter 4, Subchapter A (federal)
 - California Code of Regulations, Title 8, Section 5451 (state)
 - California Code of Regulations, Title 22, Chapter 32 (state)
 - California Code of Regulations, Title 24 (state)
 - NFPA 30: Flammable and Combustible Liquids Code (2021)
4. Identify the primary causes of bulk storage incidents
5. Identify key players who may become involved in a major bulk storage emergency and describe their role in resolving the emergency
 - On-site response (industrial fire brigade, environmental health and safety, etc.)
 - Facility Engineer
 - Third-party contractors

Discussion Questions

1. Who regulates bulk storage operations at the federal level?
2. Who regulates bulk storage operations in California?
3. What are the major causes of bulk storage incidents?

Application

1. Determined by instructor

Instructor Notes

1. None

Topic 3-2: Identifying Bulk Storage Construction and Hazards

Terminal Learning Objective

At the end of this topic a student, given sample pipeline markers, a transportation chain overview, and basic design and construction features, will be able to describe bulk storage construction features and hazards by identifying markers, labels, and placards, and basic design and construction features.

Enabling Learning Objectives

1. Define “bulk storage”
 - Above ground: 1,320 gallons or more
 - Below ground: 55 gallons or more
2. Identify types of bulk storage facilities
 - Bulk fuel storage terminals
 - Refineries
 - Airports and aviation facilities
 - Military bases and training centers
 - Marketing (loading and unloading) terminals
 - Vehicle fuel (gas, diesel, hydrogen, LNG, biofuel) stations
 - Tank farms
3. Identify markings, labels, and placards
 - NFPA 704 (fixed facilities)
4. Describe tank construction and purposes
 - Cone roof tank
 - Open floating roof tank
 - Open floating roof tank with geodesic dome
 - Covered floating roof tank
 - Dome roof tank
 - Horizontal tank
 - Spherical tank
 - Underground tank
5. Identify AHJ bulk storage facility locations

Discussion Questions

1. Where are bulk storage facilities located within your AHJ?
2. What are the components of an NFPA 704 placard?

Application

1. Determined by instructor

Instructor Notes

1. None

Topic 3-3: Identifying Hazards Associated with Ignitable Liquid Bulk Storage

Terminal Learning Objective

At the end of this topic a student, given a list of liquid products and Safety Data Sheets (SDS), will be able to identify hazards associated with ignitable liquid bulk storage in accordance with the SDS for each product.

Enabling Learning Objectives

1. Describe AHJ emergency response plans for hazards associated with ignitable liquid bulk storage
2. Describe incident priorities
 - Life safety
 - Incident stabilization
 - Property conservation
 - Environmental protection
3. Describe strategic considerations
 - Offensive mode
 - Defensive mode
 - Combination mode
4. Describe tactical considerations
 - Protective actions
 - Evacuation
 - Shelter in place
 - Air monitoring
 - Suppression
 - Water supply
 - Hand line vs. master stream
 - Water vs. foam
 - Fixed systems
5. Describe how to terminate an incident
 - Environmental considerations for run off
 - Decontamination
 - Documentation

Discussion Questions

1. What hazards are associated flammable liquid fires in bulk storage facilities?
2. Why is water supply of greater concern at a bulk storage fire than at a transport fire?
3. What agencies or organizations might you interact with at a bulk facility liquid fire in your AHJ?

Application

1. See Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires.

Instructor Notes

1. None

Topic 3-4: Identifying Hazards Associated with Ignitable Gas Bulk Storage

Terminal Learning Objective

At the end of this topic a student, given a list of pipeline products and Safety Data Sheets (SDS), will be able to identify hazards associated with gases transported through a pipeline in accordance with the SDS for each product.

Enabling Learning Objectives

1. Describe AHJ emergency response plans for hazards associated with ignitable gas bulk storage
2. Describe incident priorities
 - Life safety
 - Incident stabilization
 - Property conservation
 - Environmental protection
3. Describe strategic considerations
 - Size up
 - Offensive mode
 - Defensive mode
 - Combination mode
4. Describe tactical considerations
 - Protective actions
 - Evacuation
 - Shelter in place
 - Air monitoring
 - Suppression
 - Water supply
 - Hand line vs. master stream
 - Fixed systems
5. Describe how to terminate an incident
 - Decontamination
 - Documentation

Application

1. See Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires.

Instructor Notes

1. None

Unit 4: Pipeline Emergencies

Topic 4-1: Identifying Pipeline Regulations

Terminal Learning Objective

At the end of this topic a student, given regulatory documents will be able to identify pipeline regulations in accordance with state and federal requirements.

Enabling Learning Objectives

1. Describe basic types and categories of pipeline systems
 - Crude oil
 - Liquid
 - Natural gas
 - Propane
2. Describe the primary federal agencies that regulate pipeline operations
 - Department of Transportation, Pipeline and Hazardous Materials Safety Administration
 - Department of Labor – Occupational Safety and Health Administration
 - Environmental Protection Agency
3. Describe the primary state agencies that regulate pipeline operations
 - Office of the State Fire Marshal, Pipeline Safety Division
4. Identify rules and regulations that govern the design, construction, operation, safety, and maintenance of interstate pipelines
 - 49 Code of Federal Regulations (CFR) Parts 190-199 (federal)
 - California Government Code (CGC) Sections 51010-51019.1 (state)
5. Identify the primary causes of pipeline incidents
6. Identify key players who may become involved in a major pipeline emergency and describe their role in resolving the emergency
 - Pipeline owner
 - HazMat teams
 - Law enforcement
 - Industrial emergency response team
 - Oil spill response organizations (OSRO)
 - California Fish and Wildlife

Discussion Questions

1. Who regulates pipeline operations at the federal level?
2. Who regulates pipeline operations in California?
3. What are the major causes of pipeline incidents?

Application

1. Determined by instructor

Instructor Notes

1. None

Topic 4-2: Identifying Pipeline Operations and Hazards

Terminal Learning Objective

At the end of this topic a student, given sample pipeline markers, a transportation chain overview, and basic design and construction features, will be able to identify pipeline operations within a jurisdiction by identifying markers, transportation chains, and basic pipeline design and construction features.

Enabling Learning Objectives

1. Describe the pipeline transportation chain
2. Identify pipeline locations in California
3. Identify different types of pipeline markers found along a pipeline corridor
4. Identify the following information on a pipeline marker:
 - Product
 - Owner
 - Emergency telephone number
5. Describe the purpose of pipeline rights-of-way
6. Identify clues that, in the absence of markers, may indicate the presence of an underground pipeline
7. Identify basic design and construction features of a pipeline system
 - Piping
 - Pumps and compressors
 - Meters
 - Valves
 - Manual
 - Automatic
 - Emergency shutdown
 - Pressure relief
8. Identify operations of a gas pipeline
 - Gathering systems
 - Processing and treatment facilities
 - Compressor stations
 - Transmission pipelines
 - Service lines
 - Meters

Discussion Questions

1. Are there pipelines in your AHJ?
2. What information should a pipeline marker include?
3. What are some indicators of a pipeline right-of-way?

Application

1. Determined by instructor

Instructor Notes

1. None

Topic 4-3: Identifying Hazards Associated with Ignitable Liquid Pipeline Products

Terminal Learning Objective

At the end of this topic a student, given a list of pipeline products and Safety Data Sheets (SDS), will be able to identify hazards associated with ignitable liquids transported through a pipeline in accordance with the SDS for each product.

Enabling Learning Objectives

1. Describe how different liquid pipeline products behave during an uncontrolled release
 - Crude oil / Bakken oil
 - Flammable and combustible liquids
 - Anhydrous ammonia
 - Carbon dioxide
 - Liquid petroleum gas (LPG)
 - Hydrogen
2. Identify indicators of a leaking liquid pipeline
 - Visual
 - Olfactory
 - Auditory
3. Define “highly volatile liquid” (HVL) and identify common HVLs transported by pipelines
4. Describe AHJ emergency response plans for hazards associated with flammable and combustible liquid pipeline leaks
5. Describe incident priorities
 - Life safety
 - Incident stabilization
 - Property conservation
 - Environmental protection
6. Describe strategic considerations
 - Size up
 - Offensive mode
 - Defensive mode
 - Combination mode
7. Describe tactical considerations
 - Protective actions
 - Evacuation
 - Shelter in place
 - Air monitoring
 - Suppression
 - Water supply
 - Hand line vs. master stream
 - Water vs. foam
 - Remote shut off
 - Containment
 - Diking

- Damming
 - Diverting
8. Describe how to terminate an incident
 - Environmental considerations for run off
 - Decontamination
 - Documentation

Discussion Questions

1. What is Bakken oil? What hazards are associated with it? How is it transported in California?
2. What hazards are associated with non-flammable liquids transported through pipelines?
3. Which products used primarily in their gaseous state transport through pipelines as liquids?

Application

1. See Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires.

Instructor Notes

1. None

Topic 4-4: Identifying Hazards Associated with Ignitable Gas Pipeline Products

Terminal Learning Objective

At the end of this topic a student, given a list of pipeline products and Safety Data Sheets (SDS), will be able to identify hazards associated with ignitable gases transported through a pipeline in accordance with the SDS for each product.

Enabling Learning Objectives

1. Describe how different gas pipeline products behave during an uncontrolled release
 - Natural gas
 - Ethane and ethylene
 - Methane gas
 - Chlorine
 - Propane
2. Identify indicators of a leaking gas pipeline
 - Visual
 - Olfactory
 - Auditory
3. Describe AHJ emergency response plans for hazards associated with ignitable gas pipeline leaks
4. Describe incident priorities
 - Life safety
 - Incident stabilization
 - Property conservation
 - Environmental protection
5. Describe strategic considerations
 - Size up
 - Offensive mode
 - Defensive mode
 - Combination mode
6. Describe tactical considerations
 - Protective actions
 - Evacuation
 - Shelter in place
 - Air monitoring
 - Suppression
 - Water supply
 - Hand line vs. master stream
 - Water vs. foam
 - Remote shut off
7. Describe how to terminate an incident
 - Environmental considerations for run off
 - Decontamination
 - Documentation

Discussion Questions

1. What factors determine whether to extinguish a pipeline gas fire or allow it to passively mitigate itself?
2. How will a natural gas leak differ from a propane leak? How will this impact your strategies and tactics?

Application

1. See Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires.

Instructor Notes

1. None

Unit 5: Application

Topic 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires

Terminal Learning Objective

At the end of this topic a student, given an ignitable liquid or gas fire scenario, will be able to plan initial actions for an ignitable liquid or gas fire so that crew integrity is maintained; escape routes and safety zones are identified; contents are identified; correct protection, suppression, or containment actions are applied; and hazardous conditions are recognized.

Enabling Learning Objectives

1. Describe how to plan initial actions for an ignitable liquid or gas fire
2. Plan initial actions

Discussion Questions

1. Determined by instructor

Application

1. Activity 5-1: Planning Initial Actions for Ignitable Liquid and Gas Fires

Instructor Notes

1. There is no instructional time built into this topic. The content is covered in Topics 2-3, 2-4, 3-3, 3-4, 4-3, and 4-4.

Topic 5-2: Using Master Streams to Attack Ignitable Liquid and Gas Fires

Terminal Learning Objective

At the end of this topic a student, given a simulated ignitable liquid or gas fire scenario, PPE, an apparatus with a master stream, hose lines, and a water supply, will be able to deploy a master stream to attack a simulated ignitable liquid or gas fire in accordance with AHJ policies and procedures.

Enabling Learning Objectives

1. Describe how to deploy a master stream using an apparatus-mounted deck gun
2. Describe how to deploy a master stream using a ground monitor
3. Deploy a master stream using an apparatus-mounted deck gun
4. Deploy a master stream using a ground monitor

Discussion Questions

1. Determined by instructor

Application

1. Activity 5-2: Deploying Master Streams

Instructor Notes

1. There is no instructional time build into this topic. The content was already covered in Topics 2-3, 2-4, 3-3, 3-4, 4-3, and 4-4.
2. This is not a live fire class. Do not use live fire props for this scenario.

Acknowledgements

State Fire Training appreciates the hard work and accomplishments of those who built the solid foundation on which this program continues to grow.

State Fire Training gratefully acknowledges the following individuals and organizations for their diligent efforts and contributions that made the development and publication of this document possible.

CAL FIRE

- Joe Tyler, Director
- Mike Richwine, State Fire Marshal
- Andrew Henning, Assistant Deputy Director: Fire and Life Safety, State Fire Training, Code Development and Analysis
- (Vacant), Chief of State Fire Training
- John Binaski, Chair, Statewide Training and Education Advisory Committee (STEAC); Chief, Clovis Fire Department

Cadre – 2022 Curriculum Development

Leadership

- Chris Fowler, Cadre Lead, Deputy State Fire Marshal III, Supervisor, CAL FIRE
- Allison L. Shaw, Editor, Sacramento State

Members

- Greg Belk, Deputy Chief, CAL FIRE
- Jason Davison, Battalion Chief, Nevada County Consolidated Fire District; Operations Section Chief, Nevada County, Sierra College Fire Academy
- Darrell “Charlie” Miller, Fire Chief, McCloud Fire Department; Adjunct Instructor, College of the Siskiyous
- Andrew J. Murtagh, Training Lieutenant, San Francisco Fire Department; Adjunct Faculty, College of San Mateo Fire Academy
- Grant Tokiwa, Captain (retired), Vacaville Fire Department; Battalion Chief (retired), Chevron Richmond Refinery Fire Department

How to Read a Course Plan

A course plan identifies the details, logistics, resources, and training and education content for an individual course. Whenever possible, course content is directly tied to a national or state standard. SFT uses the course plan as the training and education standard for an individual course. Individuals at fire agencies, academies, and community colleges use course plans to obtain their institution's consent to offer course and provide credit for their completion. Instructors use course plans to develop syllabi and lesson plans for course delivery.

Course Details

The Course Details segment identifies the logistical information required for planning, scheduling, and delivering a course.

Required Resources

The Required Resources segment identifies the resources, equipment, facilities, and personnel required to deliver the course.

Unit

Each Unit represents a collection of aligned topics. Unit 1 is the same for all SFT courses. An instructor is not required to repeat Unit 1 when teaching multiple courses within a single instructional period or academy.

Topics

Each Topic documents a single Terminal Learning Objective and the instructional activities that support it.

Terminal Learning Objective

A Terminal Learning Objective (TLO) states the instructor's expectations of student performance at the end of a specific lesson or unit. Each TLO includes a task (what the student must be able to do), a condition (the setting and supplies needed), and a standard (how well or to whose specifications the task must be performed). TLOs target the performance required when students are evaluated, not what they will do as part of the course.

Enabling Learning Objectives

The Enabling Learning Objectives (ELO) specify a detailed sequence of student activities that make up the instructional content of a lesson plan. ELOs cover the cognitive, affective, and psychomotor skills students must master to complete the TLO.

Discussion Questions

The Discussion Questions are designed to guide students into a topic or to enhance their understanding of a topic. Instructors may add to or adjust the questions to suit their students.

Application

The Application segment documents experiences that enable students to apply lecture content through cognitive and psychomotor activities, skills exercises, and formative testing. Application experiences included in the course plan are required. Instructors may add additional application experiences to suit their student population if time permits.

Instructor Notes

The Instructor Notes segment documents suggestions and resources to enhance an instructor's ability to teach a specific topic.

CTS Guide Reference

The CTS Guide Reference segment documents the standard(s) from the corresponding Certification Training Standard Guide upon which each topic within the course is based. This segment is eliminated if the course is not based on a standard.

Skill Sheet

The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.

Planning Initial Actions for Ignitable Liquid and Gas Fires

Activity: Topic 5-1 (Related to Topics 2-3, 2-4, 3-3, 3-4, 4-3, and 4-4)

Format: Small group (6 groups maximum)

Time Frame: 2 hours (15-20 minutes for development / 1 hours 45 minutes for presentations)

Description

This exercise gives students an opportunity to plan initial actions for an ignitable liquid or gas fire.

Materials

- Sample scenario
- Blank scenario template
- Initial action worksheet
- *Emergency Response Guidebook* (NAERG)
- Pens
- Dry erase board or easel chart
- Markers

Instructions

Working in groups, students will:

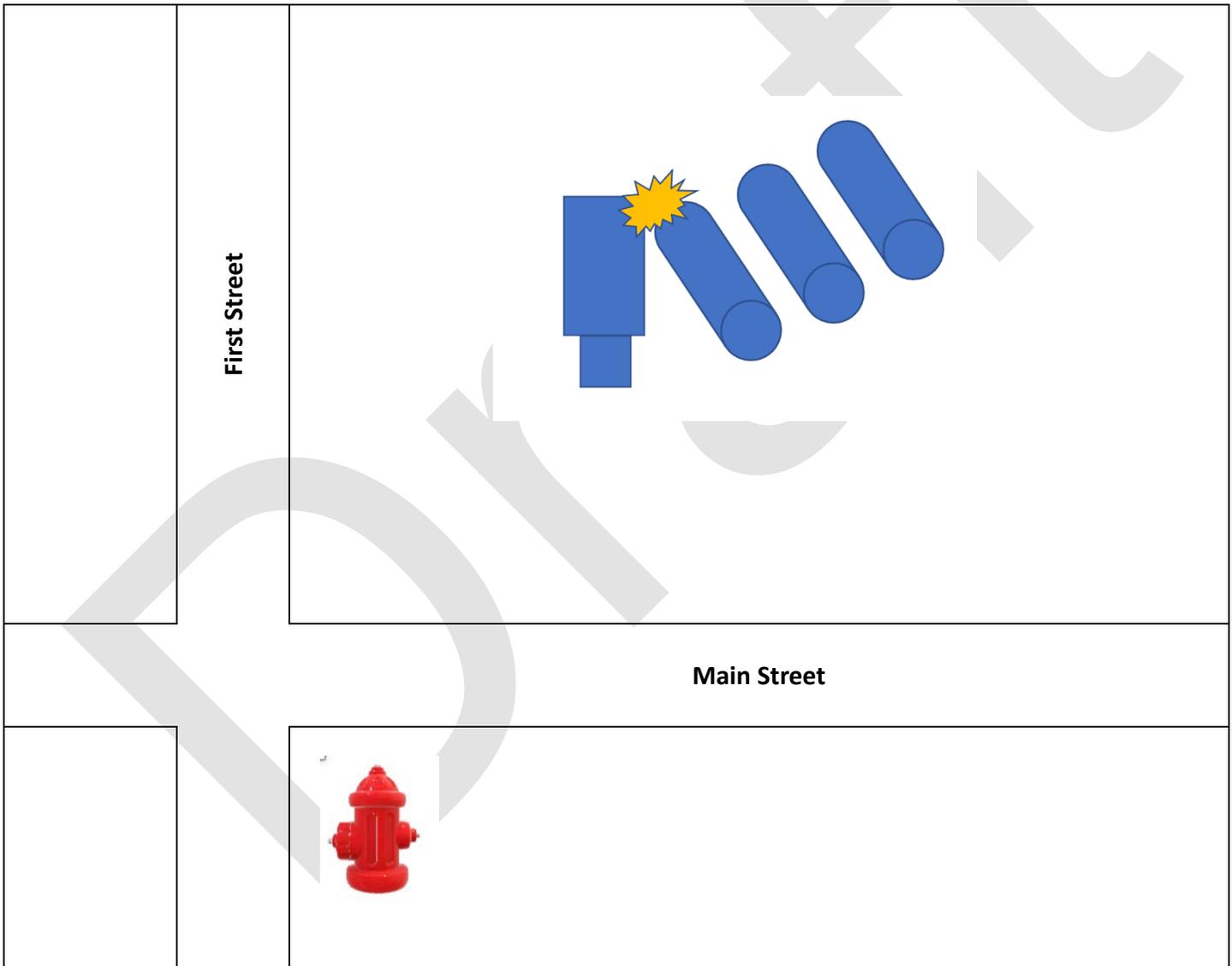
1. Plan initial actions for their given scenario
2. Present their action plan to the class
3. Participate in discussions around selected strategies and tactics

Instructor Notes

- One scenario is provided with the course plan. You are responsible for building out the other five.
- Include the following variations:
 - Liquid transported by rail car, road trailer, or cargo transport unit
 - Gas transported by rail car, road trailer, or cargo transport unit
 - Liquid fire in a bulk storage facility or vessel
 - Gas fire in a bulk storage facility or vessel (provided)
 - Liquid fire from a leaking pipeline
 - Gas fire from a leaking pipeline
- Give each team a blank Incident Action Worksheet.
- Give groups 15-20 minutes to plan their actions.
- Give each group 15-20 minutes to present their plan (including time for discussion and feedback).

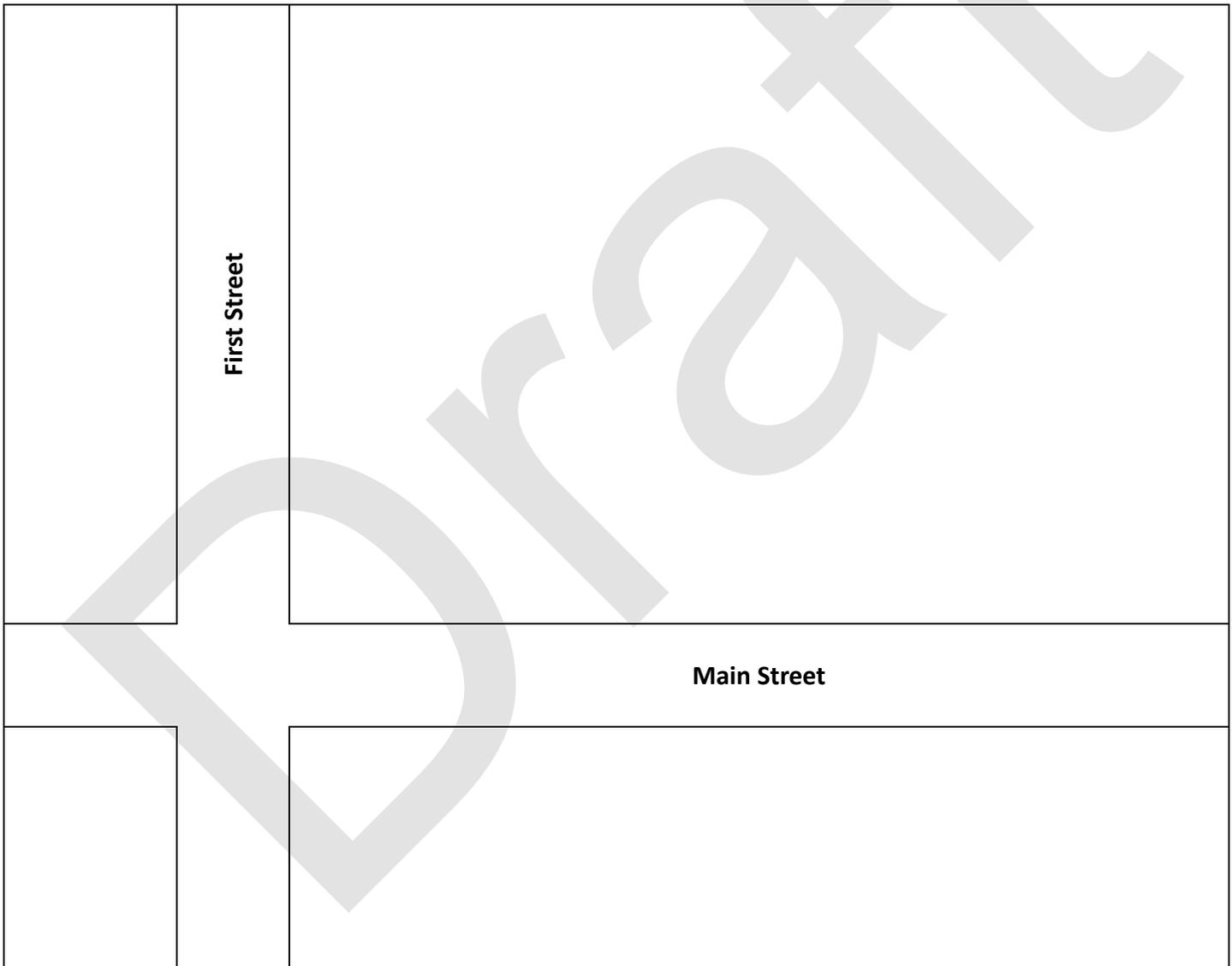
Fire Control 4B: Ignitable Liquids and Gases Technician
 Skills Exercise 1: Planning Initial Actions for Ignitable Liquid and Gas Fires

Scenario: Gas Fire in a Bulk Storage Facility or Vessel		Key	
Resources:		North:	Top of the page
Materials:	ERG	Wind Direction:	
Product and Quantity:	Propane tanks / 3,100 gallons	Wind Speed:	
Fire vs. No Fire		Weather:	
Additional Information:		Time:	



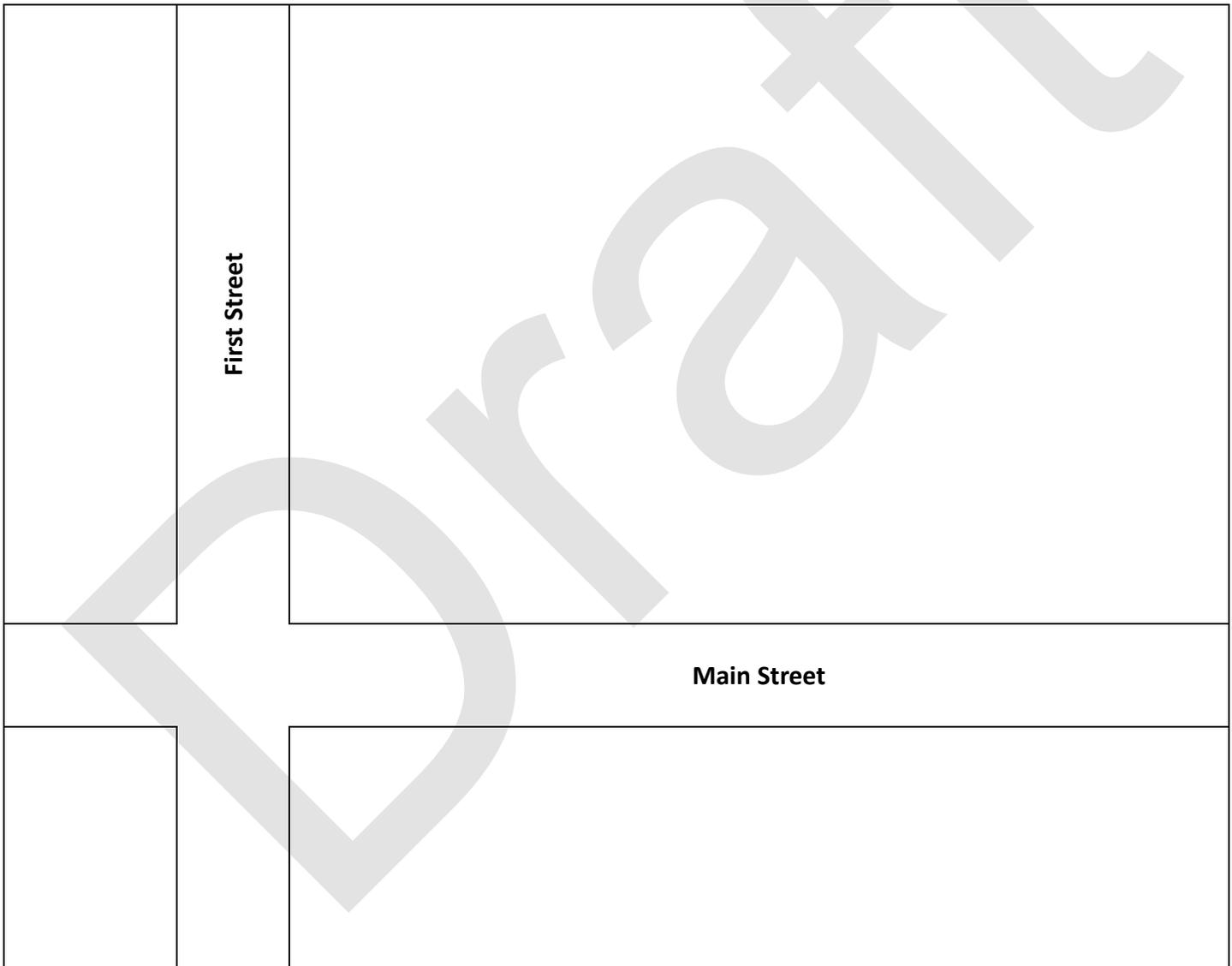
Fire Control 4B: Ignitable Liquids and Gases Technician
 Skills Exercise 1: Planning Initial Actions for Ignitable Liquid and Gas Fires

Scenario: Liquid Fire in a Bulk Storage Facility or Vessel		Key	
Resources:		North:	Top of the page
Materials:		Wind Direction:	
Product and Quantity:		Wind Speed:	
Fire vs. No Fire		Weather:	
Additional Information:		Time:	



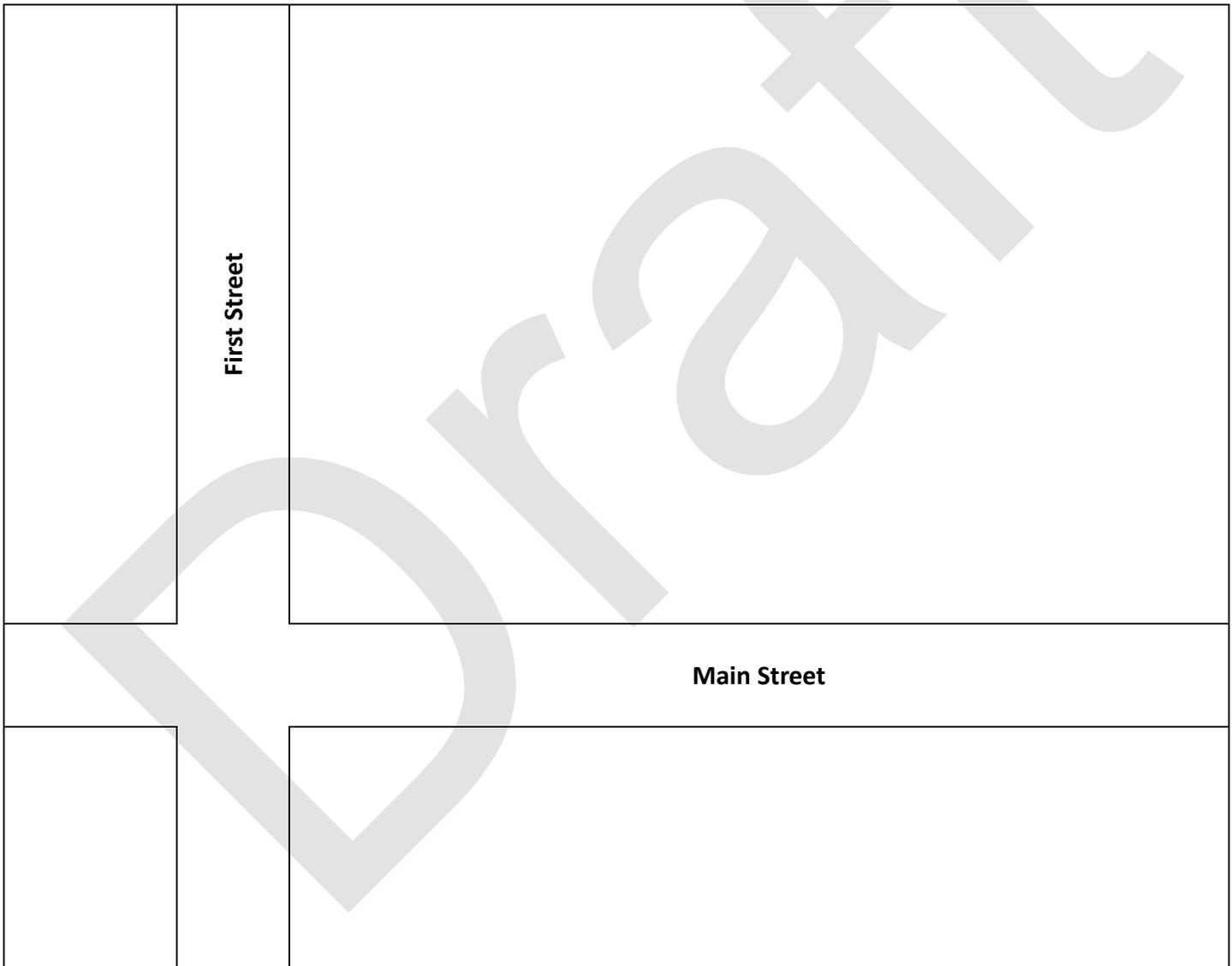
Fire Control 4B: Ignitable Liquids and Gases Technician
 Skills Exercise 1: Planning Initial Actions for Ignitable Liquid and Gas Fires

Scenario: Gas Transported by Rail, Road, or Cargo Unit		Key	
Resources:		North:	Top of the page
Materials:		Wind Direction:	
Product and Quantity:		Wind Speed:	
Fire vs. No Fire		Weather:	
Additional Information:		Time:	



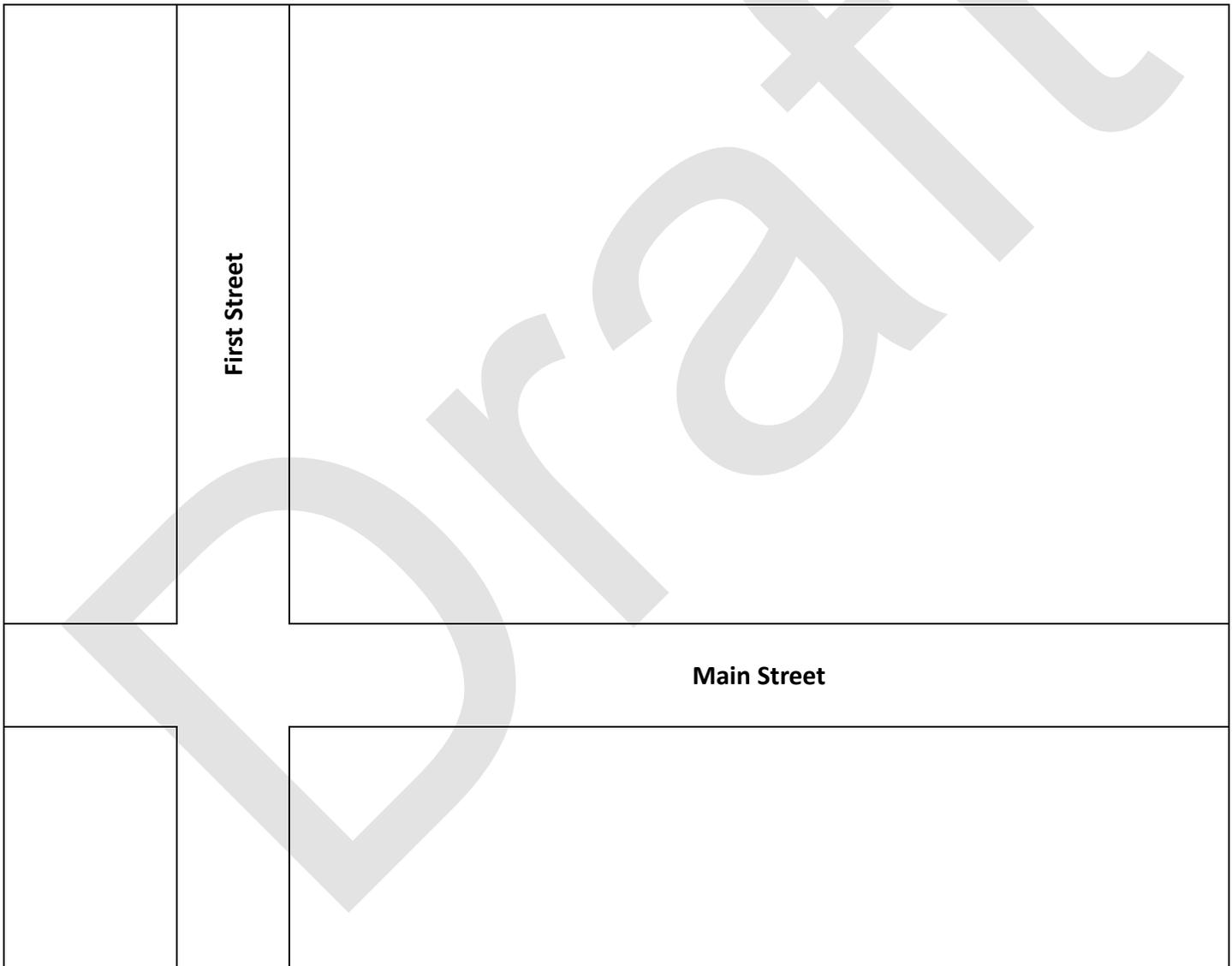
Fire Control 4B: Ignitable Liquids and Gases Technician
 Skills Exercise 1: Planning Initial Actions for Ignitable Liquid and Gas Fires

Scenario: Liquid Transported by Rail, Road, or Cargo Unit		Key	
Resources:		North:	Top of the page
Materials:		Wind Direction:	
Product and Quantity:		Wind Speed:	
Fire vs. No Fire		Weather:	
Additional Information:		Time:	



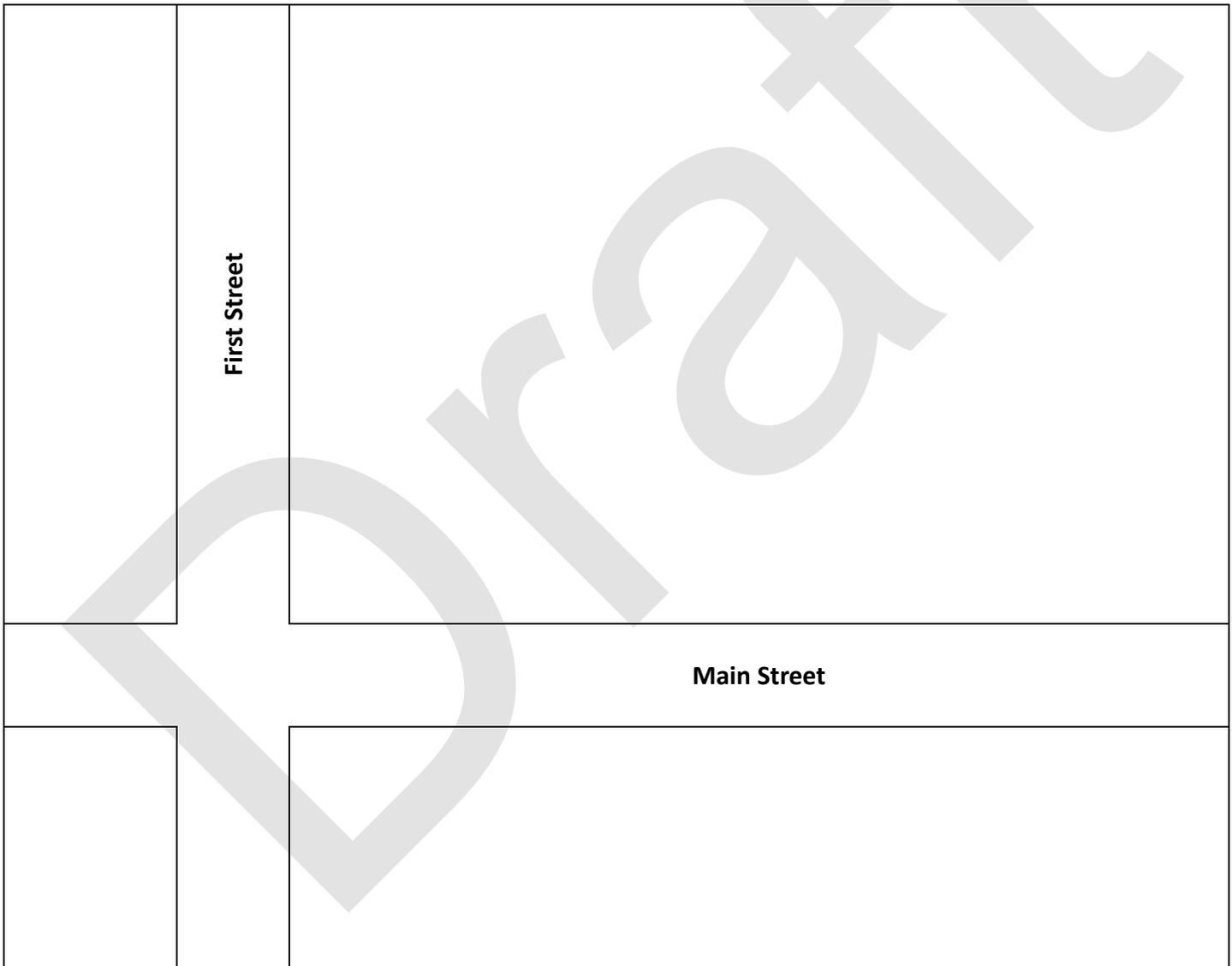
Fire Control 4B: Ignitable Liquids and Gases Technician
 Skills Exercise 1: Planning Initial Actions for Ignitable Liquid and Gas Fires

Scenario: Gas Fire from a Leaking Pipeline		Key	
Resources:		North:	Top of the page
Materials:		Wind Direction:	
Product and Quantity:		Wind Speed:	
Fire vs. No Fire		Weather:	
Additional Information:		Time:	



Fire Control 4B: Ignitable Liquids and Gases Technician
 Skills Exercise 1: Planning Initial Actions for Ignitable Liquid and Gas Fires

Scenario: Liquid Fire from a Leaking Pipeline		Key	
Resources:		North:	Top of the page
Materials:		Wind Direction:	
Product and Quantity:		Wind Speed:	
Fire vs. No Fire		Weather:	
Additional Information:		Time:	



Initial Action Worksheet	
Incident Priority <ul style="list-style-type: none">• Life safety• Incident stabilization• Property conservation• Environmental protection	Strategy <ul style="list-style-type: none">• Offensive• Defensive• Combination
Tactics	
Tasks	

Deploying Master Streams

Activity: Topic 5-2 (Related to Topics 2-3, 2-4, 3-3, 3-4, 4-3, and 4-4)

Format: Small group (maximum 15 students)

Time Frame: 3 hours

Description

This exercise gives students an opportunity to deploy a master stream to attack a simulated ignitable liquid or gas fire in accordance with AHJ policies and procedures.

Materials

- An apparatus with a deck gun
- A ground monitor
- Adequate hose lines
- Adequate nozzles
- Adequate water supply
- PPE
- Communication equipment

Instructions – Deck Gun

Each student will deploy a master stream using an apparatus-mounted deck gun to demonstrate the following skills:

1. Staff deck gun
2. Direct pump operator to charge device supply line
3. Direct stream
 - Up
 - Down
 - Right
 - Left
 - Fog stream
 - Straight stream
4. Signal pump operator to shut down water supply to deck gun
5. Climb down from deck gun

Instructions – Ground Monitor

Working as a team, students will deploy a master stream using a ground monitor to demonstrate the following skills:

1. Place ground monitor (monitor and base) in position with assistance
2. Position ground monitor on a solid, level surface
3. Secure upper assembly to ground monitor base according to manufacturer guidelines
4. Deploy hose lines and attach to ground monitor
5. Secure ground monitor to hose line and ensure all connections are tight
6. Set nozzle to desired elevation and adjust nozzle pattern (if applicable)
7. Direct pump operator to charge ground monitor supply line
8. Set all ground monitor position locks
9. Direct stream*
 - Up
 - Down
 - Right
 - Left
 - Fog stream
 - Straight stream
10. Signal pump operator to shut down water supply to ground monitor

* If possible, have each student complete this portion individually.



Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) Training Record

Name: _____

SFT ID Number: _____

Unless otherwise specified by an asterisk (*) indicating that each student must complete a skill individually, students will complete these skills as a member of a team.

	Required Skills	Course Plan Topic	Evaluator Initials
1.	Prepare foam concentrate supply for use	2-1	
2.	Assemble foam stream components	2-1	
3.	Approach spill as part of a coordinated team	2-1	
4.	Demonstrate the rain down foam application techniques	2-1	
5.	Demonstrate the roll in/on foam application techniques	2-1	
6.	Demonstrate the bank back foam application techniques	2-1	
7.	Retreat from a spill as part of a coordinated team	2-1	
8.	Control a flammable gas cylinder fire <ul style="list-style-type: none">• Advance hoseline(s) toward gas cylinder(s)• Apply water application techniques• Assess cylinder integrity and changing cylinder conditions• Operate control valve(s)• Respond to changing incident conditions• Retreat hoseline(s)	3-1	
9.	Control a flammable gas meter fire <ul style="list-style-type: none">• Advance hoseline(s) toward meter• Apply water application techniques• Assess meter integrity and changing meter conditions• Operate control valve(s)• Respond to changing incident conditions• Retreat hoseline(s)	3-1	

10.	Control a flammable gas fires involving valves, flanges, and piping <ul style="list-style-type: none"> • Advance hoseline(s) toward valve, flange, and piping prop • Apply water application techniques • Assess valve, flange, and piping integrity and changing conditions • Operate control valve(s) • Respond to changing incident conditions • Retreat hoseline(s) 	3-1	
-----	---	-----	--

A candidate has successfully completed the skill when they perform it to the corresponding Terminal Learning Objective standard found in State Fire Training’s Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) course.

SFT Course ID: _____

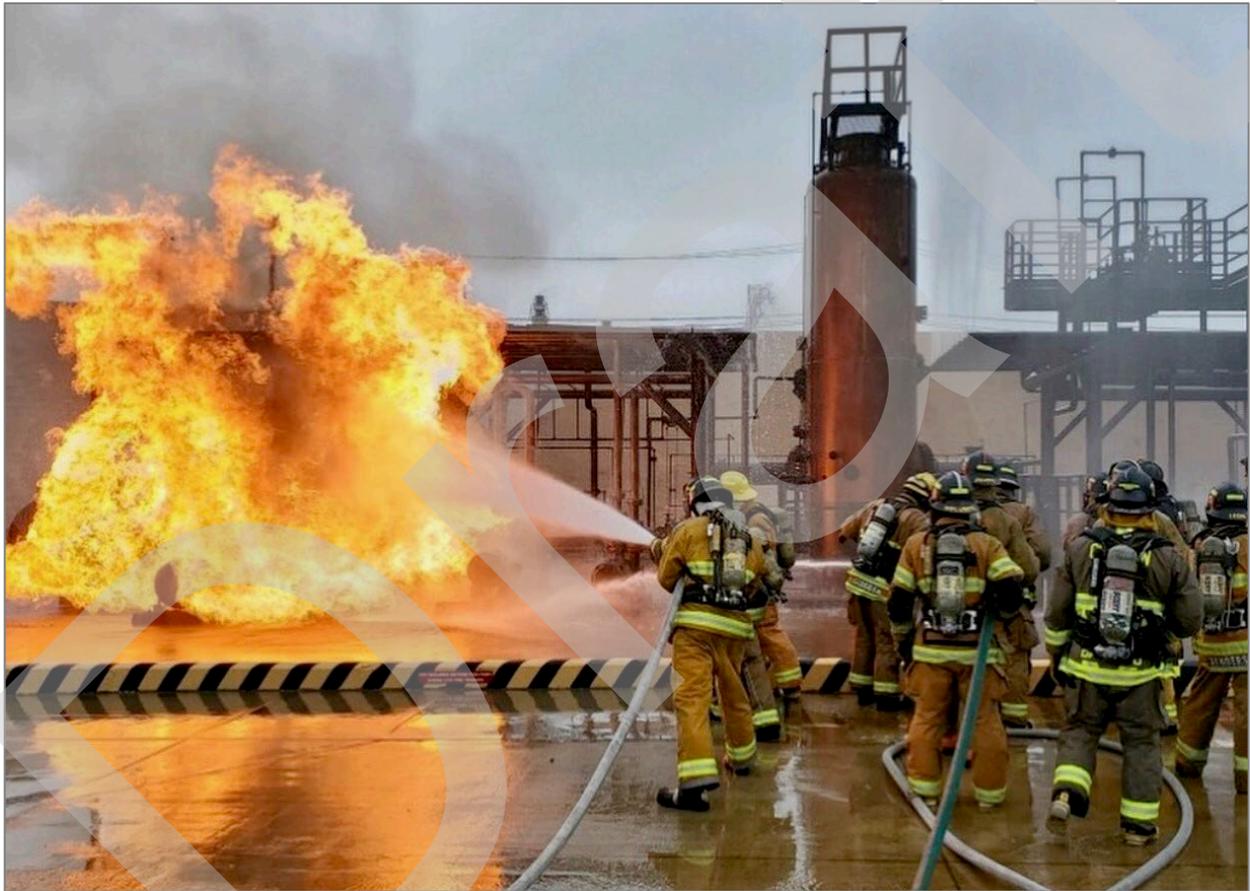
Course Delivery Date: _____

Instructor of Record: _____

Instructor SFT ID Number: _____

Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations

Instructor Task Book (2022)



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

Overview

Authority

Published: Month Year

Published by: State Fire Training, PO Box 944246, Sacramento, CA 94244-2460

Cover photo courtesy of Caryn Petty, Deputy State Fire Marshal, State Fire Training, CAL FIRE.

Purpose

The State Fire Training instructor task book is a performance-based document. It lists the minimum requirements a candidate must meet in order to teach a specific State Fire Training course or course series.

Assumptions

With the exception of Fire Fighter and Emergency Vehicle Technician (EVT) certifications, a candidate may begin the task book initiation process upon completion of all required education components (courses).

Each job performance requirement (JPR) shall be evaluated after the candidate initiates the task book.

State Fire Training task books do not count towards the NWCG task book limit. There is no limit to the number of State Fire Training task books a candidate may pursue at one time as long as the candidate meets the initiation requirements for each.

It is the candidate's responsibility to routinely check the State Fire Training website for updates to an initiated task book. All State Fire Training issued updates to an initiated task book are required for task book completion.

A candidate must complete their task book within three years of its initiation date. Otherwise, a candidate must initiate a new task book using the curriculum's current published version.

Roles and Responsibilities

Candidate

The candidate is the individual pursuing instructor registration.

Initiation

The candidate shall:

1. Complete the Initiation Requirements section.
 - Please print.
2. Complete a block on the Signature Verification page with a handwritten signature.

Completion

The candidate shall:

1. Complete all Job Performance Requirements.
 - Ensure that an evaluator initials, signs, and dates each task to verify completion.
2. Complete the Completion Requirements section.
3. Sign and date the Candidate verification section on the Review and Approval page with a handwritten signature.
4. Obtain their fire chief's handwritten (not stamped) signature on the Fire Chief verification section on the Review and Approval page.
5. Create and retain a physical or high-resolution digital copy of the completed task book.

Submission

The candidate shall:

1. Submit a copy (physical or digital) of the completed task book and any supporting documentation to State Fire Training.
 - See Submission and Review below.

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

Evaluator

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

A qualified evaluator is a Registered Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Instructor designated by the candidate's Fire Chief (or authorized designee). If no such evaluator is present within the organization, the Fire Chief (or authorized designee) shall designate an individual with more experience than the candidate and a demonstrated ability to execute the job performance requirements. For instructor task books that do not require fire chief initiation, academy instructors serve as or designate evaluators.

An instructor task book may have more than one evaluator.

All evaluators shall:

1. Complete a block on the Signature Verification page with a handwritten 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.
 - Do not evaluate any job performance requirement (JPR) until after the candidate initiates the task book.
 - Sign all appropriate lines in the instructor task book with a handwritten 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.

Fire Chief

The Fire Chief is the individual who initiates (when applicable) and then reviews and confirms the completion of a candidate's instructor task book.

A Fire Chief may identify an authorized designee already on file with State Fire Training to fulfill any task book responsibilities assigned to the Fire Chief. (See *State Fire Training Procedures Manual*, 4.2.2: Authorized Signatories)

Initiation

The Fire Chief shall:

1. Review and understand the candidate's instructor task book requirements and responsibilities.
2. Complete a block on the Signature Verification page with a handwritten signature.
3. Designate qualified evaluators.

Completion

The Fire Chief shall:

1. Confirm that the candidate has obtained the appropriate signatures to verify successful completion of each job performance requirement.
 - Ensure that all job performance requirements were evaluated after the initiation date.
2. Confirm that the candidate meets the Completion Requirements.
3. Sign and date the Fire Chief verification statement under Review and Approval with a handwritten signature.
 - If signing as an authorized designee, verify that your signature is on file with State Fire Training.

Submission and Review

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

To submit a completed task book, please send the following items to the address below:

1. A copy of the completed task book (candidate may retain the original)
2. All supporting documentation
3. Payment

State Fire Training

Attn: Instructor Registration

PO Box 944246

Sacramento, CA 94244-2460

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 4A: Ignitable Liquids and Gases Awareness/Operations.

Initiation Requirements

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

Candidate Information

Name: _____

SFT ID Number: _____

Fire Agency: _____

Initiation Date: _____

Prerequisites

The candidate meets the following prerequisites.

1. OSFM Instructor 2 certification **or** Training Instructor 2 certification **or** Fire Instructor 2 certification **or** SFT Registered Instructor
2. OSFM Fire Fighter 2 certification

Include documentation to verify prerequisite requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.

Education

That candidate has completed the following courses.

1. I-300 Intermediate ICS (CalEMA/CalOES, CDF/CAL FIRE, FEMA, FIRESCOPE, NFA, NWCG, or SFT)
2. Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022)
or
Fire Control 4: Controlling Ignitable Liquids and Gases (2015) **and** Hazardous Materials First Responder Operations (FRO) (IAFF, CSTI, or SFT)

Include documentation to verify education requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.

Fire Chief Approval

State Fire Training confirms that a Fire Chief's approval is not required to initiate this task book.

Draft

Signature Verification

The following individuals have the authority to verify portions of this instructor task book using the signature recorded below.

Please print except for the Signature line where a handwritten signature is required.
Add additional signature pages as needed.

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

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

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

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

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

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

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

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

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

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

Job Performance Requirements

Job Performance Requirements

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.

When California requirements exceed or require revision to the NFPA standard, the corresponding Office of the State Fire Marshal approved (OSFM) additions or revisions appear in italics.

All JPRs must be completed within a California fire agency or State Fire Training Accredited Regional Training Programs (ARTP).

Each JPR shall be evaluated after the candidate initiates the task book.

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

Ignitable Liquids and Gases Awareness/Operations

1. Administration	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Describe facility requirements						
b. Secure resources: fuel, foam or foam substitute, props or FLAG trailer						
c. Confirm that equipment is serviceable: PPE (including SCBA), props, nozzles, hoses, etc.						
d. Prepare a pre-burn plan in compliance with NFPA 1403						
e. Describe Fire Control 4 course plan content						
f. Describe NFPA 1403: Standard on Live Fire Training Evolutions (chapter 8 – Exterior Class B Fires) requirements						
g. Describe how to become a Registered SFT Fire Control 4 Instructor						
h. Obtain SFT course approval						
i. Secure applicable permits and/or approvals						
j. Notify applicable parties						
k. Develop IAP for operational period using applicable ICS forms						
l. Identify and assign instructional tasks and duties in compliance with NFPA 1403						
m. Maintain the training environment to safeguard participants						
n. Deliver course in accordance with <i>SFT Procedures Manual</i>						

o. Complete records and reports in accordance with NFPA 1403						
2. Classroom/Lecture	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Develop teaching materials based on Fire Control 4 course plan: lesson plan, audio/visual presentations, activities (if applicable), handouts (if applicable)						
b. Deliver lecture and application portions of Fire Control 4 course plan						
3. Prop Set Up and Operations	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Demonstrate correct prop set up based on facility requirements						
b. Conduct a pre-burn inspection of the structure or prop						
c. Calculate the minimum water supply required for a live fire evolution in compliance with NFPA 1403, Section 4.12						
d. Calculate the minimum water flow application rate for a live fire evolution in compliance with NFPA 1403, Section 4.12						
e. Demonstrate safe operation of individual props prior to instruction						
f. Predict stages of fire growth in a compartment, flow path, flashover, rollover, and backdraft						
g. Conduct a personnel accountability report (PAR) upon entering and exiting a live fire structure or prop						
h. Monitor live fire participants to safeguard participants						
i. Conduct a post-burn inspection of the structure or prop						

j. Conduct a post-burn briefing session						
4. Skills Exercise Set Up and Placement (Liquids)	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Establish two water supply sources						
b. Set up proper hose lines: attack lines, safety lines, personnel						
c. Confirm hose line pressure and flow						
5. Skills Training (Liquids)	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Conduct student/instructor skill briefing						
b. Perform a walk around of exercise site and test burn						
c. Inspect students' PPE and SCBA						
d. Supervise a group during a live fire evolution						
e. Prepare foam concentrate supply for use						
f. Assemble foam stream components						
g. Demonstrate rain down foam application technique						
h. Demonstrate roll in/on foam application technique						
i. Demonstrate bank back foam application technique						
j. Approach and retreat from spills as part of a coordinated team						

6. Skills Exercise Set Up and Placement (Gas)	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Establish two water supply sources						
b. Set up proper hose lines: attack lines, safety lines, personnel						
c. Confirm hose line pressure and flow						
7. Skills Training (Gas: Pressure Cylinder)	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Conduct student/instructor skill briefing						
b. Perform a walk around of exercise site and test burn						
c. Inspect students' PPE and SCBA						
d. Supervise a group during a live fire evolution						
e. Execute effective advances and retreats						
f. Apply various water application techniques						
g. Assess cylinder integrity and changing cylinder conditions						
h. Operate control valves						
i. Choose effective procedures when conditions change						
8. Skills Training (Gas: Meter)	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Conduct student/instructor skill briefing						
b. Perform a walk around of exercise site and test burn						

c. Inspect students' PPE and SCBA						
d. Supervise a group during a live fire evolution						
e. Execute effective advances and retreats						
f. Apply various water application techniques						
g. Assess cylinder integrity and changing cylinder conditions						
h. Operate control valves						
i. Choose effective procedures when conditions change						
9. Skills Training (Gas: Valves, Flanges, and Piping)	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Conduct student/instructor skill briefing						
b. Perform a walk around of exercise site and test burn						
c. Inspect students' PPE and SCBA						
d. Supervise a group during a live fire evolution						
e. Execute effective advances and retreats						
f. Apply various water application techniques						
g. Assess cylinder integrity and changing cylinder conditions						
h. Operate control valves						
i. Choose effective procedures when conditions change						

10. Demobilization	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Demobilize props						
b. Demobilize equipment						
c. Demobilize personnel						
11. Post-Incident Analysis (PIA)	1 st Evaluation			2 nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Conduct a post-incident analysis						
b. Complete applicable required reports						

Completion Requirements

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

Experience

That candidate has completed the following experience requirements.

1. Have a minimum of two years’ full-time or four years’ part-time/volunteer experience as a Fire Fighter performing suppression duties in a recognized California Fire Agency

Agency	Experience	Start Date	End Date

Position

State Fire Training confirms that there are no position requirements for instructor registration.

Updates

The candidate has completed and enclosed all updates to this instructor task book released by State Fire Training since its initial publication.

Number of enclosed updates: _____

Completion Timeframe

A candidate must complete their task book within three years of its initiation date. Otherwise, a candidate must initiate a new task book using the curriculum’s current published version.

Initiation Date (see Initiation Date under Initiation Requirements): _____

Review and Approval

Candidate

Candidate (please print): _____

I, the undersigned, am the person applying to teach Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements documented herein is true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documents may be cause for rejection or revocation.

Signature: _____ Date: _____

Fire Chief

Candidate's Fire Chief (please print): _____

I, the undersigned, am the person authorized to verify the candidate's qualifications to teach Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements 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.

Signature: _____ Date: _____

Update 22-1

Justification

In 2022, State Fire Training (SFT) updated the Fire Control 4 curriculum. SFT updated the stand-alone 2015 course to focus on awareness and operations activities tied to the requirements in Fire Fighter 1 and moved the pipeline training into a second, technician-level course that also includes transportation and bulk storage emergencies.

Revision/Update

1. Candidates actively working on a Fire Control 4 (2015) Primary Instructor Task Book are now only required to obtain two evaluator signatures per job performance requirement instead of three.
2. Candidates actively working on a Fire Control 4 (2015) Primary Instructor Task Book are no longer required to complete the pipeline job performance requirements.
3. Candidates actively working on a Fire Control 4 (2015) Primary Instructor Task Book must submit their completed task book with the corresponding Task Book Update 22-1 on or before December 31, 2023. SFT will return any 2015 task book received after December 31, 2023, and require the candidate to complete the 2022 version.
4. Candidates actively working on a Fire Control 4 (2015) Senior Instructor Task Book should stop the process. SFT no longer registers Senior Instructors for Fire Control 4 courses.

Fire Chief Signature

Candidate's Fire Chief (please print): _____

I, the undersigned, am the person authorized to verify the candidate's instructor task book qualifications to be a Registered Instructor. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements documented herein are true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documentation may be cause for rejection.

Signature: _____ Date: _____



Ignitable Liquids and Gases (2022) Interim Procedures

Issued: **Month** 2022

Procedure Changes

Edition: May 2022 edition of the *State Fire Training Procedures Manual*

Effective Date: **Month**, **##**, 2022 (anticipated)

Section Changes: Modify and update the following sections:

- **6.11.9: FIRE CONTROL – PRIMARY INSTRUCTOR**
- **6.11.10: FIRE CONTROL – SENIOR INSTRUCTOR**

Justification: Following approval by the State Board of Fire Services (SBFS), the new Fire Control 4 curriculum will go into effect on January 1, 2023, and the existing Fire Control 4 curriculum will retire on June 30, 2023. The new curriculum provides directive for Instructor qualification that creates a single Registered Instructor level thereby repealing the existing Senior Instructor level.

SFT Contact: SFT Staff assigned to Instructor Registration.

Note: Using the May 2022 edition of the State Fire Training Procedures Manual:

- Update Section 6.11.11.
- Update Section 6.11.10

6.11.9: FIRE CONTROL – INSTRUCTOR

6.11.9.1: Eligible Courses

Table 6.11.9.1: Fire Control – Instructor Eligible Courses

CFSTES Courses	FSTEP Courses
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Fire Control 1: Basic Fire Chemistry • Fire Control 2: Basic Operations – Structural • Fire Control 3: Acquired Structure (2018) • Fire Control 3: Fixed Facility (2018) • Fire Control 4A: Ignitable Liquid and Gases Awareness/Operations • Fire Control 4B: Ignitable Liquids and Gases Technician • Fire Control 5: Aircraft Rescue and Fire Fighting • Fire Control 6: Wildland Fire Fighting Essentials • Fire Control 7: Wildland Fire Fighting

6.11.9.2: General Qualifications

- A. A Registered Instructor for a Fire Service Training and Education Program (FSTEP) Fire Control course shall meet the qualifications required of all State Fire Training (SFT) Registered Instructors.
 - 1. See **6.2.1: Qualifications**.
- B. An Instructor registered to teach Fire Control 4: Controlling Ignitable Liquids and Gases (2015) is authorized to teach Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022).

6.11.9.3: Course Work

- A. A Fire Control 3 Structural Firefighting: (2018) Registered Primary Instructor must have attended and passed:
 - 1. ICS-300: Intermediate ICS for Expanding Incidents
 - 2. Safety Officer: C-404, S-404, L954, or FDSOA Incident Safety Officer
 - 3. Fire Control 3 Structural Fire Fighting (2018)
 - 4. Instructor: Live Fire Training – Fixed Facility (2018)
 - 5. Instructor: Live Fire Training – Acquired Structure (2018)
 - i. This course is optional and is only required for those instructors who will be delivering Fire Control 3 Structural Fire Fighting (2018) using an acquired structure.

- B. A Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Registered Instructor must have attended and passed:
 1. I-300 Intermediate ICS (CalEMA/Cal OES, CDF/CAL FIRE, FEMA, FIRESCOPE, NFA, NWCG, or SFT)
 2. Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) or Fire Control 4 and HazMat Fire Responder Operations (IADF, CSTA, or SFT)

- C. A Fire Control 4B: Ignitable Liquids and Gases Technician Registered Instructor must have attended and passed:
 1. Fire Control 4B: Ignitable Liquids and Gases Technician (2022)

6.11.9.4: Professional Experience

- A. A Registered Instructor for an FSTEP Fire Control course shall meet the professional experience qualifications listed below.
 1. Performing in an “acting” capacity does not qualify.

Table 6.11.9.4: Fire Control – Primary Instructor Professional Experience

FSTEP Course	Experience
<ul style="list-style-type: none"> • Fire Control 1: Basic Fire Chemistry • Fire Control 2: Basic Operations - Structural • Fire Control 3: Acquired Structure (2018) • Fire Control 3: Fixed Facility (2018) • Fire Control 5: Aircraft Rescue and Fire Fighting • Fire Control 6: Wildland Fire Fighting Essentials • Fire Control 7: Wildland Fire Fighting 	<ul style="list-style-type: none"> • Held the rank of Fire Fighter within a recognized fire agency in California performing suppression/rescue duties for a minimum of two (2) years
<ul style="list-style-type: none"> • Fire Control 3: Structural Firefighting (2018) 	<ul style="list-style-type: none"> • Held the rank of Fire Fighter within a recognized fire agency in California performing suppression/rescue duties for a minimum of three (3) years full time experience; or • Held the rank of Fire Fighter within a recognized fire agency in California performing suppression/rescue duties for a minimum of six (6) years volunteer or part-time paid experience time

FSTEP Course	Experience
<ul style="list-style-type: none"> • Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations 	<ul style="list-style-type: none"> • Have a minimum of two (2) years' full-time or four (4) years' part-time/volunteer experience as a Fire Fighter performing suppression duties within a recognized California Fire Agency
<ul style="list-style-type: none"> • Fire Control 4B: Ignitable Liquids and Gases Technician 	<ul style="list-style-type: none"> • Have a minimum of three (3) years' full-time or six (6) years' part-time/volunteer experience as a Fire Fighter performing suppression duties within a recognized California Fire Agency

6.11.9.5: Task Book

- A. An Instructor candidate for Fire Control 3: Structural Firefighting (2018) or Fire Control 4 must successfully complete the corresponding Instructor Trainee Task Book.
- B. An Instructor candidate for Fire Control 3: Structural Firefighting (2018) must successfully complete the Instructor: Live Fire Training – Fixed Facility Instructor Task Book.
 - 1. Instructors who will be delivering Fire Control 3 Structural Fire Fighting (2018) using an acquired structure, shall also complete the Instructor: Live Fire Training – Acquired Structure Instructor Task Book.
- C. A Fire Control 3: Structural Firefighting (2018) or Fire Control 4 Primary Instructor Trainee has three (3) years after starting their Fire Control 3: Structural Firefighting (2018) Instructor Trainee Task Book to complete the Task Book requirements.
- D. A Fire Control 3: Structural Firefighting (2018) Instructor Trainee must satisfy all instructor requirements and become a Registered Fire Control 3: Structural Firefighting (2018) or Fire Control within one (1) year of completing the Task Book.
- E. A Primary Instructor candidate for Fire Control 3: Structural Firefighting (2018) or Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) must successfully perform each of the tasks listed in the Instructor Task Book twice. The two (2) instances must occur during two (2) different registered courses. The same evaluator cannot sign off on the same task twice.

6.11.9.6: Fire Control 3A (2009) and Fire Control 3B (2009) Instructor Update

- A. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) must meet the Instructor Update requirements, to become a Primary Registered Instructor for Fire Control 3: Structural Firefighting (2018).
- B. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators

(2009) had until December 31, 2021, to meet the Instructor Update requirements and apply to State Fire Training.

- C. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting must meet the following Instructor Update. The Primary or Senior Registered Instructor must have attended and passed:
 - 1. Instructor: Live Fire Training – Fixed Facility (2018)
 - 2. ICS-300: Intermediate ICS for Expanding Incidents
 - 3. Safety Officer: C-404, S-404, L954, or FDSOA Incident Safety Officer

- D. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) shall submit a course completion diplomas for each course listed in the Instructor Update to SFT through the SFT User Portal.

- E. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) who did not submit all Instructor Update documents to SFT by December 31, 2021, lost their Registered Primary Instructor for Fire Control 3, and are required to reapply to SFT under the new requirements.

6.11.10: FIRE CONTROL – SENIOR INSTRUCTOR

6.11.10.1: Eligible Courses

Table 6.11.10.1: Fire Control – Senior Instructor Eligible Courses

CFSTES Courses	FSTEP Courses
<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Fire Control 5: Aircraft Rescue and Fire Fighting Fire Control 7: Wildland Fire Fighting

6.11.10.2: General Qualifications

- A. A Registered Senior Instructor for a Fire Service Training and Education Program (FSTEP) Fire Control course shall meet the qualifications required of all State Fire Training (SFT) Registered Senior Instructors.
- See **6.3.1: Qualifications**.

6.11.10.3: Teaching Experience

- A. A Registered Senior Instructor for Fire Control 5 and 7 shall have taught a minimum of two (2) Fire Control courses as the Registered Primary Instructor within the last three (3) years.

6.11.10.4: Experience

- A. Same as the Registered Primary Instructor.
- See **6.7.7.3: Experience**.

6.11.10.5: Task Book

- A. A Senior Instructor candidate for Fire Control 3: Structural Firefighting (2018) must successfully complete the corresponding Instructor Trainee Task Book.
- B. A Fire Control 3: Structural Firefighting (2018) or Fire Control 4 Instructor Trainee has two (2) years after starting their Fire Control ~~3A, 3B, or 3~~ 3: Structural Firefighting (2018) or Fire Control 4 Instructor Trainee Task Book to complete the Task Book requirements.
- C. A Fire Control 3: Structural Firefighting (2018) or Fire Control 4 ~~Senior~~ Instructor Trainee must satisfy all instructor requirements and become a Registered Fire Control 3: Structural Firefighting (2018) or Fire Control 4 Senior Instructor within one (1) year of completing the Task Book.
- D. An Instructor candidate for Fire Control 3: Structural Firefighting (2018) or Fire Control 4 must successfully perform all of the tasks during three (3) different training events.

- E. An Instructor candidate for Fire Control 3: Structural Firefighting (2018) must be evaluated by a minimum of three (3) different senior instructors.

6.11.10.6: Fire Control 3A (2009) and Fire Control 3B (2009) Instructor Update

- A. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) must meet the Instructor Update requirements, to become a Primary Registered Instructor for Fire Control 3: Structural Firefighting (2018).
- B. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) had until December 31, 2021, to meet the Instructor Update requirements and apply to State Fire Training.
- C. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting must meet the following Instructor Update. The Primary or Senior Registered Instructor must have attended and passed:
 - 4. Instructor: Live Fire Training – Fixed Facility (2018)
 - 5. ICS-300: Intermediate ICS for Expanding Incidents
 - 6. Safety Officer: C-404, S-404, L954, or FDSOA Incident Safety Officer
- D. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) shall submit a course completion diplomas for each course listed in the Instructor Update to SFT through the SFT User Portal.
- E. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) who did not submit all Instructor Update documents to SFT by December 31, 2021, lost their Registered Primary Instructor for Fire Control 3, and are required to reapply to SFT under the new requirements.

6.711.79: FIRE CONTROL – PRIMARY INSTRUCTOR

6.711.79.1: Eligible Courses

Table 6.711.79.1: Fire Control – Primary Instructor Eligible Courses

CFSTES Courses	FSTEP Courses
<input type="checkbox"/> None	<input type="checkbox"/> Fire Control 1: Basic Fire Chemistry
	<input type="checkbox"/> Fire Control 2: Basic Operations – Structural
	<input type="checkbox"/> Fire Control 3A: Structural Fire Fighting in Acquired Structures
	<input type="checkbox"/> Fire Control 3: Acquired Structure (2018)
	<input type="checkbox"/> Fire Control 3B: Structural Fire Fighting in Live Fire Simulators
	<input type="checkbox"/> Fire Control 3: Fixed Facility (2018)
	<input type="checkbox"/> Fire Control 4: Controlling Ignitable Liquids and Gases
	<input type="checkbox"/> Fire Control 4A: Ignitable Liquid and Gases Awareness/Operations
	<input type="checkbox"/> Fire Control 4B: Ignitable Liquids and Gases Technician
	<input type="checkbox"/> Fire Control 5: Aircraft Rescue and Fire Fighting
	<input type="checkbox"/> Fire Control 6: Wildland Fire Fighting Essentials
	<input type="checkbox"/> Fire Control 7: Wildland Fire Fighting

6.711.79.2: General Qualifications

- A. A Registered Primary Instructor for a Fire Service Training and Education Program (FSTEP) Fire Control course shall meet the qualifications required of all State Fire Training (SFT) Registered Primary Instructors.
 - 1. See 6.2.1: Qualifications.
- B. An Instructor registered to teach Fire Control 4: Oil and Gas Fire Fighting (retired) or Fire Control 4A/B: Flammable Gases and Liquids Fire Fighting is authorized to teach Fire Control 4: Controlling Ignitable Liquids and Gases (2015) is authorized to teach Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022).

6.11.9.3: Course Work

- A. A Fire Control 3 Structural Firefighting: (2018) Registered Primary Instructor must have attended and passed:
 - 1. ICS-300: Intermediate ICS for Expanding Incidents
 - 2. Safety Officer: C-404, S-404, L954, or FDSOA Incident Safety Officer
 - 3. Fire Control 3 Structural Fire Fighting (2018)
 - 4. Instructor: Live Fire Training – Fixed Facility (2018)

- 5. Instructor: Live Fire Training – Acquired Structure (2018)
 - i. This course is optional and is only required for those instructors who will be delivering Fire Control 3 Structural Fire Fighting (2018) using an acquired structure.

A. A Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations Registered Instructor must have attended and passed:

- 1. I-300 Intermediate ICS (CalEMA/Cal OES, CDF/CAL FIRE, FEMA, FIREScope, NFA, NWCG, or SFT)
- 2. Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) or Fire Control 4 and HazMat Fire Responder Operations (IADF, CSTA, or SFT)

B. A Fire Control 4B: Ignitable Liquids and Gases Technician Registered Instructor must have attended and passed:

- 1. Fire Control 4B: Ignitable Liquids and Gases Technician (2022)

6.711.79.34: Professional Experience

A. A Registered Primary Instructor for an FSTEP Fire Control course shall meet the professional experience qualifications listed below.

- 1. Performing in an “acting” capacity does not qualify.

Table 6.711.79.34: Fire Control – Primary Instructor Professional Experience

FSTEP Course	Experience
<input type="checkbox"/> Fire Control 1: Basic Fire Chemistry	<input type="checkbox"/> Held the rank of Fire Fighter within a recognized fire agency in California performing suppression/rescue duties for a minimum of two (2) years
<input type="checkbox"/> Fire Control 2: Basic Operations - Structural	
<input type="checkbox"/> Fire Control 3A: Structural Fire Fighting in Acquired Structures	
<input type="checkbox"/> Fire Control 3: Acquired Structure (2018)	
<input type="checkbox"/> Fire Control 3B: Structural Fire Fighting in Live Fire Simulators	
<input type="checkbox"/> Fire Control 3: Fixed Facility (2018)	
<input type="checkbox"/> Fire Control 4: Controlling Ignitable Liquids and Gases	
<input type="checkbox"/> Fire Control 5: Aircraft Rescue and Fire Fighting	

FSTEP Course	Experience
<input type="checkbox"/> Fire Control 6: Wildland Fire Fighting Essentials <input type="checkbox"/> Fire Control 7: Wildland Fire Fighting	
<input type="checkbox"/> Fire Control 3: Structural Firefighting (2018)	<input type="checkbox"/> Held the rank of Fire Fighter within a recognized fire agency in California performing suppression/rescue duties for a minimum of three (3) years full time experience; or <input type="checkbox"/> Held the rank of Fire Fighter within a recognized fire agency in California performing suppression/rescue duties for a minimum of six (6) years volunteer or part-time paid experience time
<input type="checkbox"/> Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations <input type="checkbox"/> Fire Control 4B: Ignitable Liquids and Gases Technician	<input type="checkbox"/> Have a minimum of two (2) years' full-time or four (4) years' part-time/volunteer experience as a Fire Fighter performing suppression duties within a recognized California Fire Agency <input type="checkbox"/> Have a minimum of three (3) years' full-time or six (6) years' part-time/volunteer experience as a Fire Fighter performing suppression duties within a recognized California Fire Agency

6.711.79.45: Task Book

- A. An Primary Instructor candidate for Fire Control 3A, 3B, or 3: Structural Firefighting (2018) or Fire Control 4 must successfully complete the corresponding Instructor Trainee Task Book.
- B. An Primary Instructor candidate for Fire Control 3: Structural Firefighting (2018) must successfully complete the Instructor: Live Fire Training – Fixed Facility Instructor Task Book.
 - 1. Instructors who will be delivering Fire Control 3 Structural Fire Fighting (2018) using an acquired structure, shall also complete the Instructor: Live Fire Training – Acquired Structure Instructor Task Book.
- C. A Fire Control 3A, 3B, or 3: Structural Firefighting (2018) or Fire Control 4 Primary Instructor Trainee has two (2) three (3) years after starting his or her their Fire Control 3A, 3B, or 3: Structural Firefighting (2018) or Fire Control 4 Instructor Trainee Task Book to complete the Task Book requirements.
- D. A Fire Control 3A, 3B, or 3: Structural Firefighting (2018) or Fire Control 4 Primary Instructor Trainee must satisfy all instructor requirements and become a Registered Fire Control 3A, 3B, or 3: Structural Firefighting (2018) or Fire Control 4 Primary Instructor within one (1) year of completing the Task Book.

- E. A Primary Instructor candidate for Fire Control 3: Structural Firefighting (2018) or Fire Control 4A: Ignitable Liquids and Gases Awareness/Operations (2022) must successfully perform each of the tasks listed in the Instructor Task Book twice. The two (2) instances must occur during two (2) different registered courses. The same evaluator cannot sign off on the same task twice.
- F. A Primary Instructor candidate for Fire Control 4 must successfully perform all of the tasks during three (3) different training events.
- G. Only a Registered Fire Control 4 Senior Instructor may evaluate a Fire Control 4 Primary Instructor candidate.

6.11.9.6: Fire Control 3A (2009) and Fire Control 3B (2009) Instructor Update

- A. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) must meet the Instructor Update requirements, to become a Primary Registered Instructor for Fire Control 3: Structural Firefighting (2018).
- B. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) had until December 31, 2021, to meet the Instructor Update requirements and apply to State Fire Training.
- C. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting must meet the following Instructor Update. The Primary or Senior Registered Instructor must have attended and passed:
 - 1. Instructor: Live Fire Training – Fixed Facility (2018)
 - 2. ICS-300: Intermediate ICS for Expanding Incidents
 - 3. Safety Officer: C-404, S-404, L954, or FDSOA Incident Safety Officer
- D. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) shall submit a course completion diplomas for each course listed in the Instructor Update to SFT through the SFT User Portal.
- E. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) who did not submit all Instructor Update documents to SFT by December 31, 2021, lost their Registered Primary Instructor for Fire Control 3, and are required to reapply to SFT under the new requirements.

6.711.810: FIRE CONTROL – SENIOR INSTRUCTOR

6.711.810.1: Eligible Courses

Table 6.711.810.1: Fire Control – Senior Instructor Eligible Courses

CFSTES Courses	FSTEP Courses
<input type="checkbox"/> None	<input checked="" type="checkbox"/> Fire Control 3A: Structural Fire Fighting in Acquired Structures
	<input checked="" type="checkbox"/> Fire Control 3B: Structural Fire Fighting in Life Fire Simulators
	<input checked="" type="checkbox"/> Fire Control 4: Controlling Ignitable Liquids and Gases
	<input type="checkbox"/> Fire Control 5: Aircraft Rescue and Fire Fighting
	<input type="checkbox"/> Fire Control 7: Wildland Fire Fighting

6.711.810.2: General Qualifications

A. A Registered Senior Instructor for a Fire Service Training and Education Program (FSTEP) Fire Control course shall meet the qualifications required of all State Fire Training (SFT) Registered Senior Instructors.

1. See 6.3.1: Qualifications.

B. An Instructor registered to teach Fire Control 4: Oil and Gas Fire Fighting (retired) or Fire Control 4A/B: Flammable Gases and Liquids Fire Fighting is authorized to teach Fire Control 4: Controlling Ignitable Liquids and Gases.

6.711.810.3: Teaching Experience

A. A Registered Senior Instructor for Fire Control 4, 5, and 7 shall have taught a minimum of two (2) Fire Control courses as the Registered Primary Instructor within the last three (3) years.

6.711.810.4: Experience

A. Same as the Registered Primary Instructor.

1. See 6.7.7.3: Experience.

6.711.810.5: Task Book

A. A Senior Instructor candidate for Fire Control 3A, 3B, or 3: Structural Firefighting (2018) or Fire Control 4 must successfully complete the corresponding instructor trainee task book.

- B. A Fire Control ~~3A, 3B, or 3: Structural Firefighting (2018)~~ or Fire Control 4 ~~Senior~~ Instructor Trainee has two (2) years after starting ~~his or her~~ their Fire Control ~~3A, 3B, or 3: Structural Firefighting (2018)~~ or Fire Control 4 ~~Instructor~~ Trainee Task Book to complete the ~~Task Book~~ requirements.
- C. A Fire Control ~~3A, 3B, or 3: Structural Firefighting (2018)~~ or Fire Control 4 ~~Senior~~ Instructor Trainee must satisfy all instructor requirements and become a Registered Fire Control ~~3A, 3B, or 3: Structural Firefighting (2018)~~ or Fire Control 4 Senior Instructor within one (1) year of completing the ~~Task Book~~.
- D. A ~~Senior~~ Instructor candidate for Fire Control ~~3A, 3B, or 3: Structural Firefighting (2018)~~ or Fire Control 4 must successfully perform all of the tasks during three (3) different training events.
- E. An ~~Senior~~ Instructor candidate for Fire Control ~~3A, 3B, or 3: Structural Firefighting (2018)~~ must be evaluated by a minimum of three (3) different senior instructors.
- ~~F. Only a Registered Fire Control 4 Senior Instructor may evaluate a Fire Control Senior Instructor candidate.~~

6.11.10.6: Fire Control 3A (2009) and Fire Control 3B (2009) Instructor Update

- A. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) must meet the Instructor Update requirements, to become a Primary Registered Instructor for Fire Control 3: Structural Firefighting (2018).
- B. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) had until December 31, 2021, to meet the Instructor Update requirements and apply to State Fire Training.
- C. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting must meet the following Instructor Update. The Primary or Senior Registered Instructor must have attended and passed:
 1. Instructor: Live Fire Training – Fixed Facility (2018)
 2. ICS-300: Intermediate ICS for Expanding Incidents
 3. Safety Officer: C-404, S-404, L954, or FDSOA Incident Safety Officer
- D. A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators

(2009) shall submit a course completion diplomas for each course listed in the Instructor Update to SFT through the SFT User Portal.

A Primary or Senior Registered Instructor for Fire Control 3A: Structural Fire Fighting in Acquired Structures (2009) or Fire Control 3B: Structural Fire Fighting in Live-Fire Simulators (2009) who did not submit all Instructor Update documents to SFT by December 31, 2021, lost their Registered Primary Instructor for Fire Control 3, and are required to reapply to SFT under the new requirements.