

Office of the State Fire Commissioner



Pennsylvania State Fire Academy

Live Fire Suppression Policy No. 2006-02

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I. PURPOSE

This policy is designed to create a safe instructional environment, and minimize exposure to health and safety-related hazards for all personnel engaged with Pennsylvania State Fire Academy (PSFA) sanctioned/authorized Live Fire Suppression Training. This policy meets or exceeds the National Fire Protection Association (NFPA 1403), *Standard on Live Fire Training Evolutions*, latest edition. Live fire training is the use of any open flame or device that produces heat and smoke in a building, structure, or other acquired prop(s). The PSFA has the expectation that fire training facilities will meet the National Fire Protection Association (NFPA 1402), *Standard on Facilities for Fire Training and Associated Props*, latest edition, and all documentation will be available for audits.

II. SCOPE

This document details the procedures in setting up, preparing, and running any live fire training evolution(s) in which a student receives a certificate for a PSFA class. This includes any state-accredited course that provides the students with a safe review on both interior and exterior operations and the opportunity to apply techniques used by firefighters in an actual (live) fire training environment.

- A. This policy applies to all PSFA courses/seminars/drills utilizing live fire suppression training conducted at full or part-time fire training facilities, field courses for any fire local-level fire training conducted across the Commonwealth in which a course/seminar/drill certificate is issued or recognized by the PSFA.
1. **Acquired Structure:** A building or structure acquired by the Authority Having Jurisdiction from a property owner for conducting state-accredited live fire training (exterior or interior). The Department of Environmental Protection (DEP) must approve all live fire training in an acquired structure, and only PSFA suppression instructors can conduct that training.
 2. **Fixed Facility Training Structure:** A structure built of conventional building materials; or structures built of containers specifically designated for conducting live fire training evolutions (Class A or Class B) on a repetitive basis.
 3. **Props:** Equipment not normally designed for burning but are used for live fire, exterior training evolutions (i.e., automobile, dumpsters, flammable liquids/gases), and those fixtures portable or fixed that are designed for live fire training (gas props, etc.).
 4. **Live fire conditions** include the use of smoke drills utilizing live fire to produce heat/smoke within acquired or fixed facility structures. This does not include artificially-generated smoke machines.

III. PERSONNEL QUALIFICATIONS AND RESPONSIBILITIES

The qualifications and responsibilities for personnel conducting the training evolution(s) are listed below. These qualifications were designed to ensure that individuals with the appropriate training and experience are in charge of the training/drill ground.

If the live fire training is part of the Interior Firefighter (ELIF) course, ALL Instructors of record must be Suppression Instructors. Reference the *Entry Level Fire Training Curriculum Policy 2005–01*, revised November 1, 2018. Only Suppression Instructors approved by the PSFA/Educational Training Agencies (ETA's) will direct and supervise the students involved in the live fire activities. Assignment rotations, rest, and rehabilitation of instructors shall be provided.

A. **Lead Instructor** (Instructor-in-Charge) shall:

1. Be an accredited Pennsylvania State Fire Academy (PSFA) Suppression Instructor approved as Lead Instructor by the PSFA Field Supervisor/ETA to conduct live fire training such as a Structural Burn Session (SBS), etc.
2. Be responsible for ensuring a productive, safe learning environment under both realistic and controlled circumstances during live fire evolutions and for full compliance with these guidelines. He/she shall also be responsible for selecting Assistant Instructors following Section III, items B, C, D or E, and F of this document. He/she shall utilize a nationally recognized Incident Command System (ICS).
3. Be responsible for making the decision to ignite the training fire in coordination with the Safety Officer.
4. Ensure all instructors take a personal accountability report (PAR) when entering and exiting during an actual attack evolution, and assigned students are monitored and supervised during live fire training evolutions.
5. Provide for rest and rehabilitation of all participants of the training session, which includes any medical evaluation, treatment, fluid replenishment, and relief from climatic conditions.

B. **Assistant Instructors** shall:

1. Be an accredited Pennsylvania State Fire Academy (PSFA) Suppression Instructor. All live fire training in acquired structures/fixed facilities under this policy (i.e., Structural Burn Sessions) requires two (2) assistant instructors.
2. Be chosen by the Lead Instructor, subject to the approval of the PSFA Field Supervisor/ETA.

3. Be responsible for rotating through duty assignments and performing all functions assigned to him/her by the Lead Instructor that include:
 - a. Include one instructor to each functional crew, i.e., attack, backup, search, each of which shall not exceed five students.
 - b. Ensure all required protective clothing and equipment is being worn appropriately, by all participants
 - c. Monitor and supervise all assigned students during live fire training evolutions and perform a personal accountability report (PAR) when entering and exiting a structure.
 - d. Make sure that at no time any individual is unsupervised in the burn room area.

C. **Safety Officer(s)** shall be:

1. An accredited Pennsylvania State Fire Academy (PSFA) Suppression Instructor chosen by Lead Instructor and approved by the PSFA Field Supervisor/ETA.
2. Responsible for ensuring that the Lead Instructor has complied with all requirements of this policy.
3. Accountable to the PSFA Field Supervisor for exercising his/her authority **to intervene** in any aspect of an evolution to stop a potential accident or dangerous situation whenever an unsafe situation arises.
4. Observe and record all unsafe acts, or conditions on the drill ground, including if the conditions are:
 - a. Minor in nature, he/she shall inform the Lead Instructor to correct them.
 - b. Serious in nature, he/she may use their discretionary power to stop a drill from continuing, with proper notification to the Lead Instructor.
5. Responsible for an inspection of the structure to ensure that no unauthorized persons, animals or objects are in the building immediately prior to ignition
6. Vigilant that at no time any individual is unsupervised in the burn room area.
7. Responsible for providing for the safety of all persons on the scene (including instructors, students, and bystanders) from incidents likely to cause personal injury and/or equipment damage.

8. Verifies instructor personal accountability report (PAR) when entering and exiting during an actual live fire attack evolution.
9. Monitor the weather for a potential menace. If it does, he/she will have the authority to cancel the drill after consultation/agreement with the LEAD instructor.

D. Fire Control (Ignition) Instructor (Acquired Structure & Class A Fixed Facility) shall be:

1. An accredited Pennsylvania State Fire Academy (PSFA) Suppression Instructor chosen by the Lead Instructor and approved by the PSFA Field Supervisor/ETA.
2. Present on a minimum two-person Fire Control Team to ignite all initial fires on any level of the structure.
 - a. One member of the Fire Control Team (not a student or safety officer) shall assist to ignite, maintain and control the type and amount of materials being burned and adding all materials to the fire sets.
 - b. The other member shall be in the area to observe the other team member and recognize, report, and respond to any adverse conditions.
3. One member of the two-person Fire Control Team must include an instructor of record (i.e., Fire Control, Lead, Assistant, or Safety Officer).
4. In full protective clothing, including self-contained breathing apparatus (SCBA) when performing this control function.
5. Have access to a charged hose line when the Fire Control Team is igniting or attending to any fire.
6. Maintain communication with the Safety Officer and under the coordination of the Lead Instructor to ignite initial fires.
7. Employed/authorized by the management of the fixed facility and follow their written policies. If an acquired structure, the other member of the Fire Control Team must be a certified Firefighter II.
8. Assignment rotations, rest, and rehabilitation of Fire Control Teams shall be provided to prevent overheating, thermal saturation, dehydration, and fatigue.

E. Fire Control (Ignition) Technician (Fixed Facility, Gas-Fueled Props) shall be:

1. Authorized/employed by the management of the fixed facility to operate the facility per their written policies (suggested Suppression Instructor level).
 - a. The training system shall be operated before exposing students to live flames to ensure its proper operation.
2. Under direct supervision of the Safety Officer and under the coordination of the Lead Instructor to ensure fires are not ignited without an instructor visually confirming that the flame area is clear of personnel.
3. Responsible for controlling the fuel and igniting all fires per fixed facility written policies.
4. Provide an assignment rotation, rest, and rehabilitation.

F. Rapid Intervention Team (RIT) Officer shall be;

1. An accredited Pennsylvania State Fire Academy (PSFA) Suppression Instructor chosen by the Lead Instructor and approved by the PSFA Field Supervisor/ETA.
2. In charge of the RIT Team, that consists of at least four (4) other individuals. Students MAY be utilized for RIT Team functions. Duties, staffing, and minimum equipment for RIT are found in Appendix G.

G. Support Personnel shall:

1. Include but not be limited to; apparatus operators, rehab, traffic control, and EMS standby. They shall not be a student nor counted as an Instructor.
2. Be trained and competent in their duties as assigned.
3. Wear PPE appropriate for their duties.

IV. PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

- A. Personal Protective Clothing (PPC) - Prior to participating in any activity, Instructors will inspect and document all (student, instructors, safety officers, fire control team,) PPC/gear used for suppression (live fire) training/classes to determine if the PPC is in a serviceable and safe condition.

- B. The instructor(s) shall sign the “PSFA Personal Protective Equipment Inspection Checklist” (Appendix D) that attests each firefighting ensemble was inspected before any live fire training/class. Any gear that is contaminated, defective, or damaged shall not be permitted for structural or live fire training.
- C. Each participant shall be equipped with full Personal Protective Clothing (PPC) with an affixed manufacturer’s labels indicating it has met the requirements of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, along with the listed edition number. PPC shall include:
 - 1. Turnout coat and protective trousers
 - 2. Firefighting boots
 - 3. Firefighting gloves
 - 4. Protective hood
 - 5. Helmet
 - 6. Eye protection
- D. Personal Protective Equipment (PPE) includes all PPC and Self-Contained Breathing Apparatus (SCBA) that meet the requirements of NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Emergency Services* and personal alert safety systems that meet the requirement of NFPA 1982, *Standard on Personal Alert Safety Systems (PASS)* (based on Date of Manufactured).
- E. All participants shall be inspected by the Safety Officer and Instructors prior to entry into any live fire training evolution to ensure that the protective clothing, SCBA, and a personal alert safety system (PASS) device are being properly worn and are in serviceable condition.
- F. In addition to the inspection of protective clothing, ALL personnel shall wear a long sleeve shirt and long pants or long sleeve coveralls under their protective clothing while participating in live structural burn activities.
- G. All students, instructors, safety personnel, and other personnel shall properly wear the protective clothing and equipment necessary whenever they are involved in the evolution.
- H. All students, instructors, safety personnel, and other personnel participating in live fire training evolution shall breathe from an SCBA air supply whenever one or more of the following conditions exist:
 - 1. Operating in an atmosphere that is either suspected, may become or is oxygen-deficient, or may become, suspected or is contaminated by-products of combustion, or both.
 - 2. Operating below ground level.

- I. All personnel using SCBA will follow the current PSFA Facial Hair/SCBA Use Policy.
- J. A method of communication shall be established to enable two-way communications between all the instructional staff, the interior, and exterior activities and external requests for assistance.

V. EMERGENCY MEDICAL SERVICES (EMS)

- A. The personnel staffing the Basic Life Support (BLS) EMS function will NOT be permitted to participate in the training. BLS functions shall be located near the operations area, and all personnel involved in the training must be aware of its location.
- B. **Acquired Structure Live Fire Training:** Basic Life Support (BLS) EMS with **transport capabilities** shall be available on-site to handle injuries.
- C. **Fixed Facility Interior Live Fire Training:** Basic Life Support (BLS) emergency medical services shall be available on-site to handle injuries.
- D. Medical Monitoring/Rehab will be established with all live fire evolutions and the BLS/ALS personnel who will:
 - 1. Be familiar with the PA Department of Health – BLS Protocol – Rehabilitation of Firefighters at Incident Scenes and the criteria for allowing personnel to be released from rehab.
 - 2. Determine baseline vitals for all personnel/instructors participating in live fire evolutions.
 - 3. Monitor the mental capacity, vital signs, and general well-being of all students and instructors as they report to rehab.
 - 4. Provide hydration, nourishment, and supplemental interventions for recovery. Water is the fluid of choice for rehydration.
 - 5. Based on the criteria in the BLS protocol, determine when a student or instructor is released from rehab to participate in training.
 - 6. Notify the Safety Officer when a patient needs transported.
 - 7. Ensure medical equipment is readily available to treat injured personnel.

VI. HOSE LINE AND WATER SUPPLY REQUIREMENTS

- A. **Attack Lines** are those hose lines used to actively suppress the fire.

B. **Backup Lines** shall be provided to ensure protection for personnel on training attack lines.

1. The number and size of the attack and backup lines used are at the discretion of the Lead Instructor and Safety Officer.
2. All attack or backup line(s) shall deliver a minimum of 95 GPM each.
3. There shall be a minimum of one instructor with each hose line being actively used inside a structure during the training, regardless of the number of students.
(maintaining a 1:5 instructor/student ratio)

C. There shall be ample room provided around all props so that all attack line(s), as well as backup line(s), can operate freely.

D. **RIT (Safety) Line** is always charged and available for the RIT Team.

E. Water Supply:

1. The water supply for a live fire training evolution shall be assessed based on the extent of the evolutions, size and type of structure and contents to be involved, method of attack to be employed, protection of exposures, and reserves for potential unexpected problems.
2. The minimum water supply and delivery rates for the live fire training evolutions shall meet the criteria established in NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, published by the National Fire Protection Association (NFPA).
3. A minimum reserve water supply of at least 50 percent of the total fire load demand shall be available to handle exposure protection or unforeseen situations for Acquired Structure live fire training.
 - a. Fixed Facility (Gas-Fueled or Class A Structures) are exempt from the minimum reserve water supply requirement above.
4. Separate water sources shall be utilized for the attack lines and backup (Safety)/ RIT lines to preclude the loss of both water sources at the same time. This may be a second pumper, either using its water tank as a source, a draft from a natural water source, or a hydrant from a different supply source.
 - a. Exception: A single source shall be sufficient at a training center facility where the water system has been engineered to provide adequate volume for the

evolutions conducted and a backup power source or backup pumps, or both, are in place to ensure an uninterrupted supply in the event of a power failure or malfunction.

VII. FUEL MATERIALS

A. Acquired Structure or Class A fixed facility structural live fire training evolution:

1. No flammable/combustible liquids shall be used during any live fire training evolutions in these structures.
2. Only Class “A” materials will be used during a structural live fire training evolution. Pressure-treated wood, rubber, plastic, polyurethane foam, upholstered furniture, and chemically treated or pesticide-treated straw or hay shall not be used.
3. Class A materials should not be used in structures designed with props designed and engineered to use propane or natural gas for live fire training.
4. The fuels utilized in live fire training evolutions shall have known burning characteristics of such a nature to be controllable as possible. Acceptable fuels include:
 - a. Pine excelsior
 - b. Wooden pallets
 - c. Straw or hay
 - d. And other wood-based products
5. Unidentified materials, such as debris/furniture found in or around the structure, which may burn in unanticipated ways, react violently, or create environmental/health hazards, shall not be used.
6. Fuel materials shall be used only in the amounts necessary to create the desired fire size. Fires will not be of a size that is uncontrollable as to limit conditions that could cause uncontrolled flashover or backdraft.
 - a. No more than four (4) pallets of average size or a comparable amount of Class A materials shall be used per fire.
7. The Lead Instructor and the Safety Officer shall assess an acquired structure and identify factors that affect the growth, development, and spread of fire.
8. The management of a fixed facility should develop a burn sequence matrix chart specific to each burn area that includes maximum fuel loading per evolution and the maximum number of sequential live fire evolutions that can be conducted per day in each burn room before the room can cool.

- a. The quantities of materials to be used will be reviewed with the instructional staff prior to the start of the drill.
- B. Fuel-fired buildings and props (propane, natural gas) are only used in live fire training structures specifically designed for their use.

VIII. PRE-BURN PLAN BRIEFING (See Attached Appendix I)

- A. A pre-burn plan shall be prepared, indicating all features of the training areas and reviewed during briefing sessions.
- B. Instructors and Student's Briefing will be held prior to the live fire evolutions, and all assignments and Rotation Matrices (See Appendix I) for all participants will be provided, reviewed, and discussed.
- C. All instructors and students will complete a walkthrough of the structure to confirm they understand the expected procedures to be performed during the evolutions and to be familiar with the layout, location of the exits, and safety lines.
- D. An operations area (hazard) perimeter will be established in the immediate area around the structure. No civilians or any other persons, not members of the class, wearing appropriate protective clothing will be allowed to enter the operations area.
- E. For acquired structures, the operations area will be determined based on 1.5 times the building height. It will be measured outward from the base of the structure and instituted/enforced by the Safety Officer.
- F. Establish a recognized emergency "evacuation" signal that is understood by all participants and a pre-determined location for a PAR check/roll call in the event an evacuation of the structure.
- G. Before conducting any live fire training, all participants shall have knowledge of and the familiarity with the prop or props being used for the evolution.

IX. SMOKE PRODUCED BY LIVE FIRE

- A. Property adjacent to the training site that could be affected by smoke from the live fire training evolutions shall be identified, and the persons in charge of these properties notified of the date and time of the evolutions.
- B. Streets or highways near the training site shall be surveyed for potential effects from the live fire training evolutions. Safeguards shall be taken to eliminate possible hazards to motorists.

- C. If deemed necessary, the Department of Transportation (DOT), *Special Event Form* will be completed and submitted to the appropriate DOT office (Appendix H).

X. CONDUCTING LIVE FIRE TRAINING IN AN ACQUIRED STRUCTURE

- A. The Lead Instructor and Safety Officer will inspect the structure to determine if live fire evolutions can be safely conducted, and it is suitable for the training.
- B. Prior to training, the Lead Instructor shall obtain in writing:
1. A letter from the property owner, confirming ownership of the property, that a clear title (deed) exists,
 2. Insurance has been canceled,
 3. Utilities have been disconnected, and services adjacent shall be removed or protected.
 4. Approval has been granted for fire training evolutions,
 5. Release of liability for all personnel and all agencies involved from any claim for loss resulting from the training activities,
 6. The condition of the acquired structure at the end of the training (i.e., demolished by fire training),
 7. The method of returning the property to the owner and acknowledged by the owner of the structure.
- C. Any permit(s) required by the municipality in which the drill(s) is being conducted shall be applied for and received.
- D. The Lead Instructor is responsible for submitting the following documents to the PSFA Field Supervisor responsible for the county where the live training is being conducted:
1. *Application for Open Burning Exception for Fire Fighting Instruction* (Appendix A) and a copy of the *Asbestos Abatement and Demolition/Renovation Notification Form* (DEP Form 2700-PM-BAQ0002 REV. 9/2019).
 2. *Request for Live Fire/Smoke Drill Training* (Appendix B)
 - a. The above referenced forms must be submitted forty-five (45) days before the anticipated live fire exercise.
 - b. A copy of these approved forms must be present on the drill ground during live fire training evolutions.
- E. The PSFA Field Supervisor shall answer the Lead Instructor's request in writing at least ten (10) days prior to the training. This letter will contain the approval/disapproval of the requested training and the approval/disapproval of the requested instructors.

- F. After inspecting the structure, the Lead Instructor shall fill out the *Live Fire Checklist* (Appendix C) as each step occurs, and it must be present at the training site.
- G. Only one fire at a time shall be permitted within an acquired structure.
- H. Participants shall be made aware of exits from the acquired structure before each live fire training exercise. No fires shall be in any designated exit paths.

XI. CONDUCTING LIVE FIRE TRAINING IN A FIXED FACILITY

- A. The Lead Instructor is responsible for submitting the following documents to the PSFA Field Supervisor responsible for the county where the live training is being conducted:
 - 1. *Request for Live Fire/Smoke Drill Training* (Appendix B)
 - a. The above referenced be submitted forty-five (45) days before the anticipated drill.
 - b. A copy of this approved form must be present on the drill ground during live fire training evolutions.
- B. The PSFA Field Supervisor shall answer the Lead Instructor's request in writing at least ten (10) days prior to the training. This letter will contain the approval/disapproval of the requested training and the approval/disapproval of the requested instructors.
- C. The Lead Instructor is responsible for notifying all personnel (i.e., Assistant Instructors, Safety Officer, Ignition Officer, RIT Officer, Students) of the date, the time and location of where to report.
- D. The Lead Instructor is responsible for ensuring the facility has all the necessary equipment needed for the burn (i.e., hand tools, SCBA, fire apparatus, etc.).
- E. There will be one instructor for every five students actively participating in the training. Students on break do not need to have an instructor assigned to them.
- F. More than one fire is permitted within a fixed facility, as identified on the burn sequence matrix chart developed for the training session.

XII. DURING ALL LIVE FIRE EVOLUTIONS

- A. No person(s) shall play the role of a victim inside the structure during a live fire training evolution. Manikins can be used to simulate victim(s), and the location of the manikin shall not be required to be disclosed, provided that the possibility of victims is discussed in the pre-burn briefing.

- B. Safe practices generally considered to be accepted as standard tactics and strategies.
- C. This policy is a minimum standard and can be exceeded by the PA State Fire Academy and Fixed Site Policies for all live fire training evolutions.
- D. A personnel accountability system shall be established for all participants (instructors and students), which will allow the lead instructor or other staff to, at any given point during the evolution, determine the name and approximate location (i.e., interior, exterior, rehab, etc.) of each participant.

XIII. ACQUIRED AND SPECIALTY PROPS

The Acquired and Specialty Props include equipment designed for live fire training to include, but not limited to, vehicles, dumpsters, fire extinguisher, or flammable liquids/gas props.

- A. Instructors and the Safety Officer who are responsible for conducting live fire evolutions with a gas-fueled training system or with other specialty props shall be trained in the complete operation of the system and the props.
- B. All props that use pressure to move fuel to the fire shall be equipped with remote fuel shutoffs outside of the hazard area but within sight of the prop and the entire field of attack for the prop.
- C. During the time the prop is in use, the remote shutoff shall be attended continuously by safety personnel who are trained in this operation and who have direct communications with the Safety Officer and instructors.
- D. Where flammable or combustible liquids are used, measures shall be taken to prevent runoff from contaminating the surrounding area.
- E. Vehicles used as props for live fire training shall have all fluid reservoirs, tanks, shock absorbers, driveshafts, and other gas-filled closed containers removed, vented or drained prior to any ignition.
- F. Any course utilizing “Live Fire” in a vehicle shall adhere to other Commonwealth Agency regulations, i.e., Crimes Code Title 18, regarding the destruction of vehicles as well as DEP regulations for open burning. See Appendix E for more information.
- G. Any course utilizing live fire for fire extinguisher training shall adhere to DEP regulations for open burning and contact their DEP Air Quality Program Office at least ten (10) business days before the training, no written notice required. See Appendix E for more information.

- H. Fire Extinguisher props that don't use flammable gases (i.e., propane) can only use a combustible liquid with a flash point above 100 degrees F. The prop must be specifically engineered to accommodate a defined quantity of the fuel.

XIV. EXTERIOR LIVE FIRE AND/OR TRANSITIONAL ATTACK

The Exterior Live Fire or Transitional Attack training includes ALL exterior Live Fire/Live Smoke evolutions, excluding fire extinguishers training.

- A. Any course utilizing exterior "Live Fire" evolutions or "Live Smoke" shall require a minimum of three (3) Suppression Instructors (Instructor, Safety, Fire Ignition) approved by the PSFA Field Supervisor/ETA.
- B. The Lead Instructor shall utilize the same request forms used for "Live Fire" training courses.
 - 1. *Application for Open Burning Exception for Fire Fighting Instruction* (Appendix A).
 - 2. *Request for Live Fire/Smoke Drill Training* (Appendix B)
- C. Exterior "Live Fire" evolutions include any unconfined open flame or device that can propagate fire to a building, structure, or other combustible materials.
- D. Fire Control Instructor must be present on a minimum two-person Fire Control Team to ignite the initial fire within the structure.
- E. For Exterior "Live Fire" evolutions, once the initial fire is set, no interior fire suppression training or entry into the structure is authorized; only exterior suppression operations will be approved.
 - 1. All participants in the operations area must be wearing an SCBA.
 - 2. A charged backup hose line will be available whenever live fire is used.
 - 3. "Live Smoke" shall be defined as; smoke generated from within the structure by use of the combustion of any materials to cause smoke to be created.
 - 4. During "Live Smoke" evolutions, a staffed charged hose line shall be available whenever live smoke is in the drill building.
 - a. Artificially generated smoke shall not require the use of charged hose lines.

XV. LIVE FIRE EVIDENCE-BASED RESEARCH (ACQUIRED STRUCTURE)

- A. The PSFA Administrator can approve the use of an Acquired Structure to conduct evidence-based live fire research utilizing testing full-scale live fire experiments to document fire dynamics, fire suppression, ventilation, or other fire service related topics deemed applicable and approved by the PA State Fire Academy.
- B. Any testing must be with a nationally recognized entity such as Underwriter Laboratory (UL) Firefighter Safety Research Center, National Institute of Standards and Technology (NIST), Bureau of Alcohol, Tobacco, and Firearms (ATF) or other academic institution.
- C. This policy also allows for the use of live fire for the purposes recreating live fire/arson investigations in conjunction with a recognized Commonwealth law enforcement agency (i.e., PSP Fire Marshal's or local fire investigators).
- D. All live fire evolutions under this section shall require a minimum of three (3) Suppression Instructors (Instructor, Safety, Fire Ignition) approved by the PSFA Field Supervisor.
- E. The Instructors shall utilize the same request forms used for "Live Fire" training courses.
 - 1. *Application for Open Burning Exception for Fire Fighting Instruction* (Appendix A).
 - 2. *Request for Live Fire/Smoke Drill Training* (Appendix B)
- F. Fire Control Instructor must be present on a minimum two-person Fire Control Team to ignite the fire within the structure.
- G. The purpose of the Research/Investigation "Live Fire" evolutions is to collect scientific research/evidence. Once the initial fire is set, no interior fire suppression training is authorized. The fires are extinguished under the control of the suppression instructors working with local fire companies/departments.
 - 1. All participants in the operations area must be wearing an SCBA.
 - 2. A charged backup hose line will be available whenever live fire is used.
- H. **WEATHER**
 - A. The lead instructor will gather the weather forecast for inclusion in the morning briefings with all personnel.

- B. The lead instructor will monitor weather conditions for any extreme weather changes that may result in additional stressors (i.e., changes in humidity levels, temperatures, etc.) or other conditions (high wind, lighting, etc.) that may cause bodily harm.
- C. The training session shall be curtailed, postponed, or canceled, as necessary to reduce the risk of injury or illness caused by extreme weather conditions.

XVII. MEDICAL MONITORING/REHABILITATION

- A. EMS Personnel shall brief all instructors and students on the signs and symptoms of heat or cold-related disorders and monitor students and instructors for related disorders.
- B. If a student exhibits signs of heat or cold-related disorders, the instructor will direct the student to EMS. If an instructor shows symptoms of a heat cold-related disorder, the Lead Instructor and/or designee, in consultation with the Safety Officer, shall direct the instructor to EMS for evaluation.
- C. A refusal of any participant to report to EMS will result in immediate removal from the program. Encourage all participants to report any signs and symptoms that affect not only them but also anyone who is involved in the live fire training exercise.
- D. Rehabilitation requirements located in Appendix F.

XVIII. POST TRAINING ACTIVITIES

- A. The lead instructor will ensure that incident reports are completed for all individuals that exhibited signs or symptoms of heat or cold-related disorders.
- B. Conduct a post-incident review with instructors/students. This review should include:
 - 1. The need to continue hydrating and the use of alcohol should be avoided.
 - 2. Evaluate the group's performance.
 - 3. Reinforce the training that was covered.
 - 4. Complete all required paperwork as required by sponsoring agency, ETA, etc.

XIX. ENFORCEMENT

- A. Failure to adhere to this policy may result in discipline up to and including suspension or revocation of Instructor credentials.

XX. DELEGATION OF PROGRAM MANAGEMENT

- A. The Pennsylvania State Fire Commissioner delegates ongoing management and implementation of this policy to authorized staff of the program involved unless or until

withdrawn. Specific responsibilities are placed upon the PA State Fire Academy Administrator, the Fire Academy Assistant Administrator, the Fire Service Education Specialists, and the staff of the PA State Fire Academy.

XXI. AUTHORITY

- A. Title 35 Health and Safety as amended and Act 61 of 1995, the State Fire Commissioner Act.

XXII. SUPERSEDES

This Office of the State Fire Commissioner Live Fire Suppression Policy #2006-02 revision dated October 1, 2020, supersedes and rescinds any and all other policies related to Live Fire Training of the Office of the State Fire Commissioner. References to all NFPA and other standards in this Policy shall be defined as the published standard in effect on the published date of this Policy, unless otherwise superseded by Administrative Directive published by the PA State Fire Academy.

XXIII. DURATION OF INSTRUCTOR POLICY

This Live Fire Training Policy shall remain in effect until superseded or suspended.

XXIV. EFFECTIVE DATE

Original June 1, 2006

Revised May 14, 2008

Revised May 30, 2013

Revised July 1, 2015

Revised October 1, 2020



Thomas Cook,
Administrator, Pennsylvania State Fire Academy
Office of the State Fire Commissioner

APPENDIX A

Application for Opening Burning Exception for Fire Fighting Instruction with Instructions



APPLICATION FOR OPEN BURNING EXCEPTION FOR FIRE FIGHTING INSTRUCTION

Please see the attached instructions for completing, submitting, and processing the **Application for Open Burning Exception for Fire Fighting Instruction** for assistance in filling out this form. You may either mail or fax the Application to the appropriate office. Always confirm receipt of faxes.

1. Name of Applicant (Print): _____ Phone No: _____
 Applicant's Signature: _____ Title: _____
 Representing: _____ (Name of Training School, VFD, etc.)
 Mailing Address: _____ Zip Code: _____
2. Name of other participating parties: _____

3. Name of person in charge: _____ Phone No. _____
 Mailing address: _____ Zip code: _____
4. a. Street address and town of site: _____
 b. Directions to site (from nearest major crossroads): _____

 c. Date(s) and time(s) of accredited training: _____

 d. Type of structure to be burned: ☐ Commercial ☐ Industrial ☐ Institutional/Residential ☐ Public
☐ Vehicle ☐ Other
 If other, please describe: _____
 e. The distance from proposed burning site to nearest neighboring structure is _____ feet.
 Nearest structure is: ☐ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Public
 f. The name of and distance to nearest stream or body of water: _____
 g. Name of owner of structure/burn site: _____ Phone No: _____
 Mailing address of owner: _____ Zip code: _____
 Owner's signature: _____ Date: _____
5. A completed, original, signed Asbestos Abatement and Demolition/Renovation Notification Form (DEP Form 2700-FM-BAQ0021) must be submitted to DEP, with a copy to the U.S. EPA, for each and every acquired structure (including residential structures) to be used in the fire fighting training *a minimum of ten working days prior to the scheduled date of the fire fighting training*. However, to insure timely processing of the Application for Open Burning Exception for Fire Fighting Instruction and to avoid a possible delay in the scheduled training, the Department recommends that the Asbestos Abatement and Demolition/Renovation Notification Form be submitted to DEP at the same time as the Application for Open Burning Exception for Fire Fighting Instruction is submitted to the PSFA Field Supervisor. **Please print or type the words "Fire Fighting Training" in box 1 of the Asbestos Abatement and Demolition/Renovation Notification Form to assist in proper processing of the form. A certified building inspector trained in asbestos inspection must inspect the structure.**

5. a. Has a completed, original, signed Asbestos Abatement and Demolition/Renovation Notification Form been submitted to DEP, with a copy to the U.S. EPA? ☐ Yes ☐ No If yes, Date Submitted: _____
- b. If an Asbestos Abatement and Demolition/Renovation Notification Form for the acquired structure has **not** been submitted, submit the completed, original, signed Asbestos Abatement Form to DEP and the copy to U.S. EPA at these addresses:

U.S. EPA

Asbestos NESHAP Coordinator (3WC32)
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

If the facility address is in Bucks, Chester, Delaware, or Montgomery Counties, send your notification information to:

PA DEP Southeast Region
Asbestos Notification
2 East Main Street
Norristown, PA 19401-4915
Telephone: 484-250-5920

If the facility address is in Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, or Wyoming Counties, send your notification information to:

PA DEP Northeast Region
Asbestos Notification
2 Public Square
Wilkes-Barre, PA 18701-1915
Telephone: 570-826-2511

If the facility address is in Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, or York Counties, send your notification information to:

PA DEP Southcentral Region
Asbestos Notification
909 Elmerton Avenue
Harrisburg, PA 17110-8200
Telephone: 717-705-4702

If the facility address is in Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, or Union Counties, send your notification information to:

PA DEP Northcentral Region
Asbestos Notification
208 West Third Street, Suite 101
Williamsport, PA 17701-6448
Telephone: 570-327-3638

If the facility address is in Beaver, Cambria, Fayette, Greene, Somerset, Washington, or Westmoreland Counties, send your notification information to:

PA DEP Southwest Region
Asbestos Notification
400 Waterfront Drive
Pittsburgh, PA 15222-4745
Telephone: 412-442-5214 for Beaver, Greene, and Washington Counties
Telephone: 724-925-5428 for Cambria, Fayette, Somerset, and Westmoreland Counties

If the facility address is in Armstrong, Butler, Clarion, Crawford, Elk, Erie, Forest, Indiana, Jefferson, Lawrence, McKean, Mercer, Venango, or Warren Counties, send your notification information to:

PA DEP Northwest Region
Asbestos Notification
230 Chestnut Street
Meadville, PA 16335-3481
Telephone: 814-332-6940

- c. **A written statement signed by the owner or operator of the structure that identifies the asbestos-containing material (or lack thereof) and guarantees its removal and proper disposal must be attached to this form. All asbestos containing material must be removed and properly disposed of prior to fire training.**
6. This fire fighting training activity must be either part of the PSFA local level training program, or if not a PSFA course, accepted by the PSFA.
- a. Responsible Fire Chief's signature: _____ Date: _____
- b. Name of Lead Instructor or Trainer (Print): _____ Telephone No.: _____
Lead instructor's organization or affiliation: _____
- c. Local/state police notified? ☐ Yes ☐ No Neighbors notified? ☐ Yes ☐ No
911 Center notified? ☐ Yes ☐ No Utilities notified? ☐ Yes ☐ No
- d. Note all combustible materials and quantities to be used during the training. List the number of fires to be set using each type of combustible for each fire fighting training exercise:
- _____
- _____
- e. Specific type of training to be conducted (or PSFA Course Title) and justification for training:
- _____
- _____

When the fire fighting instruction is concluded, all fires must be completely extinguished. It shall be the building owner's responsibility to properly demolish and dispose of the remains.

This open burning exception is valid only for the dates specified on the application.

FOR OSFC USE ONLY	
☐ Approved	☐ Disapproved
PA State Fire Academy Representative Signature: _____	Date: _____

The open burning exception is not valid without approval by the DEP. See 25 Pa. Code §129.14(c)(2).

FOR DEP USE ONLY	
☐ Approved	☐ Disapproved
Reviewed by: _____	Date: _____

Failure to submit an Application for Open Burning Exception for Fire Fighting Instruction may result in enforcement action including the assessment of civil penalties.

APPENDIX B

Request for Live Fire/Smoke Drill



PA State Fire Academy
Request for Live Fire Training
or Smoke Training
PLEASE TYPE

(Revised 2023)



To: _____, Field Supervisor

From: _____, Local Level Instructor

Date: _____

I request permission to conduct a Live Fire Training/Live Smoke Drill (NOT SBS) at:

Location: _____ County: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Start Time: _____ End Time: _____ Date: _____

I request to have the following PSFA Suppression Level Instructors assigned as:

Lead Instructor: _____ Safety Officer: _____

RIT Officer: _____ Ignition Officer: _____

Assistant Instructor: _____ Assistant Instructor: _____

Assistant Instructor: _____ Assistant Instructor: _____

Assistant Instructor: _____ Assistant Instructor: _____

There will be approximately _____ students participating in the training/drill. We are planning on using _____ hose line(s).

Educational Training Agency: _____

Lead Instructor Signature: _____

APPENDIX C

Live Fire Checklist

Live Fire Checklist

I. Site Inspection

Date/Initial

- A. Building is structurally stable
- B. Utilities Disconnected
- C. Exposures will be in no danger
- D. Water supply will be adequate
- E. Effects of smoke on surrounding area
- F. Floor plan is sketched for briefings

II. Prior to Burn

- A. Site inspection completed
- B. Owner/Occupant release signed and notarized
- C. Municipal Burning Permit/DEP approval
- D. Authorization from PSFA Field Supervisor

III. Selection of Instructors

- A. Assistant Instructors/Safety Officer appointed

IV. Notifications

- A. Dispatcher
- B. Police (if necessary)
- C. Students
- D. Instructors
- E. Safety Officer

V. Briefings

- A. Instructors
- B. Students

VI. Drill Preparation

- A. Hose lines (Attach, Backup, Safety)
- B. Danger Zone marked
- C. Ambulance and Apparatus placed
- D. PPE Inspection list completed (Appendix D)
- E. Personnel accountability system in place

Lead Instructor _____
Print and Sign

Date: _____

Safety Officer _____
Print and Sign

Date: _____

APPENDIX D

Personal Protective Equipment and SCBA Inspection Checklist



Pennsylvania State Fire Academy

Personal Protective Equipment Inspection Checklist



USER Name	Inspection Date

Instructions:

1. This checklist shall be used for a structural firefighting ensemble only
2. Soiled or contaminated gear shall be cleaned prior to inspection

Definitions:

"Soiled" – Soil easily transfers from one surface to another

"Contamination" - Presence of a visual or odorous foreign substance

3. Universal precautions shall be used if the gear is soiled or contaminated
4. The following inspection elements should not be considered all inclusive. In the event that you find something that requires further inspection, do not hesitate to have it inspected further
5. The inspection should in no way be interpreted as complying with the Advanced Inspection requirements established by NFPA 1851

Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensemble, latest edition.

6. Mark the appropriate box (pass/fail)

Helmet Make:	Model:		S/N:	
	P	F		
Contamination	☐	☐	Suspension system	☐
Soiling	☐	☐	Damaged or missing reflective trim	☐
Shell Damage: Cracks, crazing, dents, abrasions or thermal damage	☐	☐	Liner Damage: Rips, tears, or thermal damage	☐
Damaged or missing components	☐	☐	Loss of Seam Integrity	☐

Eye Protection	P	F
Damaged or missing components to faceshield or goggle system	☐	☐

Hood	P	F		P	F
Contamination	☐	☐	Rips, tears, cuts or thermal damage	☐	☐
Soiling	☐	☐		☐	☐
Loss of Face Opening adjustments / shrinkage	☐	☐	Loss of Seam Integrity; Broken or missing stitches	☐	☐

Footwear Make:	Model:		P	F	P	F
Contamination	☐	☐	Rips, tears, punctures or thermal damage	☐	☐	☐
Soiling	☐	☐	Loss of water resistance	☐	☐	☐
Closure system damage	☐	☐		☐	☐	☐
Damaged or deformed safety toe, mid-sole, and shank	☐	☐	Loss of Seam Integrity; Broken or missing stitches	☐	☐	☐

Drag Rescue Device (DRD)	P	F		P	F
Contamination	☐	☐	Installed correctly	☐	☐
Soiling	☐	☐		☐	☐
Cuts, tears, punctures, splitting, or thermal damage	☐	☐	Loss of Seam Integrity; Broken or missing stitches	☐	☐

Coat – Make:	Model:		S/N:	
	P	F		
Contamination	☐	☐	Rips, cuts, tears, or thermal damage	☐
Soiling	☐	☐	Correctly assembled	☐
2" Coat to Pants overlap	☐	☐		
Damaged or missing hardware and closure system	☐	☐	Loss of Seam Integrity; Broken or missing stitches	☐

Pants – Make:	Model:		S/N:	
	P	F		
Contamination	☐	☐	Rips, cuts, tears, or thermal damage	☐
Soiling	☐	☐	Correctly assembled	☐
Damaged or missing hardware and closure system	☐	☐	Loss of Seam Integrity; Broken or missing stitches	☐

Gloves				
	P	F		
Contamination	☐	☐	Rips, cuts, tears, or thermal damage	☐
Soiling	☐	☐	Inverted liner	☐
Shrinkage	☐	☐	Loss of elasticity and flexibility	☐
			Loss of Seam Integrity; Broken or missing stitches	☐

Interface Components(items such as wristlets and collars)				
	P	F		
Contamination	☐	☐	Loss of effectiveness	☐
Soiling	☐	☐	Physical damage	☐
			Loss of Seam Integrity; Broken or missing stitches	☐

COMMENTS:

ANY DAMAGE NOT INCLUDED IN THIS CHECKLIST SHALL REQUIRE AN ADVANCED INSPECTION

Inspected by:	Signature:



Pennsylvania State Fire Academy

Self-Contained Breathing Apparatus Inspection Checklist



SCBA Make and Model		Inspection Date	
Cylinder DOT-E Number		Cylinder Serial Number	
DOT-E			

Instructions:

1. This checklist shall be used for a Open Circuit Self-Contained Breathing Apparatus (SCBA) only
2. This inspection complies with the intent of NFPA 1852, **Selection, Care, and Maintenance of Open Circuit Self Contained Breathing Apparatus, Latest Edition, Chapter 7, Maintenance**
3. Units that are soiled or contaminated shall be cleaned prior to inspection

Definitions:

“Soiled” - Soil is easily transferred from one surface to another

“Contaminated” - Presence of a visual or odorous foreign substance

4. Mark the appropriate box (pass/fail)

Facepiece

	P	F		P	F
Overall assembly: free from deterioration, dirt and damage	☐	☐	Lens: free from cracks, crazing, thermal, or other damage	☐	☐
Headnet and harness anchors: present, functional and undamaged	☐	☐	Exhalation valve: functional and undamaged	☐	☐
Regulator connection: functional and undamaged	☐	☐	Speaking diaphragm: functional and undamaged	☐	☐
Rubber Components: free from deformation, wear, damage, and cracks	☐	☐	Lens Frame Retainer: present and correctly installed	☐	☐

Backplate and Harness Assembly

	P	F		P	F
Harness and Backframe assemblies: free from cuts, tears and damage	☐	☐	Cylinder Retention System: functional and undamaged	☐	☐
Fastening assemblies: operate properly	☐	☐	Straps: extend fully	☐	☐

Cylinder

	P	F		P	F
Hydrostatic test: current	☐	☐	Threads: serviceable	☐	☐
Gauge: functional and undamaged	☐	☐	Valve hand wheel: undamaged	☐	☐
Cylinder: cracks, dents, or damage	☐	☐	Burst disc outlet: clear	☐	☐
Composite cylinder: cuts, gouges, or damage	☐	☐	Cylinder pressure: full	☐	☐

Construction (Circle)	Last Hydro Date	Hydro Retest Req.	Hydro Due Date	Service Life(yrs.)	End of Life Date
Steel or Aluminium		5 years		Indefinite	
Hoop wrapped Alum.		3 years		15 Years	
Fiberglass wrapped		3 years		15 Years	
Kevlar wrapped		3 years		15 Years	
Carbon Fiber wrapped		5 years		15 Years	

Hoses					
	P	F		P	F
Free of cuts, abrasion, or damage	☐	☐	Connections tight	☐	☐
External fittings: functional and undamaged	☐	☐	Coupling nipple seal; present and undamaged	☐	☐

Pressure Retention Test					
Procedure: Close all valves, open cylinder valve fully then close.				P	F
No audible pressure loss, or visual loss of greater than 100 psi in 10 seconds				☐	☐

End of Service Time Indicator(ESTI)					
	P	F		P	F
Mount secure and debris free	☐	☐	Fitting: functional and undamaged	☐	☐
Proper activation pressure	☐	☐			

Regulator Assembly					
	P	F		P	F
Control: functional and undamaged	☐	☐	Pressure relief device: undamaged	☐	☐
Housing: undamaged	☐	☐			
No unusual noises while operating	☐	☐	Normal and bypass modes functional	☐	☐

Remote Pressure Gauge / Remote Console					
	P	F		P	F
Undamaged	☐	☐	Remote gauge and cylinder pressure within 5%	☐	☐

Personal Alert Safety System(PASS)					
	P	F		P	F
Excessive wear or damage	☐	☐	Battery covers secure	☐	☐
Functions properly	☐	☐	Low battery warning not present		

Other Components					
	P	F		P	F
Heads Up Display(HUD): functional and undamaged	☐	☐	Voice amp serviceable	☐	☐
Rapid Intervention Connection/Universal Air Connection(RIC/UAC)storable and serviceable				☐	☐

COMMENTS:

Inspected by:	Signature:

APPENDIX E

Vehicle Fire – Title 18 Crimes Code,
Section 3301(i)

Fire Extinguisher Training

Vehicle Fires

Title 18, Crimes Code, Section 3301(i)

- A. Provides that a person may burn or explode their own vehicle if, at least 48 hours in advance, they file a sworn statement of such planned destruction with the nearest Pennsylvania State Police installation.
- B. The written, sworn statement shall certify the following:
 - 1. That the person making the statement is the lawful titleholder of the vehicle.
 - 2. That the vehicle is free of any encumbrances.
 - 3. That there is no insurance covering loss by fire or explosion, or both, on the vehicle.
- C. When any person delivers a written, sworn statement as described above, the receiving member shall:
 - 1. Verify the identity of the presenter and/or maker of the statement.
 - 2. Review the contents of the statement for accuracy and completeness.
 - 3. File the statement, in date order, in the Station's general file, in a separate folder designated for these statements.
- D. The proper filing of this written, sworn statement is a "defense to prosecution" for other specified subsections of the same chapter.

DEP Regulations:

Submission and Approval Process for other forms of Fire Fighting Training involving open fire: Emergency service organizations conducting other forms of training using open fire for developing competency and proficiency in fire suppression requires only a phone call to the appropriate DEP Air Quality Program Office at least ten (10) business days before the training, no written notice required.

Fire Extinguisher Training

DEP Regulations:

Fire Extinguisher Training: Fire extinguisher training requires only a phone call to the appropriate DEP Air Quality Program Office at least ten (10) business days before the training, no written notice required.

APPENDIX F

Rehabilitation and Instructor and Student Matrix

REHABILITATION PROCEDURE

PURPOSE: To ensure that the physical and mental condition of everyone operating at the training exercise does not deteriorate to a point that affects the safety of each member or that jeopardizes the safety and integrity of the operation. This procedure shall apply to all training exercises where strenuous physical activity or exposure to heat or cold exists.

RESPONSIBILITY

LEAD INSTRUCTOR: shall consider the circumstances of each evolution and make adequate provisions for the rest and rehabilitation for all members operating at the training. These provisions shall include; medical evaluation, treatment and monitoring, fluid replenishment, mental rest, and relief from extreme climatic conditions and the other environmental parameters of the incident. The rehabilitation shall include the provision of EMS at the BLS level or higher. **Students/Instructors shall visit REHAB after every IDLH exposure.**

ASSISTANT INSTRUCTORS: shall maintain an awareness of the condition of each member operating within their span of control and ensure that adequate steps are taken to provide for each member's safety and health. The command structure shall be utilized to request relief and reassignment of fatigued crews.

PARTICIPANTS: During periods of hot weather, everyone shall be encouraged to drink approved beverages. During any training evolution, all members shall advise their instructor when they believe that their level of fatigue or exposure to heat or cold is approaching a level that could affect themselves, their crew, or the operation in which they are involved. Members shall also remain aware of the health and safety of other members of their team.

ESTABLISHMENT OF REHABILITATION

The LEAD INSTRUCTOR will establish a rehab location for personnel operating at the training evolution. EMS will be placed in charge of the rehab. It should be in a location that will provide physical rest by allowing the body to recuperate from the demands and hazards of the emergency operation or training evolution.

It should be far enough away from the scene that members may safely remove their turnout gear and SCBA and be afforded mental rest from the stress and pressure of the emergency operations or training evolution.

It should provide suitable protection from the prevailing environmental conditions. During hot weather, it should be in a cool, shaded area. During cold weather, it should be in a warm, dry area.

It should enable members to be free of exhaust fumes from apparatus, vehicles, or equipment.

It should be large enough to accommodate multiple crews, based on the size of the training.

It should be easily accessible by EMS units

It should allow prompt reentry back into the training operation upon complete recuperation.

GUIDELINES

HYDRATION: A critical factor in the prevention of heat injury is the maintenance of water and electrolytes. Water must be replaced during emergency incidents. During heat stress, the member should consume at least 1 quart of water per hour. The rehydration solution should be a 50/50 mixture of water and a commercially prepared activity beverage and administered at about 40 degrees.

Rehydration is important even during cold weather operations where, despite the outside temperature, heat stress may occur during firefighting or other strenuous activity when protective equipment is worn. Alcohol and caffeine beverages should be avoided before and during heat stress because both interfere with the body's water conservation mechanisms. Carbonated beverages should also be avoided.

REST: Members shall rehydrate (at least 8 ounces) while SCBA cylinders are being changed. Members and instructors shall be immediately placed in the rehabilitation area for rest and evaluation following the end of an evolution. EMS shall determine the amount of rest needed for everyone.

RECOVERY: Members in the Rehabilitation area should maintain a high level of hydration. Members should not be moved from a hot environment directly into an air-conditioned area because the body's cooling system could shut down in response to the external cooling. An air-conditioned environment is acceptable after a cool-down period at ambient temperature with sufficient air movement.

MEDICAL EVALUATION: EMS should be provided and staffed by the most highly trained and qualified EMS personnel on the scene (at the minimum of BLS level). They shall evaluate vital signs, examine members, and make proper disposition (return to duty, continued rehabilitation, or medical treatment and transport to a medical facility). Continued rehabilitation should consist of additional monitoring of vital signs, providing rest, and providing fluids for rehydration. Medical treatment for members, whose signs and/or symptoms indicate potential problems, should be provided in accordance with local medical control procedures. EMS personnel shall be assertive in an effort to find potential medical problems early. All medical

evaluations shall be recorded on standard forms along with the member's name and complaints and must be signed, dated, and timed by EMS.

ACCOUNTABILITY: Members going to rehab shall take their accountability tags with them. EMS will collect tags as you enter rehab and will document member's arrival and departure time. Members will not leave the rehab area until authorized by EMS. When leaving the rehab area, members will take their tag and report to the personnel staging area.

Sample Instructor Rotation Matrix

Assignment	Evolution							
	1	2	3	4	5	6	7	8
IC	G	F	E	D	C	B	A	G
Attack	F	E	D	C	B	A	G	F
Break	E	D	C	B	A	G	F	E
Backup	D	C	B	A	G	F	E	D
Safety	C	B	A	G	F	E	D	C
Ignition	B	A	G	F	E	D	C	B
RIT	A	G	F	E	D	C	B	A

Evolution	Position	Name
1	Instructor A	
2	Instructor B	
3	Instructor C	
4	Instructor D	
5	Instructor E	
6	Instructor F	
7	Instructor G	

Sample Student Rotation Matrix

Assignment	Evolution							
	1	2	3	4	5	6	7	8
Attack	A	F	E	D	C	B	A	F
Safety	B	A	F	E	D	C	B	A
Backup	C	B	A	F	E	D	C	B
RIT	D	C	B	A	F	E	D	C
Break	E	D	C	B	A	F	E	D
Rehab	F	E	D	C	B	A	F	E

Teams		
A	Student 1	Student 2
	Student 3	Student 4
B	Student 5	Student 6
	Student 7	Student 8
C	Student 9	Student 10
	Student 11	Student 12
D	Student 13	Student 14
	Student 15	Student 16
E	Student 17	Student 18
	Student 19	Student 20
F	Student 21	Student 22
	Student 23	Student 24

Teams are 4-member teams. Please follow the rotation schedule, as provided above.

APPENDIX G

Rapid Intervention Team

Rapid Intervention Team

RIT Duties/Staffing

- A. RIT Officer (Instructor) will answer directly to the Incident Commander (IC) and shall remain with the RIT at all times during the evolution.
- B. RIT Instructor will verify all tools are in place, and all team members are ready (including PPE, SCBA, and accountability) for service.
- C. Two (2) members of the RIT will don SCBA facemasks prior to every evolution.
- D. RIT shall be in place, ready for service, prior to any instructor/ignition officer entering the Burn Building Structure to start a fire and remain in place until every instructor and student has cleared the Burn Structure and PAR is verified after every evolution.

Equipment

- A. Tools and equipment (at a minimum-listed) will be kept in the RIT Staging Area with the RIT and will not be used by any other team for any purpose except firefighter rescue and/or safety. NO EXCEPTIONS!
 - 1. 1 - charged 1¾" hose line
 - 2. 1 - sets of irons
 - 3. 1 - bagged rope
 - 4. 1- stokes basket
 - 5. 1 - 20' length of webbing

APPENDIX H

Special Event Form

SPECIAL EVENT PERMIT**Processions, Assemblages and Special Activities, and Film Shoots****APPLICANT CONTACT INFORMATION**

Contact Name: _____ Title: _____

Organization: _____ ☐ Municipal Sponsor ☐ Private

Sponsor Street Address: _____ City: _____ State: _____ Zip Code: _____

Phone: _____ E-mail: _____ Hours: _____

SPECIAL EVENT INFORMATION

1. Special Event Name: _____
2. Special Event Type (Check all that apply): ☐ Procession ☐ Assemblage ☐ Special ☐ Activity ☐ Film Shoot
3. Special Event Purpose/Description (Attach additional sheet if necessary):

4. Date of Special Event: From _____ To _____
 a. Alternate Date of Special Event: From _____ To _____
5. Time of Special Event: From _____ To _____
 a. Alternate Time of Special Event: From _____ To _____
6. County(ies):

7. Municipality(ies):

8. State Road(s) (List all state roads involved in the special event - Attach additional sheet if necessary):

State Route Number:	State Road Name:	Number of Lanes:	Type of Highway:
_____	_____	_____	Select One
_____	_____	_____	Select One
_____	_____	_____	Select One
_____	_____	_____	Select One
_____	_____	_____	Select One
_____	_____	_____	Select One

SPECIAL EVENT INFORMATION (CONTINUED)

9. Approximate number of vehicles in the special event: vehicles
10. Approximate number of pedestrians involved in the special event: pedestrians
11. Highway will be (check all that apply): ☐ Fully Closed ☐ Partially Closed ☐ Minor Encroachment ☐ Other
- a. Describe the highway closure and the affect on adjacent properties. (Attach additional sheet if necessary):

12. Travel distance of road closure/encroachment:
13. Travel distance of the alternate route: ☐ N/A

NOTE: Alternate route shall not be more than 5 miles longer or 5 times greater in length then the normal travel distance. An alternate route is not required if one of the following conditions exists:

- a. The highway to be closed is not a state route and is primarily used by local drivers who are familiar with an alternate route.
- b. The highway is only partially or periodically closed and the vehicle escort service can safely maintain traffic on the remainder of the highway.
- c. The highway closing for less than 20 minutes and excessive traffic backup will not occur during closing.
14. Does the special event occur on a freeway: ☐ Yes ☐ No
- The following five (5) questions pertain to the use of a freeway: ☐ N/A

- a. Please state the reason(s) why this event should use a freeway, including safety aspects to both motorists and event participants. (Explain on a separate attached sheet)
- b. Are there a minimum of two lanes of traffic in each direction of flow: ☐ Yes ☐ No
- c. Will the special event move orderly and uniformly along the freeway: ☐ Yes ☐ No
- d. Will the special event use a maximum of one lane of the highway and can the MPT Contractor safely maintain traffic on the remainder of the highway: ☐ Yes ☐ No
- e. Will the delay for traffic entering or leaving the highway at ramps be no more than 5 minutes and can MPT control all delayed traffic: ☐ Yes ☐ No

15. Notification of Pennsylvania State Police (PSP) (Please Contact Station Commander at Local PSP Barracks):
- a. PSP Contact Name: Title: Date:
16. Maintenance and Protection of Traffic (MPT): ☐ N/A

- a. MPT Performed By:
- b. MPT Contact Name: Phone:
- c. Date MPT requested: From To
- i. Alternate Date MPT requested: From To
- d. Time MPT requested: From To
- i. Alternate Time MPT requested: From To

17. Vehicle Escort Service: ☐ N/A
- a. Vehicle Escort Performed By:
- b. Vehicle Escort Contact Name: Phone:
- c. Date Vehicle Escort Service requested: From To
- i. Alternate Date Vehicle Escort Service requested: From To
- d. Time Vehicle Escort Service requested: From To
- i. Alternate Time Vehicle Escort Service requested: From To

APPLICANT CERTIFICATION, PERMIT CONDITIONS, & SIGNATURES

The applicant shall indemnify, save harmless, and defend (if requested) the Commonwealth of Pennsylvania, the Department of Transportation, and their officers, agents, and employees from any and all claims, suits, or actions for injuries, death and/or property damage arising out of the procession, assemblage, or special activity identified in this permit where the claim, suit, or action was caused by the applicant, its officers, agents, and employees, the event participants, support staffs, event officials, volunteers, medical support, technical support, media vehicles, event communications staffs, the traveling public, general public, or spectators.

A certificate of insurance must be provided showing: (a) public liability insurance for bodily injury and property damage in the minimum amount of two hundred fifty thousand (\$250,000.00) per person and one million dollars (\$1,000,000.00) per occurrence to cover any loss that might occur as a result of the permitted use of the state highways or that might otherwise arise out of or be connected with the event; (b) occurrence-based coverage; and (c) the Commonwealth of Pennsylvania named as an additional insured. The applicant warrants the information in the insurance certificate is accurate.

The event route shall be appropriately secured with proper security and safety measures taken to protect the event participants, support staffs, event officials, volunteers, medical support, technical support, media vehicles, vehicle escort services, maintenance and protection services, the traveling public, event communications staffs, the general public, and spectators. Proper emergency medical services shall be provided. Local fire departments, the general public, and the traveling public shall be notified in advance of the event. Written notification shall be submitted to each municipality notifying the municipality that the event uses state roads and written approval shall be obtained from each municipality granting the applicant permission to hold the event. The applicant shall coordinate and pay for temporary traffic control during the event.

The Department reserves the right to re-open any closed road(s) at any time due to any emergency that may occur which require the use of such roads to safely provide for the movement of traffic through the area.

- ☐ I have attached a Certificate of Insurance as described above.
- ☐ I have read, understand, and agree to the above terms and conditions.
- ☐ I attest that all information in the special event permit application is accurate to the best of my knowledge.
- ☐ For a film shoot, I have read and agree to comply with the requirements of Exhibit A - Film Shoot Requirements.

Applicant

Contact Name (Print): _____ Title of Contact: _____

Contact Name (Signature): _____ Date: _____

Attesting Witness (Print): _____ Title of Witness: _____

Attesting Witness (Signature): _____ Date: _____

Pennsylvania Department of Transportation

District Traffic Engineer (Print): _____

District Traffic Engineer (Signature): _____ Date: _____

District Executive (Print): _____

District Executive (Signature): _____ Date: _____

Remarks:

Actions

1. Complete the Route/Bridge Restriction (M-937R) form and submit it at least ten (10) business days prior to the special event.
2. Notify the Traffic Management Center (TMC) of the special event date.

APPLICANT CHECKLIST

- ☐ Complete TE-300: Special Event Permit Application (Submit Pages 1, 2, and 3).

NOTE: Application becomes permit once reviewed and signed.

- ☐ Review Title 67, Chapter 212.701 Subchapter H, Special Events. Special Event Insurance Certificate.

- ☐ Documentation detailing the traffic control plan. Documentation includes:

- ☐ Map of special event route and the alternate traffic route. Map includes state route numbers, road names, intersections, etc.
- ☐ Coordination of a vehicle escort service (if applicable).
- ☐ Coordination of maintenance and protection of traffic (MPT) (if applicable). MPT can include Private Contractor, Local Police/Fire, etc.

- ☐ Notify Pennsylvania State Police (PSP) of special event (Please contact Station Commander at Local PSP Barracks).

- ☐ Notification and/or approval letter(s) for special event. Criteria for type of applicant is as follows:

Municipal Sponsor

NOTE: If your municipality's special event crossed into a different municipality, your municipality will need to satisfy municipal sponsor criteria for own special event AND private sponsor criteria for the other municipalities that your special event enters.

If Special Event occurs on:

1. State Road(s)

- ☐ The Municipal Sponsor is required to submit a notification letter for special event involvement on state road(s) and the permit application (Pages 1, 2, and 3) to the Pennsylvania Department of Transportation.

2. Local Road(s)

- ☐ The Pennsylvania Department of Transportation has no involvement with the special event on the Municipality's local road(s). The Municipality coordinates its own criteria for special event involvement on its own local road(s).

Private Sponsor

If Special Event occurs on:

1. State Road(s)

- ☐ The Private Sponsor is required to send notification letter(s) to each municipality for special event involvement on state road(s).
- ☐ The Private Sponsor is required to obtain approval letter from each municipality for special event involvement on state road(s).
- ☐ The Private Sponsor is required to submit a copy of each municipality notification and approval letter, and the permit application (Pages 1, 2, and 3) to the Pennsylvania Department of Transportation.

2. Local Road(s)

- ☐ The Pennsylvania Department of Transportation has no involvement with the special event on the Municipality's local road(s). The Private Sponsor is required to submit appropriate documents to municipality according to the municipality's requirements.

NOTE: If the involvement of the special event on a state road also requires requires involvement on a local road the private sponsor should notify the municipality of the local road involvement at least **eight (8) weeks prior to the date of the special event.**

- ☐ Submit completed and signed permit application and the required documents to the appropriate Pennsylvania Department of Transportation District Engineering Office (See Page 6) **eight (8) weeks prior to the date of the special event.**

GLOSSARY TERMS

The terms used in this package are defined as follows:

1. **Applicant** - An individual, group, municipal authority, or governing body that is applying for the special event permit.
2. **Assemblage** - An organized gathering of people without vehicles, or with vehicles that are stationary, which encroaches onto a street or highway and interferes with the movement of pedestrian or vehicular traffic. The term includes, but is not limited to, street fairs, block parties, organized demonstrations and other recreational events.
3. **Conventional Highway** - A highway other than a low-volume road, expressway, or freeway.
4. **Expressway** - A divided arterial highway for through traffic with partial control of access and generally with grade separations at major intersections.
5. **Film Shoot** - All aspects of production of a video production at a set or location.
6. **Freeway** - A limited access highway to which the only means of ingress and egress is by interchange ramps.
7. **Fully Closed Road** - The roadway is closed to all road users except contractor's equipment or authorized vehicles.
8. **Low-Volume Road** - As defined in the Manual on Uniform Traffic Control Devices (MUTCD).
9. **Maintenance and Protection of Traffic (MPT) Contractor** - A service used to provide such safety measures deemed necessary to maintain alternate routes while safely guiding the traveling public through detours. These safety measures include, but are not limited to, appropriate signs, warning devices, pavement markings, and other temporary traffic control devices. MPT contractor can include a private contractor, local police/fire, etc.
10. **Minor Encroachment** - All activity remains on the shoulder, while the traffic control devices are placed on the roadway.
11. **Partially Closed Road** - One or more lanes are closed (but not all lanes) to all road users and an approved traffic control plan is established to allow road users to safely and effectively navigate around the temporary conditions.
12. **Procession** - An organized group of individuals, or individuals with vehicles, animals or objects, moving along a highway on the roadway, berm, or shoulder in a manner that interferes with the normal movement of traffic. The term includes, but is not limited to, walks, foot races, parades, and marches.
13. **Special Activity** - An organized vehicle race, speed competition or contest, drag race or acceleration contest, test of physical endurance, exhibition of speed or acceleration, or other planned event held within the right-of-way of a public roadway. The term includes those races defined in 75 Pa. C.S. § 3367 (relating to racing on highways).
14. **Special Event** - A procession, assemblage, or special activity held within the right-of-way of a public roadway.
15. **State Designated Highway/State Road/State Route (SR)** - A highway or bridge on the system of highways and bridges over which the Department has assumed or has been legislatively given jurisdiction.
14. **Vehicle Escort Service** - An automobile used to guide vehicle(s), bicycle(s), and/or pedestrian(s).

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION DISTRICT ENGINEERING OFFICES

Click on District to visit website (e.g. "District 1-0")

District 1-0

Address: 255 Elm Street, P.O. Box 398
Oil City, PA 16301-0398
Phone: 814.678.7154
Counties: Crawford, Erie, Forest, Mercer, Venango,
Warren

District 2-0

Address: 70 PennDOT Drive Clearfield, PA 16830
Phone: 814.765.0400
Counties: Cameron, Centre, Clearfield, Clinton, Elk,
Juniata, McKean, Mifflin, Potter

District 3-0

Address: 715 Jordan Avenue, P.O. Box 218
Montoursville, PA 17754-0218
Phone: 570-368-8686
Counties: Bradford, Columbia, Lycoming, Montour,
Northumberland, Snyder, Sullivan, Tioga, Union

District 4-0

Address: 55 Keystone Industrial Park
Dunmore, PA 18512
Phone: 570.963.4061
Counties: Lackawanna, Luzerne, Pike, Susquehanna,
Wayne, Wyoming

District 5-0

Address: 1002 Hamilton Street Allentown, PA 18101
Phone: 610.871.4100
Counties: Berks, Carbon, Lehigh, Monroe, Northampton,
Schuylkill

District 6-0

Address: 7000 Geerdes Boulevard
King of Prussia, PA 19406-1525
Phone: 610.205.6700
Counties: Bucks, Chester, Delaware, Montgomery,
Philadelphia

District 8-0

Address: 2140 Herr Street Harrisburg, PA 17103-1699
Phone: 717.787.6653
Counties: Adams, Cumberland, Dauphin, Franklin,
Lancaster, Lebanon, Perry, York

District 9-0

Address: 1620 North Juniata Street
Hollidaysburg, PA 16648
Phone: 814.696.7250
Counties: Bedford, Blair, Cambria, Fulton, Huntingdon,
Somerset

District 10-0

Address: 2550 Oakland Avenue, P.O. Box 429
Indiana, PA 15701-0429
Phone: 724.357.2800
Counties: Armstrong, Butler, Clarion, Indiana, Jefferson

District 11-0

Address: 45 Thoms Run Road Bridgeville, PA 15017
Phone: 412.429.5000
Counties: Allegheny, Beaver, Lawrence

District 12-0

Address: 825 North Gallatin Avenue Ext.
P.O. Box 459
Uniontown, PA 15401-2105
Phone: 724.439.7315
Counties: Fayette, Greene, Washington, Westmoreland

Central Office

Address: Keystone Building 400 North Street
Harrisburg, PA 17120
Phone: 717.787.2838

EXHIBIT A - FILM SHOOT REQUIREMENTS

1. Prior to the installation of any temporary structures to any bridges, the Applicant shall submit a detailed plan prepared by a professional engineer for each installation and shall obtain acceptance of the Commonwealth's District Engineer or designee. The Applicant shall be fully responsible for the design and proper installation of its temporary structures. The acceptance of a detailed plan by the District Engineer or their designee will not relieve the Applicant of the responsibility for its work. This written acceptance shall constitute authorization to the Applicant to proceed with the installation of the temporary structure in accordance with the accepted plans. The Applicant shall remove the temporary structure after it no longer needs the temporary structure and shall restore the bridge in a manner deemed acceptable to the Commonwealth. The installation of the temporary structure shall in all respects be subject to and in compliance with the terms, conditions, and provisions of this permit.
2. The film shoot shall take place in Pennsylvania for the time period indicated on the permit. If a continuation is necessary, the Applicant shall submit a written request to the Commonwealth. The Commonwealth will issue a letter signed by a duly authorized Commonwealth representative specifying a new termination date, which letter shall become part of this permit and operate as a supplement to it.
3. Actual road or lane closures are permitted only for the time required to set up staging, remove all staging or props and conduct actual filming at each separate filming location on the dates needed to complete filming.
4. This permit is granted upon the conditions that the film shoot location be properly secured with proper security and safety measures being taken to protect the film shoot participants, support staffs, officials, state police, sheriffs and local police, the traveling public and the general public; that proper fire and emergency medical services be contacted for emergency situations that may occur; that proper police protection be provided and the film shoot be coordinated with the Pennsylvania State Police and affected local police agencies; that the general public and the traveling public be notified in advance of the film shoot; that the local fire departments and emergency ambulance services be notified of the film shoot; and that the insurance coverage specified on the permit be provided.

APPENDIX I

Pre-Burn Plan Template

Course Information

- ☐ Course Title
- ☐ Location
- ☐ Dates
- ☐ Lead Instructor

Emergency Actions

- ☐ "In the event of an emergency, render any life-saving aid necessary"
- ☐ List Steps to be taken
- ☐ Dispatch Administrative Telephone Number

Training Objectives

- ☐ (S)pecific, (M)easurable, (A)ction-Oriented, (R)ealistic, (T)ime-Sensitive or
- ☐ (A)udience, (B)ehavior, (C)ondition, (D)egree

☐ Approved Live Fire Request

Plot Plan(Scaled to show the following)

- ☐ Building
- ☐ Hazard Areas(If Applicable)
- ☐ Apparatus Placement(Including EMS units)
- ☐ Attack and Supply lines(Size, length and anticipated flow)
- ☐ Side Designations
- ☐ Command Post
- ☐ Rehab Area
- ☐ Roadways and Parking
- ☐ Staging Area(If Applicable)
- ☐ Spectator Area
- ☐ Control Zone locations(PPE Required)
- ☐ RIT Team Location
- ☐ Prohibited/Off Limits Areas(If applicable)
- ☐ Evacuation Rally Point
- ☐ Exposures
- ☐ Directional Arrow(North Indicator)

☐ Live Fire Checklist

Procedures

- ☐ Steps to successfully complete evolution(Includes both staff and students)

Cleanup/Dismissal

- ☐ Steps to successfully complete prior to the release of staff and students

Facility Inspection(Fixed Facility)

- ☐ Pre-use inspection
- ☐ Post-Use Inspection(Provided it can be done Safely)

Burn Plan(Acquired Structure Only)

- ☐ Floor Plan indicating sequence of fire sets

PRE-BURN PLAN CHECKLIST

NAME:

Elevation Drawings

- ☐ A Side
- ☐ C Side – Required if exterior floor count different from front or if crews will use for access
- ☐ Other significant building features

Communications Plan

- ☐ Radio Channel or Frequency
- ☐ Call Sign
- ☐ Primary User(s)

Participant List

- ☐ See Approval Letter for Instructor List
- ☐ Instructor Matrix(If generic – Instructor Cross Reference)
- ☐ Student Matrix (If generic – Student Cross Reference)
- ☐ Other with Official Relationship(EMS, RIT, D/Os)

Safety Plan

- ☐ PPE Requirements
- ☐ Hazards and necessary control measures
- ☐ Evacuation Signal
- ☐ General Safety Message
- ☐ Brief Description of Accountability Process
- ☐ Weather

Water Supply and Flow Calculations

- ☐ Minimum Water Supply(MWS) Calculations
- ☐ MWS with Reserve Calculations
- ☐ Fire Flow(Fixed Facility) Calculations
- ☐ 100% Fire Flow(Acquired Structure) Calculations
- ☐ Tanker/Tender Shuttle Calculations(If Applicable)

Floor Plan

- ☐ All Floors Identified
- ☐ Walls
- ☐ Doors
- ☐ Windows
- ☐ Stairs
- ☐ Side Designations
- ☐ Rooms
- ☐ Fire Locations(Fixed Facilities)
- ☐ Prohibited/Off Limits Areas(If applicable)
- ☐ FDC and Standpipe Location

Water Supply and Fire Flow Calculations

Does this facility have an engineered water supply system? (If yes, skip to fire flow section)

Building Length =

Building Width =

Building Height =

Building Volume = Length X Width X Height

Building Volume(BV) =

Occupancy Hazard Classification (OHC) =
(Use default of 7, unless otherwise instructed)

Construction Classification(CC) =

Minimum Water Supply(MWS) = BV/OHC * CC (Minimums are 2000 without an exposure or 3000 when within 50')

MWS (gallons)=

Reserve = MWS * .5

Reserve (Gallons)=

Construction Type

CC

Type 1 – Fire Resistive	.5
Type 2- Non-Combustible	.75
Type 3 – Ordinary Construction	1
Type 4 – Heavy Timber	.75
Type 5 – Wood Frame	1.5

FIRE Flows – Length x Width / 3

Fixed Facility

Attack line(s). Initial Fire Attack will suppress fire in a 10 x 20 room and once controlled will initiate an attack in a 10 x 15 room.

$$10 \times 20 = 66 \text{ GPM}$$

$$+ 10 \times 15 = 50 \text{ GPM}$$

= 116 GPM or 95 GPM(whichever is greater) must be immediately available.

SAFETY and RIT Lines Minimum of 95 GPM

Acquired Structure

Attack line. Minimum of 95 GPM

SAFETY and RIT Lines Minimum of 95 GPM

100% Fire Flow(Represents the total GPM if the building is 100% involved)

$$= (\text{Length} \times \text{Width} / 3) * \text{Number of Floors}$$

100% Fire Flow =

Sum of hoselines = 100% Fire Flow

Used in the event, we need to flow a large quantity of water immediately.

Water Shuttle Calculations

	Travel Time(TT)	Handling Time(HT)	Tender Flow Rate(GPM)
Unit Number	.65/(1.7)(Dist in Miles)	Dump + Fill Time	Tank Size – 10%/TT + HT
		Sum of TFR(s)	