

ECRFPA Model
Operating
Procedures -
Mini-Academy
Version

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The Enchanted Circle Regional Fire Protection Association has adopted a common set of Operating Procedures in order to facilitate efficient interagency operations, and to provide a foundation for Association sponsored training programs. This document is comprised of those specific procedures that Mini-Academy students are expected to be familiar with prior to the first day of the Academy.

Version 1.5

Table of Contents

Response To Structure Fires 4

 Purpose 4

 First Alarm..... 4

 Second Alarm 4

 Additional Alarms..... 5

 Special Call 5

Fireground Strategy 6

 Purpose 6

 Basic Concepts 6

 Ventilation Limited Fire..... 6

 Flow Path Control..... 6

 Offensive Strategy..... 7

 Offensive Strategy Mnemonic: “S.L.I.C.E.R.S.” 7

 Defensive Strategy 8

 Change of Strategy..... 9

Flow Path Control & Ventilation 10

 Purpose 10

 Basic Concepts 10

 Coordination of Flow Path Control, Ventilation and Fire Attack with Water 10

 Initial Flow Path Control..... 10

 Application of Water from the Exterior 11

 Designated Entry and Exhaust Points 11

 Timing of Ventilation..... 11

 Compartmentalization 11

 Ventilation Methods and Priorities..... 11

 Procedure..... 12

 Tactical Considerations 12

Use of the Incident Command System (ICS) 14

 Purpose 14

 General..... 14

 Establishing Command..... 14

Radio Designation 14

Stationary or Mobile Command..... 14

Transfer of Command 15

Standard Company Assignments and Responsibilities 16

 Purpose 16

 Types of Companies on the Fireground 16

 Engine Company Functions..... 16

 Truck Company Functions..... 17

 Assignment of Company Functions 17

Seat Assignments 18

 Purpose 18

 Seat Numbering 18

 Left Side Seats / Right Side Seats 18

 Seat Assignments 18

 Offensive Operations – Working Fire..... 19

 First Due Engine Company – Fire Attack..... 19

 First Due Truck Company 19

 Second Due Engine Company – Water Supply..... 20

Accountability 21

 Purpose 21

 Accountability 21

 Accountability Officers & Passports..... 21

 General Rules of Thumb..... 22

 Termination of Passport Procedure..... 22

SCBA Use 23

 Purpose 23

 S.C.B.A. Equipment 23

 S.C.B.A Use 23

Fire Stream Selection 24

 Purpose 24

 Fire Stream Selection 24

Residential and Commercial Classifications.....	24
Minimum Fire Flows for Interior Residential Attack.....	25
Minimum Fire Flows for Interior Commercial Attack	25
Offensive Interior Attack Fire Stream Considerations	25
Engine Mounted Master Streams.....	25
Elevated Master Streams.....	25
Rural Water Supply Operations (3 Phase Water Supply).....	26
Purpose	26
Planning Assumptions:.....	26
Phases	26
Resource Requirements.....	27
Firefighter Rehab	28
Purpose	28
Establishing the Rehab Unit	28
Rehab Procedure.....	28
On Deck/Tactical Reserve Companies	30
NOTE:	30
Purpose	30
On Deck Company Composition	30
On Deck Assignments.....	30
Rescue of Lost, Trapped or Injured Firefighters	31

Response To Structure Fires

Purpose

Many tasks must be performed at the scene of a structure fire in order to protect life and property. Nothing is more important in determining the eventual outcome than our ability to put an adequate number of trained, well organized and properly equipped firefighters on the scene as quickly as possible. This procedure establishes standards for assigning adequate resources to first, second, and subsequent alarm structure fire incidents in the Enchanted Circle. This procedure takes into consideration that the various jurisdictions around the Enchanted Circle may use different procedures for staffing firefighting companies, and that company strength may vary greatly. In general, the Incident Commander (IC) should plan on assigning only one task to any resource (Engine Company or Truck Company). For example, each engine company would be expected to stretch and staff only one attack line. The need to perform additional tasks should prompt the IC to order additional companies. This procedure assumes a reliable automatic aid and mutual aid response in order to meet the resource requirements.

First Alarm

The standard **First Alarm** assignment includes a Chief Officer, two Engine Companies, and one Truck Company. The Truck Company function will in most cases be performed by an Engine that has been assigned Truck Company responsibility by the IC (*See Standard Company Assignments*). In areas not served by a pressure hydrant water supply, the First Alarm assignment should include a water supply engine and a sufficient number of water tenders to deliver a planned fire flow rate at the fire scene, and a company or chief officer to coordinate the water supply operation (*see Rural Water Supply Operations procedure*). The dispatch of first alarm resources is automatic and does not require prior authorization. The specific resources that are "first due" are designated for each area and jurisdiction in the **Dispatch Mobilization Guide**, which shall be updated periodically.

Second Alarm

A **Second Alarm** assignment will bring an additional Chief Officer, two Engine Companies and one Truck Company to the scene. If water tenders were assigned on the **First Alarm**, then two additional water tenders will be included on the **Second Alarm** assignment. A second alarm must be requested by the Incident Commander, or the assigned Chief Officer. The assigned Chief Officer should consider requesting a **Second Alarm** prior to arriving on scene for any of the following situations:

- A report from dispatch of people in the fire building.
- A fire in a building with significant occupant safety concerns, such as a school, hotel or night club.
- A building with three or more floors.
- Anticipation of the need for multiple companies for strategic reserve, rescue or RIC.
- Anticipation of significant water supply problems or manpower needs.

Additional Alarms

The IC may order a **Third Alarm** or greater as needed to control complex incidents. It is recognized that limited resources within the Enchanted Circle may limit the capacity to fill complete alarm assignments beyond a Second Alarm. Nonetheless, it is a goal that each alarm be staffed with an additional two Engine Companies and one Truck Company.

Special Call

The IC may **Special Call** any type of resource needed on the incident without striking an additional alarm.

Fireground Strategy

Purpose

This procedure is intended to provide a standard concept of the two fireground strategies commonly used during structure fire operations in the Enchanted Circle. These strategies are **Offensive Strategy** and **Defensive Strategy**. The IC will select the most appropriate strategy based on the best information available from a complete Size-Up, with consideration for the resources available to implement the attack, and their anticipated arrival on the fireground. The selection of a strategy is always the product of a risk vs. benefit analysis.

Once an appropriate strategy is selected, it is the IC's responsibility to assure that all personnel are informed, and operating within the selected strategy. The IC may elect to change the strategy being used based on reevaluation of risk/benefit parameters. Should a change in strategy occur, it is again the IC's responsibility to assure that all personnel are informed and that the change in strategy is implemented in an orderly fashion. All fire personnel are expected to be familiar with the basic concepts and tactics associated with each Strategy.

Basic Concepts

Ventilation Limited Fire

A "ventilation limited fire" is a high intensity fire in a compartment (structure) where continued growth of the fire is limited by the availability of fresh air (oxygen). In a structure with modern construction materials and modern furnishings, this is a common fire condition. In this condition, the introduction of fresh air by premature ventilation will often lead to a rapid increase in fire intensity to flashover conditions, threatening the lives of any occupants and firefighters operating inside the structure.

Flow Path Control

A **Flow Path** is the route followed by heat and smoke moving from high pressure generated by the fire, to low pressure outside the involved structure. As heat and smoke move out of the structure down the flow path, fresh air will be drawn into the fire, which will increase fire intensity. The flow path will be determined by the path of least resistance, and will be affected by prevailing winds. Depending on the building and on the actions of occupants or firefighters, multiple flow paths may exist. **Flow Path Control** consists of closing or restricting any openings that will allow fresh air into the fire, and coordinating the timing of **Ventilation** with the application of water into any super-heated space.

Offensive Strategy

The decision to use an **Offensive Strategy** is based on the IC's judgment that there may be occupants in survivable spaces and/or salvageable property, and there are sufficient resources available to safely implement an offensive attack.

Offensive Strategy Mnemonic: "S.L.I.C.E.R.S."

The mnemonic "S.L.I.C.E.R.S." is a mental tool that summarizes actions to be taken by the first arriving Engine Company in an **Offensive Strategy**, and consists of actions to be taken in sequence (Sequential Actions), and actions to be taken as needed and/or the opportunity arises (Actions of Opportunity).

Sequential Actions

- **SIZE-UP**
- **LOCATE THE FIRE**
- **IDENTIFY AND CONTROL THE FLOW PATH**
- **COOL THE SPACE FROM SAFEST LOCATION**
- **EXTINGUISH THE FIRE**

Actions of Opportunity

- **RESCUE**
- **SALVAGE**

Size-Up

Size-Up is a standardized information gathering process. The first arriving fire officer will be the initial IC, and is responsible for doing a complete 360 degree lap around the fire building as an essential part of the size-up process. Information to be considered in the size-up include weather conditions (especially wind), building size and construction, the location of the fire within the building, heat and smoke conditions, established flow paths, and rescue potential.

Locate the Fire

The IC should use any and all means available to determine the location, extent, and intensity of the fire within the structure. Thermal Imagers may be a valuable tool in this process.

Identify the Flow Path

If a flow path is visible on arrival, doors and windows should be closed to limit the rate of fire growth and protect potential occupants. Prevailing wind must be considered when planning entry and ventilation, and entry should not be made on the downwind side if there is any significant wind. Ventilation is an integral part of controlling the flow path, and should be planned to create an exhaust opening as close to the seat of the fire as possible, and to keep fresh air intake at interior firefighters'

backs. Inflow of fresh air at the point of entry should be limited by door control after firefighters have made entry, and until they are in a position of applying water to the seat of the fire.

Cool the Space from the Safest Location

Based on information developed during the Size-Up, the IC will determine if a high heat/ventilation limited condition exists inside the building. If such a condition exists, the IC will determine the safest and fastest way to apply water into the super-heated space. The goal will be to substantially reduce the thermal load and potential for flash over as soon as possible with the resources available. One option to achieve this goal may include initial application of water into the structure from the outside, followed rapidly by entry after the space has been cooled.

Extinguish the Fire

Once the thermal threats have been controlled, the fire should be extinguished in the most direct manner possible.

Rescue

Rescue of threatened occupants is a priority, but it must be kept in mind that suppression of the fire is often the fastest and most effective way to protect occupants. Search and rescue operations in high heat and heavy smoke conditions by firefighters with limited on the job experience, who must crawl on the floor and have very limited visibility is a slow and ineffective process, and puts firefighters at increased risk. Compartmentalization by closing interior doors to control flow paths is an important part of protecting occupants. **Vent, Enter, Isolate and Search** may be an effective tactic. The IC must determine the best course of action to accomplish the Rescue objective based on conditions at the time and resources available.

Salvage

Compartmentalization is also a quick and effective method of limiting the damage to the structure and contents.

Defensive Strategy

A **Defensive Attack** is typically implemented with master streams from the exterior, and concentrates on confining the fire to the involved structure and preventing extension to exposures. A **Defensive Strategy** is typically used when there is little or no chance of saving lives or property in the fire building, and there is great risk to firefighters engaged in any effort to do so. The IC has made a conscious decision to write off the fire building.

Conditions that should prompt the selection of a **Defensive Strategy** include:

- Fire conditions inside the structure are not survivable, eliminating the possibility of rescue
- Damage to the building is extensive with little or no potential for salvage
- There is a potential for building collapse, making it unsafe for firefighters to work in or around the structure
- There are insufficient resources to implement an Offensive Strategy

Important features of a **Defensive Attack** are:

- All exposures are identified and protected
- *Primary Search* is conducted in the exposures, and threatened occupants are evacuated
- Master Streams flowing a minimum of 750 gpm are typically the most effective tool for protecting exposures. Once exposures are protected, the next priority is typically to knock down the main body of fire, thus reducing the risk to exposures.
- A fire brand patrol down wind is usually needed.

Change of Strategy

The decision to change from an **Offensive Strategy to a Defensive Strategy** should be made as an "Emergency Traffic" transmission. Once notified, all personnel should withdraw from the structure without delay, and maintain a safe distance from the building. A *Personnel Accountability Report (PAR)* should be obtained by the IC following the change in strategy. Interior hose lines should be withdrawn and repositioned. If retreat of interior crews is delayed by retrieval of the hose line and it is unsafe to stay in the building, the hose line should be abandoned.

The IC should always be pessimistic when implementing an **Offensive Strategy**, and anticipate the need to withdraw and reposition personnel with enough lead time to accomplish the transition in an orderly manner.

Flow Path Control & Ventilation

Purpose

A fire occurring in an enclosed structure with modern furnishings will very rapidly consume most of the available oxygen, and fill the structure with heat and toxic smoke. The intent of this standard is to establish clear guidelines for coordinating the introduction of fresh air, the removal of heat and smoke, and the application of water to confine and extinguish the fire.

Basic Concepts

A fire may be thought of as a pump; drawing fresh air in and discharging heat and smoke. In modern structures with mostly synthetic based furnishings, once a fire is ignited, it will grow rapidly until it consumes readily available oxygen and its intake of fresh air becomes limited (ventilation limited condition). At this point, fire intensity will decline until a new source of fresh air becomes available. With a new source of fresh air into an already super-heated atmosphere, fire intensity will rapidly increase and conditions inside the structure will deteriorate rapidly.

A **flow path** is defined as the route followed by heat and smoke moving from high pressure generated by the fire, to low pressure outside the involved structure. As heat and smoke move out of the structure down the flow path, fresh air will be drawn into the fire, which will increase fire intensity. The flow path will be determined by the path of least resistance, and will be affected by prevailing winds. Depending on the building and on the actions of occupants or firefighters, multiple flow paths may exist.

Flow Path Control consists of closing or restricting any openings that will allow fresh air into the fire until water can be applied to the seat of the fire.

Ventilation, as used in this guideline, is the action of firefighters to create an opening to allow fresh air into the fire building, and an exhaust opening to allow heat and smoke to flow out of the building. It should be anticipated that ventilation will drive a rapid increase in fire intensity, and the opportunity to intervene by putting water on the fire will be brief.

Coordination of Flow Path Control, Ventilation and Fire Attack with Water

Flow path control and ventilation is primarily a Truck Company function. Cooling, confining and extinguishing the fire with hose streams is primarily an Engine Company function. It is essential that these functions be precisely timed and coordinated as part of a team effort. The IC be the "play caller" and coordinate the actions of all Truck and Engine Companies.

Initial Flow Path Control

Any door or window that is found to be open on arrival should be closed in order to limit fresh air supply to the fire. If entry must be forced, the door should be returned to a mostly closed position once the locking mechanism is defeated. To the extent possible, all exterior openings should be maintained in a closed, or mostly closed position until an attack line is charged and the Engine Company is ready to make entry.

Application of Water from the Exterior

If the IC sees an opportunity to cool the environment inside the structure by application of water from the exterior (*commonly referred to as a "yard line"*), a straight stream or solid bore pattern should be directed at a steep angle towards the ceiling without rapid rotation of the stream in the opening. This will prevent the hose stream from interrupting the already established flow path of smoke out through the opening. The use of a fog stream or rapid rotation of a straight stream in the opening is to be avoided.

Designated Entry and Exhaust Points

Based on the initial size-up and considering wind direction and established flow paths, the IC will designate the desired location for ventilation fresh air entry and exhaust openings. Truck Company outside team personnel will be responsible for establishing these openings.

Timing of Ventilation

Flow path control, hose stream attack on the fire and ventilation should occur in a carefully timed and coordinated manner. Personnel assigned to staff forcible entry, ventilation (entry point and exhaust point), and interior attack should all be in place with tools and equipment and prepared to execute their particular assignment prior to initiating the attack sequence (see *Procedure* below). The IC will initiate and coordinate the sequence. Flow path control will be maintained until the interior attack team has advanced to the fire and started applying water. The Engine Company Officer will notify the IC when the hose line is in place, and the IC will call for ventilation. The ventilation exhaust opening and fresh air opening should be made simultaneously or in rapid succession. Consideration should be given to reinforcing ventilation with Positive Pressure once the initial openings have been made.

Compartmentalization

Compartmentalization of the fire building is a critical part of the fire attack and flow path control. Truck Company personnel assigned to the interior team should close all possible interior openings in order to limit flow path development into uninvolved parts of the structure and preserve survivable conditions for occupants who may be trapped in these areas.

Ventilation Methods and Priorities

There are three commonly used methods of achieving ventilation at a working fire. They are:

1. Horizontal Ventilation
2. Positive Pressure Ventilation (PPV)
3. Vertical Ventilation

For ventilation to be timely and well integrated with other parts of the offensive fire attack, there must be a standard approach that requires a minimum of personnel and equipment. With that in mind, the standard approach to ventilation at a residential or small commercial structure will be *Horizontal Ventilation* first, subsequently reinforced with *PPV*. All fire companies should be well practiced in, and immediately prepared to implement this standard approach. Because of the risks and operational difficulties associated with roof operations and the limited "on-the-job" experience of most local firefighters, *Vertical Ventilation* will be a method of last resort.

Procedure

- The *IC* will designate an entry point and ventilation exhaust point.
 - Prevailing wind direction will need to be considered in this decision. In general, interior firefighters should not be placed in a position of operating in the exhaust portion of a flow path.
- The Truck Company will form up the *Inside Team* (1 and 4 seat) and *Outside Team* (2 and 3 seat) as designated in the *Standard Company Assignments* procedure.
 - The *Inside Team* will tool up, go to the entry point, force entry if necessary, provide initial door control, and be prepared to make entry on the *IC's* command.
 - The *Outside Team* will locate the designated exhaust point, assess the tools needed to make the opening, and be prepared to "open up" on the *IC's* command.
 - If the exhaust opening will not require two personnel to accomplish, the 3 Seat will remain assigned to make the exhaust opening, and the 2 Seat will report to the entry point to maintain door control after the *Interior Team* makes entry.
- When all companies are in place (Engine and Truck), the *IC* will give the command to make entry.
 - The Engine Company and Truck Company Interior Teams will make entry and advance to the fire as described in "*Offensive Operations – Working Fire*" procedure.
 - The Truck Company *Outside Team* will maintain door and flow path control
- The Truck Company *Inside Team* will close interior doors as they advance in order to compartmentalize the structure and maintain flow path control, and will assist the Engine Company gain access to the fire.
 - Primary Search will be accomplished as opportunity presents, but the initial priority will be compartmentalization, locating and advancing to the fire.
- Once the Engine Company has advanced to a position where they can knock down the fire, the *Engine Company Officer* will call for ventilation. The *IC* will assure that the ventilation message is transmitted to the Truck Company *Outside Team*.
- The Truck Company *Outside Team* will rapidly make and secure their openings, and then bring PPV equipment to the entry point in order to reinforce rapid ventilation.

Tactical Considerations

- Heavy smoke or fire exhausting from the top of the entry opening may indicate that the exhaust opening is not adequate in size, or there is some other obstruction to airflow.
- Exhaust Point location considerations:
 - The effect of the flow path being created on firefighters, occupants and the structure
 - In general, the exhaust point should be located as near the fire as possible
 - Windows are better exhaust openings than doors (promotes clearing at the floor level, and are faster to open up). Multiple windows may need to be taken out in order to provide an exhaust opening of sufficient size.
 - If the fire has already created an exhaust opening, use it. It may be necessary to enlarge the opening.

- If the exhaust opening impinges on exposures, take measures to protect the exposures.
- Always stand to the side when making the exhaust opening, and keep other firefighters and the public clear.
- If there is not a substantial amount of exhausted smoke coming from the initial opening, the desired flow path may be restricted. Consider making another opening in another room.
- Entry point considerations:
 - Door control while the *Interior Team* is advancing to the fire is a critical assignment
 - The door control person should “mark” the location of the entry point both visually and audibly by placing a flashlight inside the door and sounding with a tool
 - The door control person should keep the door in as closed a position as possible that will allow advancement of the hose but limit the inflow of fresh air, until the order for full ventilation.
 - The door control person should feed the hose line in to assist the Engine Company as they advance, and keep a hand on the line to sense when water is being flowed.
 - If a large volume of steam is seen backing out of the door opening, the door should briefly be opened wider to allow the steam to dissipate, and then closed back down.
 - Once ventilation has occurred, heavy smoke exhausting from the entry point is an indication that the exhaust opening is not large enough, or the desired ventilation flow path is otherwise restricted.
 - The most desirable condition is for interior firefighters to always have fresh air inflow at their backs.
- PPV Considerations:
 - The initial PPV fan should be placed 6'-10' away from the entry point. The cone of positive pressure should completely cover the entry opening.
 - A second fan may be added to the system by placing it 3'-4' upstream from the first fan so that its output flows into and adds to the intake of the first fan (series operation).
 - According to the most recent ventilation research, the most effective ventilation sequence is several minutes of natural ventilation, followed by the addition of PPV.
- Vent/Enter/Isolate/Search (VEIS) techniques must be considered a part of the flow path control, compartmentalization, and ventilation procedure.
 - VEIS operations are carried out by the Truck Company *Outside Team*, or an additional truck company.
 - In VEIS operations, ventilation should not occur until immediately prior to entry. Premature ventilation may allow an exhaust flow path to become well established, making it difficult or impossible to complete the operation.
 - Once entry is made into the room, the highest priority is to close the interior door.

Use of the Incident Command System (ICS)

Purpose

This procedure establishes the use of the Incident Command System as the standard to be used at all emergency incidents, and provides guidelines for certain command procedures.

General

The ECRFPA member fire departments respond to a wide range of emergency incidents. In order to effectively manage personnel and resources, facilitate automatic aid and mutual aid operations, and to provide for safety and welfare of personnel, the Incident Command System (ICS) will be used to manage all emergency operations.

Establishing Command

The first arriving Company or Chief Officer will assume the role of Incident Commander (IC). The initial IC should:

- Announce over the radio that he or she has assumed command. This announcement should be made in such a way that it is clear to all personnel on the scene, dispatch, and personnel responding that command has been established.
- Size-up the incident, and give a size-up report to dispatch.
- Determine the strategy to be used (either offensive or defensive)
- Establish tactical priorities:
 - Remove endangered occupants and treat the injured
 - Confine and extinguish the fire
 - Conserve property
 - Provide for the safety, accountability, and welfare of personnel
- Make tactical assignments as necessary
- Manage communications
- Establish an effective incident organization
- Provide for an orderly transfer of command to subsequent arriving officers if appropriate

Radio Designation

The incident should be named for an appropriate geographic location (for example, a fire on Rim Road might be named the "Rim Fire"). The IC should adopt the incident name and designator as IC ("Rim IC") instead of using their usual radio unit number. If command is transferred, the transfer should be announced over the radio, and the "Rim IC" designator transfers to the new IC. In this way, operations personnel will always get an answer when they call for the "Rim IC".

Stationary or Mobile Command

The Initial IC may choose to establish a "Stationary" or "Mobile" command post, dependent on incident needs. If the first arriving fire officer is a company officer, and the situation requires immediate action that depends on the company officer's direct participation and close supervision, he or she may choose

to function in a “mobile command” mode. In this mode of operation, the company officer maintains command by use of a portable radio while continuing the direct supervision of his or her company, including entry into the fire building. The officer should announce clearly over the radio that he or she is in “mobile command mode”. The mobile command mode should rapidly culminate in one of the following:

- Situation is controlled
- Situation is not controlled and the IC moves to the exterior and establishes a stationary command.
- Command is transferred to a subsequently arriving officer, and the company officer continues direct supervision of his or her company.

Should a situation occur where a later arriving Company or Chief Officer cannot locate or communicate with the initial IC who is functioning in a mobile command mode, they will announce that they are assuming command and initiate whatever actions are necessary to locate the missing crew.

Some situations will require an exterior stationary command due to size, complexity or potential for rapid growth. In these circumstances, the initial IC should establish a command post in a safe and visible location, and maintain that position until relieved by a higher ranking officer.

Transfer of Command

Command is transferred to improve the quality of the command organization and the safety and effectiveness of operations.

- The first arriving fire officer will automatically assume the role of Incident Commander (IC).
- Assumption of command by subsequently arriving higher ranking officers is not automatic, but rather is a discretionary decision reached between the Initial IC and the higher ranking officer.
- Passing command to an officer not at the scene creates significant safety issues, and shall not be done.
- Transfer of command requires communication between the initial IC and the officer assuming command. Face-to-face communication is preferred, but radio communication may be required when the initial IC is functioning in a mobile command mode. It is the responsibility of the person being relieved to provide a briefing for the officer assuming command that includes:
 - Incident conditions
 - Strategy, tactical assignments, and deployment of resources
 - Anticipated needs and problems
- Command shall not be considered to be transferred until the transfer is announced over the radio to all incident personnel and to dispatch.
- The person being relieved will be reassigned to best advantage.

Standard Company Assignments and Responsibilities

Purpose

This standard establishes pre-determined initial assignments for Engine, Truck and Water Supply Companies. These assignments are intended to organize and pre-plan critical tasks that must be accomplished rapidly once firefighters arrive on the fireground, and to minimize the time required to initiate operations.

Types of Companies on the Fireground

Company functions fall into two broad categories; *Engine Company* functions, and *Truck Company* functions.

Engine Company Functions

The primary function of the Engine Company is to put water on the fire. For a working fire this will require a reliable water supply capable of sustaining flow rates of 250 gpm or more. This sustainable supply of water may come from a system of pressurized fire hydrants, or more typically in the Enchanted Circle the water will need to be hauled to the fire scene in a Water Tender Shuttle operation (see the *Rural Water Supply Operations procedure*). With this in mind, Engine company functions break down into two distinct roles: 1) Fire Attack, and 2) Water Supply.

- Fire Attack:
 - Developing and maintaining standard pump pressures
 - Stretching attack hoselines and operating nozzles
 - Performing interior fire “knock down”
 - Performing overhaul
 - Operating master streams for exposure protection in *Defensive Strategy*
- Water Supply:
 - Developing a reliable and sustainable water supply capable of meeting the fire flow requirements of the fire attack (minimum of 250 gpm)
 - Stretching supply hoselines
 - Drafting
 - Relay pumping
 - Managing “*Tank Farm*” operations

Truck Company Functions

Truck Companies provide all the fireground functions that do not directly involve water. These functions include:

- Forcible entry
- Ventilation/Flow Path Control
- Search and Rescue
- Controlling utilities
- Opening walls and ceilings to check for extension
- Laddering upper stories and roofs
- Operating aerial ladders and elevated master streams
- Overhaul

Assignment of Company Functions

All Companies arriving on the fireground will be assigned Engine Company (fire attack or water supply), or Truck Company functions. This standard pre-determines those assignments according to order of arrival on the fireground. The IC should confirm or clarify those assignments, and make discretionary adjustments in order to take advantage of specific apparatus capabilities (such as an aerial ladder truck) or incident needs (such as complicated water supply problems).

- 1st apparatus – Engine – fire attack function
 - Develop standard pump pressure
 - Stretch initial attack line
 - Begin fire attack appropriate to the IC's designated strategy (*Offensive* or *Defensive*)
- 2nd apparatus – Truck function
 - Inside team
 - Force entry for Engine Company as necessary
 - Provide initial entry point door control
 - Control the flow path by compartmentalization
 - Locate fire extension
 - Conduct Primary Search as opportunity and need arise
 - Support engine company in overhaul operations
 - Outside team
 - Ventilate the fire building on the IC's command
 - Considering the IC's overall direction, identify entry and exhaust points
 - On the IC's command, create the entry and exhaust point openings
 - Ladder the fire building (every floor where firefighters are operating)
 - Control utilities as appropriate
- 3rd apparatus – Engine function – Water Supply
 - Implement the Rural Water Supply procedure, or
 - Support the pressurized hydrant water supply as needed.

Seat Assignments

Purpose

This standard preplans and organizes critical tasks that must be accomplished in rapid succession as fire companies arrive on the fireground, and assigns those tasks to individual firefighters according to the seat they occupy on the apparatus. Although the standard is based on the concept of a fully staffed, four person company, the individual seat assignments are valid even if the apparatus is not fully staffed on arrival, or the company size is other than four firefighters. The overall concept is that a firefighter who has been given a specific “seat assignment” will know what tasks are expected to be accomplished, and what tools or equipment they will need to carry to their assignment. These preplanned assignments promote efficient teamwork and rapid initiation of operations on the fireground.

Seat Numbering

The seats on the “standard concept” apparatus will be numbered in order of seniority, as follows:

Seat 1: Company Officer – *right side* - front seat

Seat 2: Driver / Pump Operator – *left side* – driver’s seat

Seat 3: Senior Firefighter – *left side* - rear seat immediately behind the driver / pump operator

Seat 4: Firefighter – *right side* - rear seat immediately behind the company officer

Left Side Seats / Right Side Seats

In addition to the concept of the specific “*seat number*” assignments, the “*right side*” seats (seats 1 and 4) are paired and assigned “*inside operations*” for that apparatus, and the “*left side*” seats (seats 2 and 3) are paired and assigned “*outside operations*”.

Seat Assignments

All personnel arriving on an apparatus are expected to function as part of an effective and cohesive company. The tasks and required tools that are assigned to each seat will be determined by whether the apparatus is assigned *Engine Company*, *Truck Company*, or *Strategic Reserve/RIC* functions, and whether the assigned strategy is *Offensive* or *Defensive*. Specific assignments for working fires (defined as fires that require a hoseline to control) are as follows:

Offensive Operations – Working Fire

First Due Engine Company – Fire Attack

Seat #	Position	Assignment	Tools
1	Officer	Designates placement of the Engine, designates attack hoseline to be pulled, backs-up the nozzle person on the attack line.	PPE, SCBA, Portable radio, flashlight, officers haligan tool
2	Driver / Pump Operator	Places the apparatus according to direction from the Officer, engage the pump, chocks the driver's side rear wheel if not done by the 3 Seat Firefighter, develop water supply and pump pressure, charge the designated attack line(s), monitors pump panel, water supply and radio.	PPE, flashlight, radio
3	Senior Firefighter	Secures supply line and operates the hydrant (if working in a jurisdiction with pressurized hydrants), chocks the driver's side wheel (when not engaged in hydrant operations), assist engineer with water supply, manages the primary attack line on the exterior, checks all lines for kinks, spotter when engine is backing.	PPE, SCBA, flashlight, hydrant and spanner wrenches as required by type of water supply
4	Firefighter	Chock engine on officer's side, pull designated primary attack line to position indicated by officer, nozzle person on primary attack line	PPE, SCBA, flashlight

First Due Truck Company

Seat #	Position	Assignment	Tools
1	Officer (<i>Inside Team</i>)	Supervise <i>Inside Truck Team</i> . Supervise forcible entry and initial door control, location of fire and extension, primary search, and salvage & overhaul.	PPE, SCBA, portable radio, flashlight, officer's hook, thermal imager (TIC)
2	Driver (<i>Outside Team</i>)	Place apparatus according to direction from the officer, supervises the <i>Outside Truck Team</i> , supervise ventilation exhaust and entry openings, control of utilities, and ground ladder placement, and VEIS operations.	PPE, portable radio, flashlight, ladder hook (or tools appropriate for ventilation exhaust opening)
3	Senior Firefighter (<i>Outside Team</i>)	Chocks driver's side, assist driver with ventilation exhaust and entry point openings, utility control, set up ground ladder(s) w/ engineer, VEIS operations, spotter when truck is backing	PPE, SCBA, portable radio, flashlight, pike pole or roof bar, truckman's axe
4	Firefighter	Chocks Officer's side, forcible entry, primary	PPE, SCBA, flashlight, flat

	<i>(Inside Team)</i>	search, opening up walls and ceilings, salvage & overhaul.	head axe, haligan bar (the irons).
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Second Due Engine Company – Water Supply

Seat #	Position	Assignment	Tools
1	Officer	Determines the water supply mode (hydrant or <i>Three Phase Rural Water Supply procedure</i>), directs placement of the engine, directs the set-up of the Tank Farm and traffic flow of water tenders if Rural Water Supply is implemented.	PPE, Portable radio, flashlight, spanner wrench
2	Driver / Pump Operator	Places the apparatus according to direction from the Officer, chocks operator's side, primes the pump from draft if in Rural Water Supply mode, establishes recirculation, develops standard water supply pump pressure, charges supply line(s) when directed, coordinates with Attack Engine operator to meet fire flow needs, monitors pump panel and radio	PPE, radio, flashlight, spanner wrench
3	Senior Firefighter	Assist engineer set-up draft hose and low level strainer if in Rural Water Supply mode, set-up recirculation line, set-up water transfer device supply lines, assist with the deployment of fol-da-tanks and transfer devices, manage transfer of water from tank to tank, spotter when engine is backing.	PPE, portable radio, flashlight, spanner wrench
4	Firefighter	Chock officer's side, assist Officer with the deployment of the initial fol-da-tank, stretches and connect the initial supply line from the Engine to the Rural Hitch, directs and spots arriving water tenders.	PPE, flashlight, spanner wrench

Accountability

Purpose

This standard establishes a system for tracking firefighters actively operating in the *Hazard Zone* of an incident. The *Hazard Zone* is defined as any area where personnel are at risk from a toxic atmosphere, or at risk of becoming lost, trapped or injured by the environment or structure. PPE appropriate to the environment is required for all personnel operating within the *Hazard Zone*.

Accountability

Accountability is a critical element in the safety of all personnel on the fireground, and in particular working in the *Hazard Zone*. In general, good accountability is maintained by the following:

- All actions on the fireground are undertaken by organized companies or crews. The company officer is responsible for tracking the welfare and location of all personnel assigned to the company.
- Accountability continues through the concepts of Unity and Chain of Command, and Span of Control. Under these concepts, each person on the fireground has only one supervisor and should be able to communicate directly with that supervisor at all times. Supervisors should be operating within their ability to track and supervise personnel or resources at all times.
- The IC is responsible for assuring that the above concepts are being adhered to, and should react to correct any barrier or deficiency.
- The initial IC should maintain awareness of assignments and progress of all companies. If command is transferred, a briefing on what companies are working, where they are working, and what their assignment are will be critical to continuing good accountability.

Accountability Officers & Passports

To provide specific accountability for personnel actively operating in the *Hazard Zone* at any given time, each firefighter qualified for entry into the *Hazard Zone* will be issued a "Passport", which shall be a removable tag listing the firefighter's name. At the time of entry into the *Hazard Zone*, the company officer will collect all passports of firefighters entering the hazard zone from his or her company, and turn them in to a designated Accountability Officer. The Accountability Officer may be a Pump Operator, Division Supervisor, or other designated officer, depending on the nature, type and complexity of the incident.

For first alarm / initial attack resources, the Pump Operator/Engineer of the first due engine will automatically be designated as the initial Accountability Officer. The first arriving company will announce the designation and location of the Accountability Officer by radio during the initial size-up report. Each Company Officer will be responsible for turning in the Passport tags of all personnel entering the *Hazard Zone* immediately prior to entry, and retrieving the Passports when exiting. As incidents escalate, designated Accountability Officers may be assigned. Transfer of Accountability Officer status should be made face-to-face, and all Passport tags for personnel currently in the *Hazard Zone* handed over to the new Accountability Officer.

General Rules of Thumb

- Passports never enter the *Hazard Zone*.
- Passports must be kept near the entry/exit point to the *Hazard Zone*.
- Passports should reflect only personnel currently operating in the *Hazard Zone*.
- Crews must turn in their Passports when entering and retrieve their Passports when exiting the *Hazard Zone*.

Termination of Passport Procedure

Passport accountability will be maintained on the incident until the benchmark "Fire under control" is transmitted. At that time, the IC will obtain a *PAR* (Personnel Accountability Report). If all personnel are accounted for, the IC, at his or her discretion, will order the termination of Passport procedures. Upon termination of Passport procedures, all Company Officers will retrieve their Company's Passport tags from the Accountability Officer.

SCBA Use

Purpose

The intent of this SCBA standard is provide clear guidelines for the use of Self Contained Breathing Apparatus (SCBA) by Fire Department personnel operating in a toxic or contaminated atmosphere, typically referred to as an *IDLH (immediately dangerous to life or health)* atmosphere. SCBAs when properly used, prevent respiratory contact or contamination with the products of combustion, super-heated gases, toxic gasses, and all other potentially harmful atmospheric contaminants.

All Fire Department personnel who are expected to respond and operate in a toxic or contaminated atmosphere, will be equipped with a self-contained breathing apparatus (SCBA) and trained in its proper use and care. Members will be able to demonstrate a non-leaking seal between the face and the facemask of the device. Individual members will be responsible for compliance with this requirement.

S.C.B.A. Equipment

Each member who has completed a documented qualification process in the use of SCBA and entry into the *Hazard Zone*, will be issued a personal facemask. The individual member will be accountable for the facemask and responsible for its maintenance and cleaning.

Breathing apparatus and spare cylinders will be stocked on the fire apparatus, one for each assigned seat. Each firefighter of the assigned company will conduct a pre-use check of the SCBA prior to entry into the *Hazard Zone*.

Any SCBA not functioning properly will be red tagged and taken out of service. The SCBA must be thoroughly evaluated, repaired as necessary by a qualified technician, and tested prior to being returned to service.

S.C.B.A Use

SCBA shall be used by all personnel operating in any of the following environments or situations:

- A working interior fire.
- A location above a working fire.
- In a potentially explosive atmosphere such as natural gas or LPG leaks or fires.
- Vehicle fires.
- Any unventilated confined space.
- Any atmosphere suspected to be oxygen deficient or contaminated with toxic or superheated gasses.

The use of SCBA will not be discontinued until authorized by the IC. Prior to discontinued use, fire areas must be thoroughly ventilated, and ventilation must continue as long as personnel are operating in the space. If there is any doubt about respiratory safety, the use of SCBA will be continued until the atmosphere is established to be safe by testing.

Fire Stream Selection

Purpose

This procedure is intended to guide Company and Command Officers in determining water supply needs, and selecting appropriate hose size and nozzle configurations. It establishes predetermined minimum flow capabilities for *offensive interior* attacks in *residential* and *commercial* buildings, and suggested minimum rates for *defensive* attacks.

In fire suppression operations, it is the application of water to burning fuels that extinguishes the fire. Rapid knockdown of the fire depends on an adequate water supply and adequate gpm flow rates from the attack lines. Delayed or inadequate water supply and/or inadequate attack line flow rates leads to increased risk to firefighters and occupants of the building, and greater fire loss.

Fire Stream Selection

The selection of hose size and nozzle type will be determined by the building class (*residential* or *commercial*) and the selected strategy (*offensive* or *defensive*). The selected fire stream should meet the following criteria:

- Adequate rate of application (*gpm*) to rapidly overcome the energy production of the fire.
- Adequate reach and penetration to reach the seat of the fire.
- Create as little disturbance to thermal stratification as possible (interior *offensive* operations)

A straight stream pattern from a combination nozzle or a solid bore stream is the fire stream of choice in interior fire attack. Straight or solid bore streams have the advantage of penetrating heated atmospheres to reach the seat of the fire, while providing the least disruption to the thermal “layering” commonly encountered in these attacks. Use of fog patterns should usually be avoided because they disrupt this thermal layering bringing hotter gasses down to floor level, and they produce great amounts of steam which causes a much greater potential for burns of victims and firefighters.

Residential and Commercial Classifications

The classification of “Residential” is determined by room sizes and fuel load that would be typical of a single family residence. It would also apply to certain business occupancies that have small rooms and light to moderate fuel loading.

The classification of “Commercial” as used in this standard, implies large room spaces and/or heavy fuel loading (stock, storage, etc.).

Minimum Fire Flows for Interior Residential Attack

Any attack line used in an interior attack at a residential type structure shall be capable of flowing a minimum of 150 gpm. Pre-connected attack lines shall be flow tested in their standard pre-connected configuration (hose size, length, and nozzle) to assure that it meets this minimum and to identify typical pump pressure required to produce the minimum flow. 1 3/4" attack lines will be typical.

Minimum Fire Flows for Interior Commercial Attack

Any attack line used in an interior attack at a commercial type structure shall be capable of flowing a minimum of 250 gpm. Pre-connected attack lines shall be flow tested in their standard pre-connected configuration (hose size, length, and nozzle) to assure that it meets this minimum and to identify typical pump pressure required to produce the minimum flow. 2 1/2" attack lines with 1 1/8" will be typical.

Offensive Interior Attack Fire Stream Considerations

An offensive attack with hose lines and nozzles capable of adequate gpm flow should knock down the fire rapidly. If an interior hose line has been operated for 10 seconds without knocking down the fire, make an adjustment. Either the stream is not reaching the fuels that are burning, or the hose line/nozzle combination is not delivering an adequate flow rate to extinguish the fire. Change locations or get a bigger line.

Engine Mounted Master Streams

Engine mounted master streams (deck guns) should be capable of flowing a minimum of 750 gpm. Solid bore tips offer the advantage of greater reach, better penetration, a more intact stream and lower operating pressure than an equivalent combination nozzle set to straight stream.

Elevated Master Streams

An elevated master stream has the advantage of large flow volumes and the ability to reach otherwise inaccessible fire. Elevated master streams should be capable of flowing 1000 gpm.

Rural Water Supply Operations (3 Phase Water Supply)

Purpose

The goal of this procedure is to rapidly develop a reliable water supply to support an offensive attack at a working fire in a district not served by pressurized hydrants. The procedure has three distinct and prioritized phases. Each phase is associated with target bench marks for flow rate and time frame. An important underlying concept is that each phase is done in priority order and fully functional before focus shifts to the next phase. This procedure takes into account the typical Engine Company staffing in the Enchanted Circle, as well as current UL/NIST research into fire behavior in modern structures.

Planning Assumptions:

- Adequate resources to implement this procedure are included in the *First Alarm* assignment
- The first due Engine is equipped with a “*Rural Hitch*” hose load which consists of a minimum of 600’ of supply line (3” or larger) with a clappered Siamese pre-connected on the end
- The first due Water Tender will arrive within 5 minutes after the first due Engine arrives and is equipped with a pump and staffed with a qualified pump operator
- The second due Engine will arrive within 8 minutes after the first due Engine, has reliable drafting capability, and has adequate staff (including Company Officer) to set up and manage a “*Tank Farm*” for water tender shuttle operations
- It should always be assumed that the fire will not be controlled with only the water carried in the on-board tank of the first due engine and the first due water tender. The “mind set” should be to develop a sustainable water supply that is capable of flowing a minimum of 250 gpm without interruption

Phases

Phase 1 – On Board Tank:

On approach to the fire scene, the first due Engine (*Attack Engine*) identifies the closest location to the fire that provides reasonable access for water tenders. The *Attack Engine* lays in a supply line from this point to the fire. The supply line should be 3” or larger (LDH preferred) equipped with a clappered Siamese on the end. When the *Attack Engine* arrives at the fire scene, the Pump Operator develops standard pump pressure from the Engine’s on-board tank while the Company Officer and firefighter stretch a pre-connected attack line to the structure and begin the offensive fire attack. The target time frame is for the Engine to be flowing water within 1 ½ minutes of arrival on the fireground, and the target flow rate is 150 gpm.

Phase 2 – Nurse Tender:

Once Phase 1 fire flow has been established, the *Attack Engine* Pump Operator connects the supply line that was laid in earlier to a gated intake. The first due Water Tender (*Nurse Tender*) arrives at the end of the supply line, connects a 3" line from a pump discharge into the clappered Siamese, coordinates with the *Attack Engine* Pump Operator and begins to pump water at a pressure of 50 psi to the *Attack Engine*. The target time frame for the *Nurse Tender* to be supplying water to the *Attack Engine* is 5 minutes, and the target flow rate is 250 gpm. The *Nurse Tender* should not get "blocked in" by Phase 3 operations.

Phase 3 – Supply Engine/Tank Farm:

The second due Engine (*Supply Engine*) arrives at the end of the *Attack Engine's* supply line, sets up the first tank (*Primary Tank*) of a Tank Farm using the fol-da-tank off the *Nurse Tender*, and connects a 3" line into the clappered Siamese. The second due Water Tender dumps water into the *Primary Tank*, the *Supply Engine* drafts from the *Primary Tank*, establishes recirculation, and begins pumping into the *Attack Engine's* supply line at a pressure of 50 psi. Once the *Supply Engine* is providing water to the *Attack Engine*, the *Nurse Tender* will disconnect from the supply line and join the other water tenders in the shuttle operations.

Development of the Tank Farm

The *Supply Engine* should be pumping water to the fireground out of the Primary Tank before additional tanks are added to the farm. The goal should be to add one tank at a time and make sure it is fully functional before adding additional tanks. It should be a priority to maintain the ability for tenders to dump directly into the Primary Tank in the case that tank-to-tank water transfer rate is too slow to keep up, or in the event that prime is lost and has to be reestablished. Most tank farms will involve 3 to 5 tanks, and should be arranged in such a way as to minimize the maneuvering that a tender has to do in order to dump. The tank farm lay-out should accommodate both rear and side dump tenders.

Resource Requirements

The resources required to implement this rural water supply procedure are in addition to the resources required for an offensive attack (see the *Response to Structure Fire* procedure). A *Water Supply Engine* and one or more *Fill Site Engines* will need to be part of the *First Alarm*, along with an adequate number of water tenders to meet the 250 gpm minimum flow rate delivered to the *Tank Farm*. All fill sites must be staffed with an Engine Company, even if the fill site is a pressurized hydrant. A minimum of a three person Engine Company is desired if all water supply functions are going to operate efficiently.

Firefighter Rehab

Purpose

Firefighting is physically demanding work in challenging environments. Firefighters may become rapidly overheated, fluid depleted, and energy depleted. As a firefighter's physical condition becomes compromised, he or she is less able to perform in a team critical situation, and more likely to be injured. Therefore, it becomes important to establish rehab as a formal function on working fires and multiple alarms. This standard establishes procedures for the management of firefighter rehab.

Establishing the Rehab Unit

The IC should establish a Rehab Unit at any working fire or multiple alarm fire. An ambulance or rescue truck to staff the Unit should be ordered if specialized rehab resources are unavailable.

The Unit Leader should select a location to establish rehab based on the following criteria:

- Safety – outside the hazard zone
- Away from smoke and vehicle exhaust
- Sheltered from wind, heat/cold, etc.
- Accessible to transport ambulance if required
- Close to fireground to facilitate movement of firefighters between rehab and tactical assignments

Rehab Procedure

- Crews will be assigned to rehab on a rotating basis by the IC
- Crews should be rotated to rehab based on the following criteria
 - Company members have expended two 30 minute SCBA bottles
 - Company has been engaged in strenuous activity for 45 minutes or more
 - Company has been exposed to harsh environment for 45 minutes or more
 - Company Officer advises that personnel are "spent"
- Companies will be rotated to rehab as a unit, and remain under the supervision of the company officer
- Each member will be evaluated by Rehab unit personnel, and the following recorded:
 - Time of evaluation
 - Resting Pulse Rate
 - Body Temperature
 - SpO₂ (*oxygen saturation*)

- Each company member will receive the following:
 - 10 minutes of rest, away from the incident and in a sheltered environment as appropriate
 - Minimum of 8 ozs of fluid: consider the following
 - water
 - electrolyte replacement drink (Gatorade, etc)
 - "Power broth" for carbohydrate replacement in cold weather

- After 10 minutes in rehab, each member will be reevaluated, looking for any of the following **Red Flags**:
 - Pulse of 110 or greater
 - Body Temperature 100.6 or greater
 - SpO₂ less than 91%

- Any member with a Red Flag finding will be rested an additional 10 minutes and reevaluated.

- Any member who continues to meet Red Flag criteria after a third rest period will be taken off the line and treated as an emergency patient by Rehab and Medical personnel.

On Deck/Tactical Reserve Companies

NOTE:

This description of the On Deck/Tactical Reserve Company function is included in this 2017 Mini-Academy document as an awareness orientation for Academy students. A fire company assigned to the On Deck/Tactical reserve will use the basic skills and equipment being taught in the Academy in their specific assignment.

Purpose

The purpose of this procedure is to describe a standard function for On Deck/Tactical Reserve Companies. One or more Engine or Truck Companies may be assigned to On Deck positions. The Incident Commander (IC) may use an On Deck Company to:

- Reinforce a stressed Engine or Truck Company engaged in a tactical assignment
- Fill a new tactical assignment
- Rapid deployment to initiate rescue of trapped or missing firefighters
- Relieve fatigued companies for rehab and recycle

On Deck Company Composition

An On Deck Company may be either an Engine Company or a Truck Company. The company should be made up of a minimum of three firefighters.

On Deck Assignments

If a company is assigned to an On Deck position, they should:

- Move to a forward position just outside the hazard zone that provides immediate access to potential tactical assignments
- Position their apparatus in a manner that does not block access to the fireground
- Obtain a briefing from the IC or Division Supervisor
- Remain intact as a company, tooled up and in full PPE
- Monitor the tactical frequency
- Recon their assigned work area with specific attention to entrance/exit points, fire conditions, and anticipated tool and equipment needs.

Rescue of Lost, Trapped or Injured Firefighters

It is recognized that the rescue of lost, trapped or injured firefighters will typically require an organized multi-company response. The primary function of an On Deck Company assigned to a firefighter rescue operation is to:

- Locate the lost, trapped or injured firefighter(s)
- Provide air supply as needed
- Protect from fire or other hazards
- Determine the equipment and resource needs to complete the rescue and communicate these to the IC