


# NEW BRITAIN FIRE DEPARTMENT STANDARD OPERATING PROCEDURE

	<b>ENGINE COMPANY OPERATIONS</b>	NUMBER: <b>01</b>
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AUTHORITY OF: <b>Fire Chief</b>		

## 1. INTRODUCTION

The objective of an engine company is to protect life and property, by locating, confining and extinguishing fire. This is accomplished through the decisive placement and aggressive operation of handlines between the fire and any trapped occupants, as well as the exposures. The engine company shall ensure the protection of the means of access/egress to facilitate the search and rescue operations, as well maximizing victim survivability.

**1.1 PRIORITIES:** The general plan or course of action, decided upon by the Incident Commander (IC), which is typically the first arriving engine company officer, to achieve the incident objectives. The incident priorities are as follows:

- Life Safety
- Incident Stabilization
- Property Conservation

**2. STRATEGIES:** The operations required to carry out the strategy, selected by the IC.

**2.1 OFFENSIVE:** Employed at most fire operations and emphasizes the rapid deployment of handlines for an aggressive, interior attack on the seat of the fire. Engine company tactics at most structure fires are to advance a handline, via the primary means of access/egress (i.e., the main entrances), and attack the fire.

**2.2 DEFENSIVE:** May be employed, initially, at large or expanding fires, where protection of exposures or containment of the fire is critical. This strategy also reflects the IC's determination that the risk to firefighters is too high for interior operations – warranting an exterior attack. Emphasis is placed on producing high volume water flows, through large caliber streams, and the establishment of sustainable water supplies.

**2.2.1 Note:** Offensive and defensive strategies **SHALL NOT** to be conducted simultaneously.

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**2.3 BLITZ:** May be used when an immediate change in positioning will be initiated, following the execution of a brief exterior attack. When selected, the operation will shift to an interior, offensive attack after the fire has been sufficiently suppressed (i.e., “darkened down”) or entry is granted. The use of this strategy is based on the location, extent, and severity of the fire. A blitz strategy should be selected when the seat of the fire is located on the exterior (e.g., a porch), the fire is blocking the access path or forcible entry is causing a significant delay. It should also be considered when fire is rapidly auto-exposing and spreading to upper floors, the attic/cockloft, and/or an adjacent building, the fire is wind-driven (with no upwind access), or an advanced fire is located below-grade (i.e., a basement) with no exterior (grade-level) access.

**3. TACTICS:** The tactics are the activities used to achieve an immediate or short-term objective that, when completed, fulfill the incident priorities. Company officers direct their resources in operational activities (i.e., tasks) to accomplish tactical objectives (e.g., extinguishment or search).

**3.1** Selection and implementation of any strategic plan and its supporting tactics is dependent on an accurate and ongoing size-up of the fireground. Size-up starts with the receipt of the alarm and continues until the incident is terminated. The ultimate responsibility for the (initial) size-up lies with the (first arriving) officer, however all engine company firefighters must conduct a continuous personal size-up.

**3.2** As higher-ranking officers arrive, the responsibility for the overall size-up is passed up the chain of command. When command is transferred on scene, information must be provided to the new IC, in the form of a situation report (likely conducted over the radio).

**4. PROTECTION OF LIFE:** The protection of life is the primary consideration at any fireground operation. When engine companies are confronted with an **IMMINENT** life hazard on arrival, the life-saving operations are placed ahead of firefighting, when sufficient firefighters are not available to do both and no ladder company is on scene. Judgment is a key factor when confronted with this situation, as in **MOST** cases, the best life saving measure by the first arriving engine company is a prompt attack on the seat of the fire; eliminating the hazard from the victim.

**4.1** Immediate rescue attempts by the first arriving engine company, without simultaneously operating a handline, should **ONLY** be attempted in an actual life-threatening situation where an occupant is in **IMMINENT** danger, which must be communicated to the incoming companies. This action should be reserved for extreme cases where it is absolutely necessary for victim survival, as delaying the first handline will aid in the growth and spread of the fire, resulting in a deterioration of conditions.

**4.2** Factors impacting on the decision to attempt immediate rescue:

- Proximity/relationship of the occupants to the fire and the smoke condition.
- Location and number of occupants trapped.
- Occupants attempting to jump.
- Means of egress cutoff by fire.
- Ability to reach occupants with ground ladders.
- Anticipated arrival time of the first arriving ladder company.

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**4.3** Actions the officer of the first arriving engine company can implement to protect endangered occupants:

- Position a handline between the fire and the endangered occupants.
- Give verbal instructions and assurance to the occupants.
- Close doors to limit the growth and spread of fire, as well as heat and smoke.
- Ensure incoming units are informed of the location of endangered occupants.

## **5. LOCATING THE FIRE:**

Before any fire attack can be initiated, the seat of the fire must be determined. This is the first stage of the fire suppression effort.

**5.1** Particular attention must be placed on assessing the basement during the (360-degree) size-up, ensuring the fire is not located below-grade.

- On arrival, an exterior survey of the building should be conducted for visible flames, smoke, blackened windows, crazed/cracked glass, soot staining around the frames of openings, occupants in distress.
- Check the basement windows, the roof-line/eaves, and any gable/cockloft vents
- Solicit information from occupants and bystanders in passing.
- Communicate with ladder company personnel.
- Use the thermal imager

**5.1.1 Note:** Do not solely rely on occupant/bystander reports – a thorough size-up **MUST** be completed.

**5.2** The odor given off by burning materials, even if there is no visible smoke, may indicate what is burning and potentially where the fire is located.

- Wood odor – structural/void space
- Burnt food odor – kitchen
- Fuel oil odor – boiler room or basement
- Rubbish odor – hallway, stairwell, compactor, or trash chute
- Electrical odor – light ballast/fixture or outlet

**5.3** Look for the intake of fresh air, as it will lead to the seat of the fire.

**5.4** When the exact location of the fire has been determined it must be communicated to the other units operating on the scene, as well as the best means of access.

**5.4.1 Note:** Assistance in locating the seat of the fire and identifying the best means of access should be provided by the ladder company, when on scene.

## **6. CONFINING/CONTROLLING THE FIRE:**

Confining and controlling a fire is the second stage of the fire suppression effort and includes those actions taken to prevent the fire from extending beyond the area already

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involved. This is the immediate concern, and can be accomplished by placing a handline between the fire and the most severely threatened occupants and exposures.

- 6.1 Note:** Exposures can be both exterior (i.e., adjacent structures) and interior (i.e., adjacent rooms/spaces or the floors above).
- 6.2** Confinement of the fire must take into consideration the intensity of the fire as well as the known or anticipated direction and rate of fire spread. Be aware that the fire may be extending via utility chases, voids, or other concealed spaces, as well as recognizing the signs of impending flashover, backdraft, or smoke explosion.
- 6.3** Depending on the building construction/occupancy, as well as the fire location, extent, and severity, the first handline deployed and operated may be committed to protecting exposures or trapped occupants, while a subsequent handline is utilized to extinguish the main body of fire.
- 6.4** In some situations, the closing of a door or window may play a vital role in limiting the growth and spread, as well as confining the fire while handlines are being deployed.

## 7. EXTINGUISHING THE FIRE:

Extinguishment is the third stage in the fire suppression effort.

- 7.1** Initial extinguishment includes the suppression of visible flames, as well as burning and smoldering fuels. Final extinguishment requires that any concealed fire and smoldering materials be uncovered by opening up the void spaces, and overhauling the area completely to wet down and cool all of the involved surfaces.

## 8. ENGINE COMPANY PERSONNEL ASSIGNMENTS

### 8.1 ENGINE COMPANY OFFICER:

The engine company officer will have more influence on the outcome of a fire operation than any other member on the scene. The officer must remain composed and possess a strong command presence, as their attitude and the manner in which decisions are made and orders are executed sets the tone for the entire incident.

- 8.1.1** On arrival, the engine company officer must closely observe the building as the apparatus pulls past the address (getting a visual of at least three sides) and ensure the apparatus is properly placed to support operations. The engine company officer shall then complete a 360-degree size-up, whenever possible, which may include a brief interior survey to assess the entire of the building, paying close attention to the basement.
- 8.1.2** The engine company officer should focus on determining the most effective and efficient means of stretching and positioning a handline. This information should include:

- Fire location

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- Best point of access
  - Stairway type and the presence of a well-hole.
  - Difficulties caused by terrain, fortifications, contents, and/or fleeing occupants.
  - Drop-point location
- 8.1.3 Note:** The gathering of information by the engine company officer takes little time. The advantages gained will result in proper handline placement and a rapid advance to the seat of the fire.
- 8.1.4** While gathering information concerning the handline stretch, the engine company officer should be alert to building occupants or bystanders with information relative to people trapped or distressed.
- 8.1.5** If people were reported trapped on the initial alarm, or if information/statements indicate the likelihood of entrapment, the engine officer should determine the following:
- Is there a known life hazard? (i.e., a *credible* on scene report or audible/visual indicators of a victim trapped).
  - How many people are trapped?
  - Where are the people trapped?
  - Are the trapped people children, adults, or special needs?
- 8.1.6** Once determined that a handline is needed, the location, route, as well as the hose size required for the operation shall be communicated to the rest of the company.
- 8.1.7 Note:** Even if the nozzle firefighter is within voice contact, the action should be transmitted over the radio, to notify the IC, as well as the other units.
- 8.1.8** If no ladder company is present, the engine company officer shall lead the handline's advance into the fire area to locate, confine, and extinguish the seat of the fire.
- 8.1.9 Note:** Officers operating out of a single-company fire house should consider carrying a set of irons to force entry when the ladder company is not yet on scene.
- 8.1.10** The door to the area of involvement **MUST** be controlled—limiting the intake of fresh air to the fire—until the nozzle team is ready to make entry with a charged handline.
- 8.1.11** On the arrival of the nozzle (and door) firefighter at the entrance to the fire area, the engine company officer should assure that each firefighter is properly equipped with full turnout gear and SCBA.
- 8.1.12** After determining that sufficient hose has been deployed and flaked out, the officer should call for water, via the portable radio. The officer must see that the handline is properly flow-checked: bleeding it of air, ensuring proper nozzle pressure is achieved, as well as a quality (solid/straight) stream, prior to making entry.
- 8.1.13** Once the handline is operational and the door is opened, the heat, smoke, and toxic gases from the fire should be allowed to briefly “blow and lift,” prior to making entry.

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The engine company officer, in particular, should take this time to assess the smoke characteristics (the volume, velocity, density, and color, as well as the height of the smoke layer) to aid in gaining a more accurate location of the fire and gauging its severity.

- 8.1.14 Note:** If the smoke does not lift (i.e., there is no intake of fresh air), and the smoke is exhausting under pressure (i.e., heat-driven), the fire is likely below-grade or the fire is wind-driven (if the entry doorway is on the downwind side and an opening is present on the upwind side). If the fire is just leaking/drifted out (i.e., volume-driven), the fire may be concealed within the void spaces (e.g., stud channels or joist bays) on that level.
- 8.1.15 Note:** The nozzle team should access and approach the fire on its level and from the upwind side, operating within the intake path, whenever possible.
- 8.1.16** After **briefly** pausing to allow the fire to vent and observing the subsequent reaction, the nozzle team should make immediate entry into the fire area. If the seat of the fire is located within a remote room (distant from the point of entry), the nozzle team should, ideally, advance in until the fire becomes visible or they are on the approach to the seat of the fire—the final 10-15ft. (i.e., the hallway or the adjacent room).
- 8.1.17** If dark, turbulent smoke is encountered or high-velocity thermal currents are detected with the thermal imager at the entry point, or if heat, falling embers, or loud crackling sounds from above are experienced while advancing in (which will typically be associated with limited to no visibility), however, the nozzle should be opened and directed out front and overhead—flowing and moving to the seat of the fire.
- 8.1.18** If the nozzle has to be shut down, be aware that if the water has not reached the seat of the fire, conditions can quickly rebound (allowing the heat and fire to return). ***The gold standard of fire attack is flowing and moving***, but if you have to hit and move, the hits should be thorough, focusing on coverage and using the reach of the stream, and the moves forward should be quick.
- 8.1.19** Communication during the fire attack can be severely hampered, due to the SCBA facepiece, the sound of the stream operating, as well as other ambient noises. The engine company officer, however, must constantly monitor the portable radio for critical information.
- 8.1.20** The engine company officer should provide the IC with vital information that may impact the overall incident and how it is handled. The officer should provide periodic progress reports to the IC, following the “CAN” format: conditions—actions—needs.
- 8.1.21** The officer should transmit the benchmarks to the IC:
- Location of the seat of the fire
  - Water on the fire
  - Victim(s) located
  - Not making progress
  - Backing out/Retreating

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- Signs of fire extension
- Fire knocked down

**8.1.22** The officer must also communicate with the ladder company outside team(s) to request/confirm ventilation. Successfully relieving conditions and facilitating the fire attack, which may be horizontal, vertical, or a combination of the two ventilation methods, is contingent on the correct location, size, and most importantly, timing of the openings created. To ensure the operation is coordinated and controlled, the nozzle team must be advancing in with a charged handline and capable of reaching the seat of the fire before that area is ventilated. The engine company officer should notify the outside vent (OV) and/or roof firefighters when they are on the approach (e.g., "E1 to L1 OV, we're *moving in*").

**8.1.23 Note:** If the engine company officer is contacted by the OV or roof firefighter, requesting authorization to vent, and the nozzle team is not ready, the response should be "*hold off*" to prevent any communication issues or misinterpretation.

**8.1.24** When initiating communication with the IC, or any other members, the officer should receive an acknowledgment. Likewise, the officer should acknowledge all messages received.

**8.1.25 Note:** A message not acknowledged is a message not received.

**8.1.26** During the advance of a handline, it is the engine company officer's responsibility to constantly monitor the nozzle team's progress and the conditions around them. After the main body of fire has been extinguished, the engine company officer should order the nozzle shut down. At this time the officer can check adjoining rooms or areas for fire extension, as well as to search those areas for any victims, if the primary search has yet to be completed.

**8.1.27 Note:** Positive cues of extinguishment are the fire darkening down, the conditions cooling down, and the smoke lifting. The nozzle team is either moving or it is losing. If the aforementioned benchmarks are not being achieved, the nozzle team needs to be backed up with another handline or (additional) ventilation is needed.

**8.1.28** While some decision-making authority is delegated to the nozzle firefighter, it must be understood that any actions taken are under the strict supervision of the officer in command of the handline. The officer must display strong command and control over the fire attack effort.

**8.1.29 Note:** The officer must consider that the nozzle firefighter may see and feel conditions that they may not (or at least not as quickly or to the same extent).

**8.1.30** The following tactics are of such importance to the fire control effort that the decisions for their implementation is reserved for the engine company officer:

- Calling for water ("charging the line").
- Initiating the handline's advance.
- Direction of the nozzle team's advance.

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- Shutting down the nozzle.
- Use of a fog stream (for hydraulic ventilation **ONLY**).
- Assignment of an engine firefighter for venting or searching.
- Need for relief of the unit.
- Necessity to back the handline out (i.e., retreat).

**8.1.31** Decisions that may be delegated by the engine company officer to the nozzle firefighter include:

- Direction of the stream.
- Rate of advancement.
- Opening the nozzle, particularly when heat or fire is suddenly encountered.
- Temporarily gating-back the nozzle to regain control of the nozzle.
- Calling for more or less hose.
- Sweeping the floor with the stream.
- Stopping the advance when a hazard or obstacle is encountered

**8.1.32** Because of the high level of physical activity required for firefighting, the debilitating effects on firefighters must be recognized by engine company officers. The engine company officer should evaluate the members of their unit, during and after the fire attack, and promptly relieve individual members or request relief for the entire unit from the IC as needed.

## **8.2 THE MOTOR PUMP OPERATOR (MPO):**

The primary responsibility of the MPO is the safe delivery of the personnel, apparatus, and equipment to an incident, as well as the delivery of water to the fire attack crews.

**8.2.1** The MPO must be thoroughly familiar with the city streets, response routes, and buildings within their area of operation, as well as the engine apparatus, all of the tools and equipment carried on board, and the configuration of the hose beds. Knowledge of the hose and nozzle complement, as well as how it is deployed at operations will assist the MPO in determining the proper pressures required. The MPO must control how many and what type of handlines and/or master stream devices are supplied and should confer with or advise the engine company officer when necessary.

**8.2.2** The MPO must monitor both the fire incident channel and the fireground channel for instructions and information that may require action, and be ready to assist members in distress, if ordered to do so by the IC. The MPO must carry and monitor a portable radio **AT ALL TIMES**.

**8.2.3 Note:** The MPO may be required to relay messages from the engine company officer over the fire incident channel if the shift commander has not yet arrived on scene.

**8.2.4** Engine company apparatus should be positioned to maximize access for two aerial apparatus, leaving both corners of the building open. This may mean being at least one ladder apparatus length past the fire building or on the side of the street opposite the fire building, if street conditions allow. When selecting this position, the



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officer needs to consider the number of lengths needed for the handline deployment, as well as for optimal placement of the ladder companies.

**8.2.5** In addition to apparatus response and placement, the MPO must:

- Estimate the amount of hose needed
- Assist the nozzle team in deploying hose off the apparatus
- Monitor the operation of all handlines deployed, including the units and their location.
- Remove any kinks from the apparatus to the point of entry (and possibly beyond).
- Monitor the apparatus pump panel, particularly the booster tank level.
- Update the engine company officer of water consumption at quarter tank intervals.
- Identify the engine company supplying water to their apparatus.
- Announce if a hydrant is located in close proximity to the apparatus
- Update the engine company officer when a positive water supply is established.
- Be prepared to handle water loss situations (prompting an *Urgent* message).
- Know the location and serviceability of nearby hydrants.
- Ensure no apparatus or vehicles park on handlines or supply lines.
- Ensure that no outriggers are lowered on handlines or supply lines.

**8.2.6 Estimating the Stretch:**

Estimating the stretch is a critical task of the MPO and is essential, regardless if the handline is static or preconnected. Stretching short is a severe issue for an engine company and can be the catalyst for failure of the entire incident. Stretching long, however, can also be problematic, especially if the hose is not properly managed; at the very least, it is inefficient.

**8.2.7** Hose estimation is a rapid assessment carried out over seconds as the MPO conducts their personal size-up of the situation on arrival. The process can be simply broken down into three steps, using the following rules of thumbs:

- 1) Rig to Door (approximately 2 lengths if the apparatus is pulled past the building)
- 2) Elevation (approximately 1 length per floor up or down)
- 3) Fire Floor (approximately 1 length for a residential occupancy)

**8.2.8** Stretching to the rear will require **AT LEAST** one additional length (depending on the depth of the building and the location of the rear access point).

**8.2.9** Estimating the stretch is not precise and should be done in lengths of hose, **NOT** in feet. While stretching long is not desired, the stretch should be rounded up to the next length if unsure; ensuring the additional hose is properly managed to prevent kinks.

**8.3 THE NOZZLE FIREFIGHTER:**

The firefighter assigned the nozzle occupies one of the most challenging and dangerous positions on the fireground. The duties associated with this position routinely take this firefighter in close proximity to the fire and requires a determined and skilled firefighter.

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- 8.3.1** The nozzle firefighter position is assigned by the engine company officer at roll call (along with the door firefighter position, if filled). The officer retains the flexibility to alter the assigned positions in order to allow a less experienced firefighter to operate in the nozzle firefighter position at a fire of lesser severity, where on the job training can be appropriately gained.
- 8.3.2** The nozzle firefighter deploys (**at least**) the first length of hose, with the nozzle attached, to the drop point, via the route identified by the officer (see Appendix A). This location should be a safe area in proximity/adjacent to the fire area such as a stairway landing, hallway, or adjoining area.
- 8.3.3** After flaking out the hose in preparation for its advance, the nozzle firefighter should complete donning any remaining personal protective equipment and go on air.
- 8.3.4** When the engine company officer calls for water, the nozzle firefighter must maintain control of the nozzle and the lead length of hose. The bale **MUST** be kept closed until the handline is **FULLY** charged with water (evident by the hose expanding to capacity). Doing so minimizes the formation of kinks.
- 8.3.5** Once charged, the nozzle firefighter must fully open the bale and flow water long enough to bleed off all of the trapped air, verify the proper nozzle pressure is achieved, as well as a quality (and pattern) of the stream (solid/straight); taking approximately 10 seconds.
- 8.3.6 Note:** When preparing to enter the fire area with a charged handline, the nozzle firefighter shall ensure that if a fog nozzle is being used, it is on straight stream.
- 8.3.7** The nozzle firefighter should **NEVER** enter the fire area with an uncharged handline. When flaking out at the drop point, the working length should be deployed to facilitate the advance. The nozzle team should be low and off to the side when opening up the door to make entry.
- 8.3.8** After making entry into the fire area, the nozzle team should promptly advance in toward the fire. Because of the flue-like conditions that can develop when the doorway is opened (creating a low-pressure exhaust point), the nozzle team should refrain from being stationary within the entryway corridor. This condition becomes even more pronounced when the fire has not vented, via windows, and the entrance door is the first opening made available to the fire.
- 8.3.9** While operating the handline, the nozzle firefighter should position themselves an arm's-length away from the tip of the nozzle, with the bale at 9-o'clock. This position allows the firefighter to easily operate the bale and direct the nozzle in any direction.
- 8.3.10** When on the approach to the seat of the fire and initiating the attack, the nozzle firefighter shall open up the bale fully and direct the stream out front and overhead, working it from side-to-side in a wall-ceiling-ceiling wall fashion. As the stream is lowered downrange, using its full reach, the stream should then transition into a tight O-pattern, focusing on the upper half of the space. The O-pattern should be

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periodically widened to capture the floor – washing it of scalding water, embers, and other harmful debris.

- 8.3.11** Effective stream application will coat the surfaces with water, cool and contract the gases, and entrain fresh air ahead to create a pressure seal and redirect the heat, smoke, and gases, ideally out a ventilation opening opposite the advance and/or above the seat of the fire; collectively maximizing tenability within that space.
- 8.3.12** The nozzle firefighter should be in a tripod position, which keeps the weight back and allows the lead leg to probe/sound out the floor ahead.
- 8.3.13** The nozzle firefighter should listen to the sound of the stream as it is worked around. The absence of sound along the sides can indicate a doorway and the absence of sound low can indicate a hole in the floor ahead.
- 8.3.14** A cardinal rule of engine company operations is **DO NOT** pass fire.
- 8.3.15** As the handline is advanced through the fire area, all open doorways should be checked to ensure that the nozzle team does not unknowingly pass an area involved in fire; which, if left unchecked, could cut off their means of egress.
- 8.3.16** If rooms to either side of a hallway must be extinguished while advancing toward the main area of involvement, the stream should be operated well ahead of the nozzle team, prior to turning in to those preceding rooms. This action is necessary in order to temporarily knockback the fire to allow the nozzle team to safely operate the stream into those preceding side rooms, prior to advancing on the seat.
- 8.3.17 Note:** The nozzle firefighter must not overcommit to a room if there are multiple spaces involved and just get their shoulders past the door frame to effectively apply the stream.
- 8.3.18** By utilizing the reach and capacity of the stream, the water will be more effectively distributed throughout the space and onto the surface fuels, allowing for a more efficient advance and extinguishment. In rooms that are off-set from the approach corridor (i.e., a hallway), the nozzle team should advance along the wall on the opposite side to obtain a better stream angle while advancing; getting water into that space and sealing it off sooner.
- 8.3.19 Note:** The nozzle firefighter should initiate turns high and outside when navigating corners to keep the hose off that pinch point and to maximize the angle of the stream to get water downrange sooner.
- 8.3.20** When entering the fire room, the nozzle firefighter should again aim the stream out front and overhead to coat the ceiling and far walls and contract the superheat gases. The stream should then be opened up into a wide O-pattern to capture the surface fuels, achieving base water application, and extinguish the seat of the fire.
- 8.3.21 Note:** Be sure to check the back wall you entered on for fire, as little to no water may have initially reached it. After knocking down the main body of fire in the room, you

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should immediately flip back to apply the stream onto that “dry” wall and knockdown any fire that may be burning behind you.

- 8.3.22** If it becomes necessary for the nozzle team to retreat, as determined by the engine company officer, due to the intensity of the fire and/or its rate of spread, the stream must be kept in operation as the handline is backed out. Firefighters withdrawing a handline from an interior position should **NEVER** turn their backs on the fire.

### **8.4 THE BACK-UP FIREFIGHTER:**

The firefighter assigned the back-up position is the second firefighter on the handline. This firefighter moves toward the fire behind the nozzle firefighter, providing physical, as well as moral support.

- 8.4.1** A major function of the back-up position is to assist the nozzle firefighter in flaking out the handline at the drop-point and to facilitate the handline advance once it is charged.
- 8.4.2** It is the back-up firefighter’s responsibility to absorb as much nozzle reaction as possible. By performing this function, the nozzle firefighter is able to advance and operate the nozzle without having to fight against the back-pressure of the operating stream.
- 8.4.3** In order to effectively operate, the back-up firefighter must take up a position behind the nozzle firefighter; either locked together, shoulder-to-shoulder or located a several feet back in a braced position or pinning the hose to ground. This arrangement allows the back-up member to support the nozzle firefighter and redirect the nozzle reaction into the ground.
- 8.4.4** When the nozzle firefighter wants to change the direction of travel or manipulate the stream, the back-up firefighter must maneuver the section of hose behind the nozzle firefighter in the opposite direction (e.g., turning like a fork lift). The back-up firefighter must stay alert to the intentions of the nozzle firefighter and be able to quickly reposition behind that member.
- 8.4.5** During the handline advance and operation, the back-up firefighter must maintain the hose below the level of the operating nozzle and keep the hose as straight as possible.
- 8.4.6** When operating as the first arriving engine and staffed with a three-person company, the officer must assume the back-up position, in addition to their regular duties, until supplemented by an additional engine company.

### **8.5 THE DOOR FIREFIGHTER**

The third firefighter on the handline occupies the door position. This firefighter, like the nozzle and back-up firefighters, removes at least one length of hose from the hose-bed.

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Following the back-up firefighter, the door firefighter carries and pays off the hose to allow the nozzle team to reach the drop-point.

**8.5.1** The door firefighter must securely prop open every door that the handline passes through as it is being deployed; ensuring the hose does not get wedged underneath, prior to being charged.

**8.5.2 Note:** When using chocks, ensure they are placed in a position where they cannot be dislodged by a passing firefighter/occupant or if the door is bumped open further.

**8.5.3** Upon arrival at the entrance to the fire area, the door firefighter assists with flaking out the handline in preparation for it being charged.

**8.5.4** Once the handline is operational, the door firefighter must remove any kinks and snags in the hose. After the nozzle team enters the fire area, the door firefighter slowly feeds hose in as they advance. The door firefighter must ensure they do not push the hose into the nozzle team, but instead, provide enough slack in the line so, that they can advance with ease.

**8.5.5** The door firefighter should maintain a bow in the section of hose between the door and the nozzle team. This technique will allow the door firefighter to monitor the advance of the nozzle team by observing/feeling the straightening of the hose. As the hose straightens, the door firefighter restores the bow; repeating this process until the hose stops or the door firefighter is called forward (to manage another pinch point or to relieve a member of the nozzle team).

**8.5.6** The door firefighter should conserve their SCBA air supply, if conditions allow. When a member of the nozzle team requires relief or is injured, the door firefighter can quickly move into position so, the fire attack can continue. The door firefighter should place a lit flashlight in the doorway (shining along the floor), to serve as an additional guide for members exiting the fire area.

**8.5.7** An important task of the door firefighter position is to monitor and observe smoke and fire conditions at the entryway. Undetected or extending fire could suddenly erupt or appear between the entrance and the nozzle team. The door firefighter is in a prime location to recognize deteriorating conditions and to warn the nozzle team.

**8.5.8** When the first arriving engine company is staffed with a three-person crew, the IC will need to assign an additional engine company (typically the third arriving engine company) to fill in the positions of back-up and door firefighters on the first handline.

## 9. ENGINE COMPANY FUNCTIONS AND CRITICAL TASKS

### 9.1 FIRST ARRIVING ENGINE COMPANY

*Fire Attack (primary function):*

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The first arriving engine company should pull past the fire building or to the opposite side of the fire building, if street conditions allow, leaving the building frontage open for both ladder apparatus), provide a brief arrival report of the conditions present over the mobile radio on the assigned fire incident channel, transmit a *Working Fire* signal, and establish incident command.

**9.1.1 Note:** After the arrival report is given, all subsequent radio communications will be conducted on the assigned fireground operations channel.

**9.1.2** The engine company officer should complete a (360-degree) size-up to gather information on possible occupants trapped and identify the location and size of the fire, as well as the best point of access.

**9.1.3** On completion, the officer must determine the fire attack strategy, the appropriate size and length handline, where to position it to confine and extinguish the fire—protecting victims, exposures, and egress pathways—and direct the execution of the operation.

## 9.2 SECOND ARRIVING ENGINE COMPANY

*Primary Water Supply (primary function):*

The second arriving engine company shall secure a positive water supply for the first arriving engine.

**9.2.1** The hydrant selection should be based on its location, the water main, and the output.

**9.2.2** The deployment of the supply hose and the positioning of the apparatus shall be executed to maximize the water flow and the placement of the ladder apparatus.

**9.2.3** The engine company officer shall assign the MPO and one firefighter to get water to the first-due engine apparatus, while the engine company officer reports to the incident commander to obtain their next assignment. If the hydrant has tamper hardware, is snow covered, or the supply hose deployment is complicated (e.g., a split lay or lengthy back stretch), the entire crew shall work to complete the operation most efficiently.

**9.2.4 Note:** If the operation will be delayed (e.g., cars/apparatus blocking the way or frozen/seized caps), an immediate notification should be made; requesting assistance, if necessary. If the second arriving engine company encounters a malfunctioning hydrant, an *Urgent* message should be transmitted.

**9.2.5** When a positive water supply to the first arriving engine has been established, the crew from the second arriving engine shall reassemble to conduct their next task, as assigned by the incident commander.

**9.2.6** The secondary function will be one of the following:

- Assist the first arriving engine in the operation of their handline, if needed.
- Deploy an additional handline to back-up the first arriving engine.

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- Deploy an additional handline for fire attack on the fire floor, if the initial handline is positioned on the exterior (e.g., a porch fire).
- Deploy an additional handline for fire attack on the floor above the fire.

## 9.3 THIRD ARRIVING ENGINE COMPANY

*Alternative Water Supply (primary function):*

The third arriving engine company shall locate a hydrant, approaching from a direction opposite the second arriving engine, whenever possible.

**9.3.1** The hydrant selection should be based on its location, the water main, and the output.

**9.3.2** The deployment of the supply hose and the positioning of the apparatus shall be executed to maximize the water flow and the placement of the ladder apparatus.

**9.3.3** The officer shall ensure the second arriving engine has established a positive water supply for the first arriving engine.

**9.3.4 Note:** If an issue is encountered with the initial hydrant, which should prompt an *Urgent* message, the third arriving engine shall assume the primary water supply role.

**9.3.5** If the primary water supply is successfully established, the nozzle firefighter shall drop the appliance/tool bag and wrap the supply hose at the alternative hydrant for the apparatus to lay in (dry) to the scene.

**9.3.6 Note:** The officer maintains the discretion to leave the nozzle firefighter at the hydrant and charge the supply hose immediately as a secondary supply, if deemed necessary, based on the severity of the incident.

**9.3.7** The officer shall report to the IC on completion

**9.3.8** The secondary function will be one of the following:

- Assist the first arriving engine in the operation of their handline, if needed.
- Deploy an additional handline to back-up the first arriving engine.
- Deploy an additional handline for fire attack on the fire floor, if the initial handline is positioned on the exterior (e.g., a porch fire).
- Deploy an additional handline for fire attack on the floor above the fire.

## 9.4 FOURTH ARRIVING ENGINE COMPANY

*Alternative Water Supply (initial function):*

The fourth arriving engine company shall locate an alternative hydrant, approaching from a direction opposite the second and third arriving engines, whenever possible.

**9.4.1** The hydrant selection should be based on its location, the water main, and the output.

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**9.4.2** The nozzle firefighter shall drop the appliance/tool bag and wrap the supply hose at the alternative hydrant for the apparatus to lay in (dry) to the scene.

**9.4.3 Note:** The officer maintains the discretion to leave the nozzle firefighter at the hydrant and charge the supply hose immediately as a secondary supply, if deemed necessary, based on the severity of the incident.

**9.4.4** The deployment of the supply hose and the positioning of the apparatus shall be executed to maximize the water flow and the placement of the ladder apparatus.

**9.4.5** The officer shall report to the IC on completion.

*Rapid Intervention Team (priority function):*

The fourth arriving engine shall serve as the rapid intervention team (RIT), ideally for the duration of the incident.

**9.4.6** The fourth arriving engine shall gather the necessary RIT equipment and stage accordingly.

**9.4.7** The entire crew, particularly the officer, shall conduct a size-up to assess the conditions, in addition to determining and tracking the location, assignment and progress of all crews operating; monitoring all radio traffic.

**9.4.8** The fourth arriving engine shall proactively mitigate egress hazards and deploy ground ladders to priority areas (i.e., the fire floor and floor above) to “soften” the building.

### **9.5 FIFTH AND SIXTH ARRIVING ENGINE COMPANIES**

*Tactical Reserve:*

**9.5.1** The fifth and sixth arriving engine companies shall report to the command post, unless assigned by the IC en route.

**9.5.2** If the IC does not have an immediate assignment, the fifth and sixth arriving engines shall stand-fast as on-deck crews to address any emerging needs or relieve a crews from any of the units on the initial assignment.

## **10. HANDLINE SELECTION**

**10.1** The 1¾ inch handline is the primary attack line used at most structural fires.

**10.2** Engine company officers may order an 1¾ inch handline be stretched at fires as the initial handline, if its use is compatible with the fire conditions, fuel load, as well as the building construction and occupancy type. The following conditions must be considered:

- The fires magnitude, location, and potential for spread.
- The occupancy of the structure and possible life hazard.



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- The need for maneuverability based on the layout and interior configuration

**10.3** A 2½ inch handline should be used if any of the following conditions exist:

- **Defensive operations**
- **Unknown size/extent of the fire area**
- **Advanced fire conditions**
- **Large, uncompartmented area (e.g., commercial/industrial occupancies)**
- **Standpipe operations**

**10.4** 1¾ inch handlines may be deployed as the second or third handline when, in the engine company officer's judgment, it is compatible with the fire conditions and the strategy of extinguishment, containment, and or exposure protection selected.

**10.5 Note:** The decreased maneuverability and the labor/time intensiveness of the 2½ handline, especially when operating on upper floors and/or within smaller, compartmented spaces, must be considered when selecting the size of the handline.

## 11. HANDLINE DEPLOYMENT & PLACEMENT

Deploying and operating handlines is the primary function of an engine company. All members must realize the importance of the initial handline deployed at a structure fire. More lives are saved by a properly positioned and operated handline than by **ALL** other means. The majority of structural fires are controlled and extinguished by this initial handline.

### 11.1 FIRST HANDLINE

The first handline is placed between the fire and any endangered occupants. This is most often accomplished by deploying the handline via the primary means of egress, typically, the main entry-/stairway. This tactic accomplishes the following objectives:

- Protects the main access/egress pathways of the building.
- Allows occupants to escape via those routes.
- Allows crews to access remote spaces to conduct searches.

**11.1.2** If a victim is showing from a window or an exterior position (i.e., porch/fire escape) and is directly exposed to and in **imminent** danger of rapidly extending/deteriorating fire conditions, the first handline should be deployed to protect them. The first handline should be deployed to that exterior point and operated to suppress the fire and maintain tenable conditions for the victims and facilitate their egress/removal.

**11.1.3 Note:** If the handline is being operated into a window, the stream **SHALL** be a solid/straight stream, applied at a steep angle, and with minimal movement to limit the air entrainment; only a *slow*, side-to-side motion, *as needed*, to improve the water distribution if conditions are not improving from the initial position (i.e., catching a rafter in the event of a failed ceiling). Because most of the water being applied will ride across the ceiling and flow down the far walls, the stream should be pulled back so, it partially impacts the header of the window opening (also known as a "lintel hit"), at the completion of the attack. Doing so will break apart the stream and deflect it at

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a downward angle to get water into the center of the room. If the fire was auto-exposing and impinging on the eaves, they should be swept with the stream to get water into the attic and at least knockback any fire extension into that space.

**11.1.4** Handlines must be deployed to protect life first and property second. If it is determined there is no life hazard in the building, the first handline is then positioned between the fire and the most severely threatened exposure (of the highest value).

**11.1.5** When placing a handline to protect an exterior exposure, it should be positioned in a way that the stream can be used alternately between the exposure and the fire. When using streams to protect neighboring buildings, the water should be applied onto the buildings surface for best results. Fog streams (i.e., “water curtains”) are ineffective at stopping radiant heat transfer and shall not be used for exposure protection.

## 11.2 SECOND HANDLINE

Unless otherwise ordered, the second handline is placed to back-up the first handline, utilizing the same travel path. This tactic is employed for the following reasons:

- Replace the first handline in the event of an equipment failure or a loss of water
- Protect the first handline from rapidly extending (“wrap-around”) fire
- Operate in tandem with the first handline if additional water flow is needed

**11.2.1** The second handline may also be used on the fire floor to address horizontal fire extension, especially for large, open areas, deep-seated/below-grade fires, or when obstructions are delaying the advance of the first handline (e.g., hoarding conditions). In this situation, the second handline may need to access the fire from an alternative entry point.

**11.2.2 Note:** Direct communication and close coordination between the first and second handlines is imperative to ensure the streams are not operated in opposition of each other.

**11.2.3** If the second handline is not needed on the fire floor, it should be redirected to the floor above to address any vertical fire extension. For below-grade fires, especially where the first handline accessed the main body of fire from an exterior entry point, the second handline should be positioned at the top of the basement stairs to protect the main egress path, which is likely below the main stairway serving the living spaces.

## 11.3 THIRD HANDLINE

Depending on the building construction and occupancy, as well as the fire conditions, a third handline may be required.

**11.3.1** The third handline may be stretched for the following applications:

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- Cover a secondary means of egress or upper floor.
- Protect persons trapped above the fire.
- Adjoining buildings to protect exposures.
- Prevent vertical extension.

**11.3.2 Note:** A third handline stretched at a fire should be deployed from an engine apparatus on a second water source.

**11.3.3** When stretching the third handline, the engine company **SHALL NOT** use the same point of entry as the first and second handlines to avoid creating a “bottleneck,” as well as a trip hazard.

**11.3.4** If there is no other suitable door/staircase accessible from the exterior, the alternative hose deployments can be employed, in the following order of priority (from a porch/fire escape or a window):

- Drop stretch (lowering hose from a shoulder load or bundle)
- Hook stretch (passing the nozzle up using a pike pole)
- Rope stretch (using the bleach bottle kit)
- Lines over ladders (stretching up a ground/aerial ladder)

## 11.4 OTHER CONSIDERATIONS FOR HANDLINES

In order to assure efficient and timely deployment of the first handline, in fires above the second floor, the services of at least two engine companies will be utilized. The pairing (“marrying”) of engine companies will, in most cases, result in a more rapid and effective operation.

**11.4.1** Additional factors and operational guidelines:

- Handlines shall not be operated in opposition to each other.
- Permission must be obtained by the IC before exterior handlines are directed into a fire building (unless it is the first handline in a defensive or blitz strategy).
- Immediate notification must be given to the IC when a situation is discovered that requires the positioning of an additional handline.
- When a handline is determined to be operating ineffectively, the IC must be notified.

## 11.5 PACKING, DEPLOYING, AND OPERATING HANDLINES

Please reference Appendix A manual for visuals and further instructions on packing, deploying, and operating handlines as well as positional assignments on an engine company.