


NEW BRITAIN FIRE DEPARTMENT STANDARD OPERATING PROCEDURE

	LADDER COMPANY OPERATIONS	NUMBER: 02
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AUTHORITY OF: Fire Chief		

1. INTRODUCTION

1.1 The responsibility of the ladder company is to support the firefighting actions of the engine company with regards to the strategic priorities of life safety, incident stabilization, and property conservation. The primary tactical objective of the ladder company, however, is to locate and remove any trapped occupants.

1.2 First-Arriving Ladder Company Functions and Critical Tasks:

Recon, Confinement, and Search (Fire Floor)

- Identify and access the fire floor.
- Assess the rear, sides (and shafts) of the building.
- Forcible entry.
- Locate the seat of the fire.
- Communicate the best means of access to the fire floor.
- Confine the fire.
- Primary search (and rescue).
- Secondary search of the floor above.
- Laddering for access.
- Coordinating ventilation.
- Overhaul.
- Salvage.

1.3 Second-Arriving Ladder Company Functions and Critical Tasks:

Recon, Confinement, and Search (Floor Above)

- Access the floor(s) above.
- Forcible entry.
- Locate (vertical) fire extension.
- Confine the fire.
- Primary search (and rescue).

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- Secondary search of the fire floor
- Laddering for access.
- Coordinating ventilation.
- Overhaul.
- Salvage.

2. LADDER COMPANY PERSONNEL DEPLOYMENT:

2.1 Ladder companies should, under typical circumstances, split their crew evenly into a two-firefighter Inside Team for interior operations and a two-firefighter Outside Team for exterior-initiated/roof operations. The officer reserves the discretion to assign the Outside Vent (OV) Firefighter to the Inside Team, if deemed necessary based on the situation being confronted.

2.2 The Inside Team shall consist of:

- Officer
- Irons Firefighter

2.3 The Outside Team should consist of:

- Driver
- Outside Vent Firefighter

3. OPERATIONS OF THE FIRST ARRIVING LADDER COMPANY

3.1 Inside Team:

The Inside Team should access the fire floor via the same means of access as the first arriving engine, unless inhibited by the fire conditions (e.g., a porch fire).

3.2 Officer:

3.2.1 Tools:

Portable radio, hand light, thermal imager, and 6' all-purpose (New York) hook.

3.2.2 Duties:

- Conduct a size-up to locate the fire and determine its extent, as well as the best means of access, relaying that information to the engine assigned on the fire floor.
- Directly supervise the Inside Team and monitor conditions.
- Determine the location of the fire, control ventilation, and direct the primary search (and rescue) operations on the fire floor.
- Direct the opening of walls and ceilings to expose concealed fire for the engine
- Provide benchmark reports to the Incident Commander.
- Coordinate operations with the Outside Team.

3.3 Irons Firefighter:

3.3.1 Tools:

Portable radio, hand light, set of "Irons" (8lb. flat-head axe and Halligan bar) and 2.5-gallon water extinguisher ("can")

- The Irons can be split between the officer and firefighter.

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- The Hydra-Ram (“Bunny Tool”) should also be carried when operating at any large multiple-dwellings (i.e., apartment buildings).

3.3.2 Duties:

- Force entry to access the building and the fire floor, as needed.
- Confine the fire by using the “can” to knockback the fire and controlling the door to the room/area of origin
- Conduct the primary search, vent windows, and open up walls and ceilings on the fire floor, as directed by the officer.

3.4 Additional Considerations for the Inside Team:

- Aggressive leadership, as well as the recognition of conditions and progress by the officer is the most important factor in conducting effective interior operations.
- Because the primary tactical objective of the Inside Team is locating and removing any trapped occupants, they shall not wait for the nozzle team of the engine to initiate their primary search. If the fire is making the desired entryway inaccessible, an alternative means shall be located to occupy any searchable space, without placing themselves in the path opposite of any advancing handlines.
- Communication and control are imperative for achieving coordination between fire attack, search, and ventilation to optimize tenability.
- The Inside Team can vent windows as they conduct their search to improve conditions and maximize tenability, ***as long as the nozzle team has water on the fire or the room/area being vented is isolated from the fire (i.e., the door is controlled)***.
- Ventilation of lower floor windows shall not jeopardize any members operating or any trapped occupants seeking refuge/egress above.

3.5 Outside Team:

The Outside Team is responsible for working in conjunction with the second arriving ladder’s Outside Team to complete all exterior-initiated and roof operations, in support of the interior operations, as well as to address any imminent life hazards.

3.6 Driver:

3.6.1 Tools: portable radio, hand light, thermal imager, and 8lb. flat-head axe or maul.

3.6.2 Duties:

- Position the apparatus to optimize aerial operations.
- Set up the apparatus and operate the aerial as needed.
- Function as the lead firefighter of the Outside Team and oversee operations.
- Communicate with the officers operating on the fire floor(s), the IC, and the Outside Team of the first arriving ladder on conditions, progress and needs.
- Access the roof when the fire is in the attic or knee-wall of a peaked-roof dwelling or is in the cockloft or top-floor of a flat-roof structure.
- Coordinate ventilation (and search) operations to support the interior crews.

3.7 Outside Vent (OV) Firefighter:

3.7.1 Tools: portable radio, hand light, 6’ all-purpose (New York) hook, and a Halligan bar.

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3.7.2 Duties:

- Assist the Driver in spotting the apparatus.
- Access the rear and report any pertinent conditions.
- Check egress points for victims.
- Force entry in the rear, as needed (controlling the door if water is not on the fire).
- Deploy ground ladders to conduct operations.
- Coordinate window venting with the officer of the engine operating on that floor.
- Perform vent-enter-search **if deemed necessary and authorized by the IC.**
- Meet up with the Driver if roof operations are being conducted.
- Check any shafts and remote portions of the structure from the roof and report any pertinent conditions.
- Perform vertical ventilation, cutting the roof and/or utilizing natural openings as directed by the Driver.

4. OPERATIONS OF THE SECOND ARRIVING LADDER COMPANY

4.1 Inside Team:

The Inside Team should access the floor above the fire via the means of access opposite the first arriving ladder, unless inhibited by the fire conditions (e.g., a porch fire).

4.2 Officer:

4.2.1 Tools: portable radio, hand light, thermal imager, and 6' all-purpose (New York) hook.

4.2.2 Duties:

- Conduct a size-up to identify the extent of the fire and the progress of the first arriving companies.
- Proceed up to the floor above the fire, via the stairway opposite the first arriving companies, whenever possible.
- Directly supervise the Inside Team and monitor conditions.
- Determine if fire has extended vertically, control ventilation, and direct the primary search (and rescue) operations on the floor above the fire.
- Direct the opening of walls and ceilings to expose concealed fire for the engine assigned to the floor above.
- Coordinate operations on the floor above with the Outside Teams, particularly ventilation.

4.3 Irons Firefighter:

4.3.1 Tools: portable radio, hand light, set of "irons" (8lb. flat-head axe and Halligan bar) and 2.5-gallon water extinguisher ("can")

- The irons can be split between the officer and firefighter.
- The Hydra-Ram ("Bunny Tool") should also be carried for any large multiple-dwellings (i.e., apartment buildings).

4.3.2 Duties:

- Force entry to access the building and the floor above the fire, as needed.
- Confine any fire extension by using the "can" to knockback the fire and control the door to the room/area of origin.

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- Conduct the primary search, vent windows, and open up walls and ceilings on the floor above the fire, as directed by the officer.

4.4 Outside Team:

The Outside Team is responsible for working in conjunction with the first arriving ladder's Outside Team to complete all exterior-initiated and roof operations, in support of the interior operations, as well as to address any imminent life hazards.

4.5 Driver:

4.5.1 Tools: portable radio, hand light, and 8lb. flat-head axe or maul.

4.5.2 Duties:

- Position the apparatus to optimize aerial operations.
- Set up the apparatus and operate the aerial as needed.
- Function as the lead firefighter of the Outside Team and oversee operations.
- Communicate with the officers operating on the fire floor(s), the IC, and the Outside Team of the first arriving ladder on conditions, progress and needs.
- Access the roof when the fire is in the attic or knee-wall of a peaked-roof dwelling or is in the cockloft or top-floor of a flat-roof structure.
- Coordinate ventilation (and search) operations to support the interior crews.

4.6 Outside Vent (OV) Firefighter:

4.6.1 Tools: portable radio, hand light, 6' all-purpose (New York) hook, and a Halligan bar.

4.6.2 Duties:

- Assist the Driver in spotting the apparatus.
- Access the rear and report any pertinent conditions.
- Check egress points for victims.
- Force entry in the rear, as needed (controlling the door if water is not on the fire).
- Deploy ground ladders to conduct operations.
- Coordinate window venting with the officer of the engine operating on that floor.
- Perform vent-enter-search **if deemed necessary and authorized by the IC.**
- Meet up with the Driver if roof operations are being conducted.
- Check any shafts and remote portions of the structure from the roof and report any pertinent conditions.
- Perform vertical ventilation, cutting the roof and/or utilizing natural openings as directed by the Driver.

5. VENTILATION

5.1 There are two modes of ventilation used during structural firefighting operations: vertical ventilation and horizontal ventilation. Vertical ventilation is a tactic used in the initial stages of fire operations to relieve the uppermost portions of the building and the stairways of heat, smoke, and gases, reducing the potential for a deflagration (i.e., backdraft or smoke explosion), aiding in the confinement of the fire, and improving tenability.

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5.2 Successful ventilation requires the following three elements of the opening(s) be correctly accounted for: location, size, and most importantly, timing.

5.3 There are three objectives of ventilation: search, extinguishment, and access.

5.3.1 Venting for Search:

Performed to facilitate the entry of members into a targeted (compartmentalized) space where there is a known/suspected life hazard, or when the desired means of entry of the ladder company Inside Team is inaccessible due to the fire (i.e., vent-enter-search [VES]). This operation carries the inherent risk of drawing the fire to space being vented, but is calculated and done so with the potential benefit of saving a life. VES is justified if it is conducted to expedite the removal of a trapped occupant or to conduct the primary search when the fire is cutting off the conventional means of entry, as long as the space is tenable to support search operations.

Venting for Search can also be performed from the interior by the Inside Team as they conduct their primary search to improve tenability. If windows are to be vented as they go, the Inside Team must ensure the nozzle team has water on the fire or the (compartmentalized) space they are searching remains isolated from the fire (i.e., the door is controlled), as doing so otherwise can draw the fire to their location and deteriorate conditions.

5.3.2 Venting for Extinguishment:

Performed to facilitate the nozzle team's advance and attack on the seat of the fire. This venting should be coordinated with the engine officer and should not occur until the nozzle team has a charged (flow-checked) handline and is **at least** moving in on the seat of the fire. The openings created shall be within the area of involvement, either opposite the nozzle team's advance if conducted through horizontal ventilation or over the seat of the fire if conducted through vertical ventilation.

5.3.3 Venting for Access:

Performed to gain entry into a building or a space within it, and initiate interior operations. Whether breaching a door, wall, or ceiling, it must be understood that an opening made to the area of involvement serves as a means of ventilation for the fire. If an opening is to be made, the opening must be controllable until the nozzle team is ready with a charged handline, as the fire will otherwise begin to grow and spread in short order. If walls or ceilings are being breached to check for and expose concealed fire, a nozzle team with a charged handline should be present.

5.4 There are three principles of ventilation: communication, control, and coordination.

5.5 Communication:

5.5.1 "In Position"

The Outside Team shall contact the engine officer operating on floor being vented to announce they are in position and where they are located. This transmission serves as a reminder to the engine officer to request ventilation when they are ready, as well as a check-and-balance, to ensure the Outside Team is set up in the correct place.

5.5.2 "Hold Off"

The engine officer shall respond with this transmission if they are not ready to receive

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ventilation. The verbiage prevents any misinterpretation, as saying “Don’t take the windows” or “Don’t take the roof” could result in mishap if the first part of the message is cut off.

5.5.3 “Moving In”

The engine officer shall make this transmission to the Outside Team when they are ready to receive ventilation—they are **at least** initiating their advance on the seat of the fire with a charged (flow-checked) handline.

5.5.4 IC Authorization

While the majority of ventilation operations will be conducted in a decentralized fashion—achieved through direct communication between the engine officer and the Outside Team, there are three extenuating circumstances which necessitate communication with the IC to ensure the operation is properly coordinated, as the effects otherwise could have severe implications. The conditions requiring IC authorization are as follows:

- Wind-Impact Conditions
- Hoarding Conditions
- Deep-Seated Fire
- Vent-Enter-Search

5.6 Porch roofs provide a stable platform from which to operate and should be used whenever possible. They afford protection from fire venting below and allow access to multiple windows if being used to conduct horizontal ventilation operations. They can also serve as a temporary area of refuge for victim removal if a trapped occupant is located during a search and rescue operation.

5.7 Avoid ventilation which may endanger any personnel operating or trapped occupants seeking refuge/egress from above.

5.8 Ventilate in a manner which does not result in auto-exposure or impingement on vertical exposures (e.g., overhanging structures or porches) or adjacent structures.

5.9 When venting windows, all of the glass, the center sash, the window treatments, and any obstructions (e.g., child gates and air-conditioning units) should be removed to maximize the size and exhaust capabilities of the opening, as well as its functionality as a means of egress if needed.

5.10 At all times, ventilation must be communicated, coordinated, and controlled to ensure the intended effect is achieved. Venting indiscriminately can supply the fire with fresh air and draw it to that point of low pressure, allowing the fire to grow and spread, which will lead to the deterioration of conditions.

6. SEARCH & RESCUE

6.1 Search:

If fire is discovered on a floor above the fire floor, a charged line should be called for immediately, providing the engine officer with the best means of access.

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- 6.2** Closing a door can temporarily confine a fire to the area/room of origin, limiting its growth and spread; preserving tenability and aiding in the search effort of the remainder of the space.
- 6.2.1** If heat or fire is preventing the area/room from being entered and searched before the door is controlled, probe as far into it as conditions allow, hooking your foot on the doorframe and reaching out if possible; checking for any victims within the area of the entryway. The water can should be used to knockback the fire and to keep the door cool if it is burning through once it is controlled. If the fire is venting out, preventing the door from being reached, use the length of a tool, ideally a 6ft. hook, to shut the door and control it.
- 6.2.2** Always check behind the door for any victims, as well as any entryways or stairways leading to other areas.
- 6.2.3** If no door is present within the frame, the door is burning through, or is otherwise compromised, preventing it from being controlled, a door from another area can be removed and placed over the doorway to cover the opening. The door should ideally be from another room, as closet doors are often of smaller dimensions and can be of lighter construction (i.e., hollow or louvered), which will minimize their ability to confine the fire.
- 6.3** Always be alert for signs of trapped victims such as crying, moaning, or coughing. Check closets, toy chests, and large cabinets/cupboards, especially when searching for children, as they may be hiding in these locations. To search under beds or other large, elevated furniture, ideally use your arm or leg, or a tool if needed for additional reach, and gently probe in and sweep the entire area. If the bed is low, be sure to sweep above for the presence of a bunk bed.
- 6.4** Ventilate as you go, ensuring the nozzle team has water on the fire or the (compartmentalized) space you are searching is isolated (i.e., the door is controlled) first, as failing to do so will draw the fire to your location and deteriorate conditions in short order.
- 6.5** When conducting VES and smoke is exhausting from the window, immediately move toward the door to control it on entering the room. Doing so closes off the doorway— isolating the space from the fire—and prevents the fire from being drawn to your location.
- 6.5.1** Whenever possible, quickly look out into the hallway to check for any victims and assess the conditions.
- 6.5.2** Once this door is closed, the vented window will enhance the tenability of the space and allow for a more rapid primary search.
- 6.5.3** If the search proves negative, it shall be communicated to the IC and further assignment shall be given. The door must be kept shut on exiting the room, unless the nozzle team has water on the fire. If reopening the door, do so slowly and check the conditions in the hall before committing the door to the fully open position.
- 6.6 Rescue:**
If you discover a trapped occupant, immediately get them to the floor and keep their head as low as possible, as elevation exponentially increases their exposure and

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reduces survivability, and notify the IC with an *Urgent* message, including your location and the number of victims.

- 6.7** The ideal means of victim removal is through the nearest main egress path. First consideration, however, should be to minimizing the level of exposure to victim. If the victim is in an isolated space and the fire is still uncontrolled, window removal will prevent them from being taken through the contaminated area and potentially past fire, which will dramatically reduce their chances of survival. Window removal has the most viability when operating on the ground-floor or when the window serves a porch, as doing so will otherwise require removal over a ladder, which is resource-, time-, and labor-intensive. The ultimate deciding factor when considering window removal, however, is the size of the victim, accessibility, the height of the sill, and the size of the window.
- 6.8** When multiple victims have been located, especially on an upper floor, the additional resources needed for removal must be committed. Units not directly engaged in fire attack may be reassigned to accomplish this task, if necessary. The priority of the nozzle teams is to maintain control of the egress pathways while the victims are being removed.

7. ROOF OPERATIONS

- 7.1** Roof operations will be the responsibility of the Outside Teams. The (senior) Driver shall be the lead firefighter and be responsible for all radio communications.
- 7.2** The following equipment shall be required for roof operations: chainsaw and rotary saw, 8lb. flat-head axe, 6ft. all-purpose (New York) hook, Halligan bar, and rope.
- 7.3** Whenever feasible, the aerial ladder or ladder tower should be used in preference to ground ladders for roof access, as they provide a more stable working platform.
- 7.4** Before operations on the roof can commence, the Driver shall determine whether or not the roof is stable and identify a secondary means of egress. This is particularly true in buildings with lightweight construction, or there is heavy fire beneath it. An unsafe roof condition shall be communicated by the Driver to the Incident Commander as an *Urgent* message.
- 7.5** Holes cut for ventilation should be a minimum of 4' x 4.' Conditions may dictate additional ventilation to provide the necessary relief. It is better to expand the original hole until the desired effect is achieved, then to cut multiple holes.
- 7.6** Timing is the lynchpin for the success of any ventilation operation. Because cutting a hole is time- and labor-intensive, it should be initiated as soon as possible. The cut, however, shall be controlled and not be louvered until the progress of the nozzle team has been confirmed, ensuring they are at least moving in on the seat of the fire.
- 7.7** When venting a pitched roof, a roof ladder should be used. The hole should be cut as close as conditions permit over the fire, on the leeward side of the roof, as close to the ridge as possible.
- 7.8** Dependent on the type of roof sheathing, either cut through the asphalt shingles or break up the tile or cut the rubber membrane over the area to be cut. The roof decking is then

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cut through and removed with a 6ft. hook. The interior ceiling should be cleared with the handle end or the 6ft. hook if necessary.

7.9 When venting a flat roof, the Outside Team should first **coordinate** the venting of any natural roof openings (e.g., bulkhead doors, scuttles, and skylights) and windows (if the fire is on the top floor).

7.9.1 When venting windows, use a pike pole from the edge of the roof to do so; ensuring the nozzle team is at least moving in on the seat of the fire and the window(s) are opposite their advance (which also applies for the natural roof openings above the fire area).

7.9.2 When venting the natural roof openings over a stairway, ensure the door to the fire apartment(s) are controlled or the nozzle team is moving in on the seat of the fire with a charged handline.

7.9.3 Be sure to quickly sweep the top landing inside of bulkheads door to search for any victims which may have attempted to escape onto the roof. Bulkhead doors are frequently secured and forcible entry will likely be needed. Ensure the integrity of the door is maintained and the door is controlled, unless authorization has been received to vent the stairway below.

7.9.4 If fire has entered the cockloft, and any of the natural roof openings are above the area of involvement, the returns walls shrouding the scuttle-/light-well can be breached to vent the cockloft.

7.9.5 A vent hole should also be cut at the leading edge of the fire to aid in confining the fire and limiting its horizontal spread. When cutting the vent hole, position upwind and maintain a position between the opening being made and the means of egress.