Bath Township Fire Department			Standard Operating Guideline	
Section **Operations**	**Referral No.** **O-04**	**Subject:** **Ventilation Operations**	**Date Issued** 11/02	**Date Revised** **2/08**

Purpose:

- To provide guidelines for use of ventilation and identify tactical considerations for ventilation operations during structural firefighting along with other useful techniques.

Scope:

- This Standard Operating Guideline shall apply to all personnel.

Responsibilities:

- Officer
  - Ensure that personnel performing ventilation are properly trained.
  - The personnel performing ventilation will do so in a safe manner and will wear proper protective clothing.
- Personnel
  - All personnel have the responsibility of wearing proper safety equipment and performing ventilation in a safe manner.

Guidelines:

- All ventilation actions must be carefully coordinated with fire suppression efforts.
- In critical rescue situations, the structure will be immediately ventilated from the outside.
- Vertical ventilation will be accomplished prior to entry into a structure in which backdraft conditions are suspected.
- Upper floor windows may be removed using a ladder or pike pole.
- All tools necessary for roof ventilation will be in place prior to starting the work.
- Power tools will be start tested prior to being raised to the roof.
- The first firefighter to the roof will carry a tool to sound the roof.
- For all buildings, a second ladder will be properly placed as an escape route.
- The Incident commander shall make the determination for employing traditional ventilation or positive pressure techniques.
- When a ladder is raised to a roof, it shall extend five (5) rungs above the roof edge
- When a ladder is raised to a window for ventilation, it shall extend so that the ladder is on the windward side of the window.

Positive pressure (PPV) has many benefits to fire ground operations:

- PPV rapidly removes heat and smoke from the building, thus reducing the fires ability to propagate and advance.

- PPV causes an improving atmosphere-thereby increasing patient survivability profile by improving the firefighters ability to conduct search and rescue operations.
- The improved atmosphere and visibility increases the firefighters ability to conduct attack/extinguishment operations.
- PPV reduces firefighter heat stress.
- PPV reduces loss caused by smoke and fire damage to the structure.
- PPV can reduce the need for and risk of roof ventilation at many fires.

Placement:

- Positive pressure fans should be placed at the point of entry from the unburned side of the fire.
- Fans should be positioned 12-15 feet back from the point of entry. The objective is to create a cone effect around the door and allow access for crews to enter the building.
- Where two PPV fans are available, placing two fans in "tandem" (one behind the other) is more effective than side-by-side operation.

Tactical Considerations:

- PPV is effective only when applied properly. An exit for the pressurized air must be provided and must be located in the fire area. This is usually a window or door opening.
- PPV must be injected from the unburned side of the fire.
- Airflow from the PPV fan must be controlled throughout firefighter operations. In some cases, windows and doors that are already open may need to be closed to control airflow.
- As one area is cleared of smoke, that area should be closed off and another exit created for the next area to be cleared of smoke.

Attic Fires

- Isolated attic fires may also benefit from PPV.
- During initial attack, crews should use small openings in the ceiling for water application. This will prevent the atmosphere below the ceiling from rapidly filling with smoke.
- Moving from one room to another using a piercing nozzle is very effective.
- An "exit" for PPV must be present in the attic area. Most roofs/attics have pre-existing vents typically at the ends or in the fascia. However, some structures have a sealed attic space. In these cases, it will be necessary to open a vertical wall at one end of the structure or cut a roof vent. If pre-existing vents are not adequate, they need to be enlarged.

Multi-story/High-rise

- Multi-story/high-rise structures require greater coordination and additional fans. Stairwells should be used to direct airflows. An exit in the fire area is a first choice. Roof doors are appropriate air exits. In some situations stairwells at the opposite end of the fire may be utilized.
- Multiple fans may be required. Two or more may be needed at the base of the building. Additional fans may be needed at various levels. A fan will be needed at the entry to the fire floor.

Positive Pressure For Exposure Control

- In some cases, PPV can be used for exposure control. This is most effective with common attics (strip malls) and walls that have been breached by plumbing, etc. The objective is to introduce PPV ahead of the moving fire and force it back into the fire area. An exit, in the fire area, will be needed.
- Fans should be placed at the entry point of the most severe exposure first. If heavy smoke exists, it may be beneficial to create a temporary opening to allow an exit for the pressure and smoke. Once the smoke has cleared, PPV operations should be initiated. An opening in the ceiling is important to allow the attic area to pressurize and force hot gases back into the fire area.

Precautions

- An exit must be in the burned area or the fire may be pushed into an unburned area.
- Because of positive pressure, a "blow torch" effect of fire blowing out of the exit may occur. This is normal and must be taken into consideration for exposures.
- Do not direct fire streams into the PPV exit, as this is counterproductive.
- All concealed spaces need to be checked for extension.
- Gas powered PPV does produce carbon monoxide and breathing apparatus may be required when PPV is used during overhaul operations.