

Spartanburg Public Safety Department Fire Division

Standard Operating Procedure	No. 102.02
Incident Scene Safety	Page 1 of 10
Supersedes: 12/01/2005	Effective: 03/20/2008

I. PURPOSE

The incident scene is a hazardous area to be conducting operations. It is important for all fire personnel to identify specific hazards of the incident scene and how to mitigate these hazards.

It remains the responsibility of each and every member of the Spartanburg Public Safety Department Fire Division to commit to safe work behaviors and to operate within standard operating procedures at all times. Chief officers, division supervisors, group leaders, and company officers carry an additional responsibility of ensuring that all members of their crew are operating in a safe manner. The first arriving member or company will initiate command. The Incident Command System will be implemented at all incidents.

II. INCIDENT ZONES

The basis for personnel safety are the incident scene zones. The zones identify what operations are being conducted, who should be in the zones, and what personal protective equipment they should have. Incident scene zones are divided into a hot zone, warm zone, and cold zone.

Hot Zone

The hot zone will be defined as any area that requires an SCBA, charged hose line, special protective clothing, or in which emergency responders are at risk of becoming lost, trapped, or injured by the environment or structure. The following situations would be included inside the hot zone:

- Entering a structure reported to be on fire
- Operating in close proximity to the structure during exterior operations
- Confined space
- Trench rescues
- Operating close to crane operations or close to swift water operations
- Building collapse
- Operating close to helicopter operations

- Extrication

All personnel in the hot zone will:

- **Wear proper protective equipment**
- **Have crew intact (Accountability)**
- **Be assigned to a task**

Warm Zone

The warm zone will be defined as just outside of the hot zone where the firefighters start their operations on the incident scene. This zone is where the firefighter is not at risk of becoming lost, trapped, or injured by the environment or structure. The following functions could be done in this zone:

- Forward fire apparatus working the incident (i.e.- engines, ladders)
- Laying hose lines
- HAZ-MAT and RIT developing strategies and tactics*
- Utility trucks*
- Special equipment needs
- Accountability Officer*
- Safety Officer*

* Depending on the incident scene hazards, these activities may be performed in the warm zone or cold zone.

If at any time emergency responders in the warm zone become threatened, this area would become a hot zone.

Cold Zone

The cold zone will be defined as outside of the warm zone where no one is at risk because of the incident. The following functions could be done in this area:

- Command
- Level I & Level II staging
- Support and staff personnel
- Rehab
- Media
- Public Information Officer
- Interviews of the responsible party

III. SAFETY OFFICER

Every incident shall have a safety officer. Unless otherwise delegated, the Incident Commander is the Safety Officer

The Fire Marshal is the designated Safety Officer for the Spartanburg Public Safety Department Fire Division. The Safety Officer is on call 24 hours a day to respond to incidents. When the Safety Officer is not available, Command should assign the Safety Officer position to another officer. If there is a delay in the Safety Officer's response to the scene, the Incident Commander should assign a temporary Safety Officer to oversee the incident.

The Safety Officer reports directly to command and has full authority to terminate, suspend, or alter any grossly unsafe condition or action. For more information on the Safety Officer, consult SOP 100.02.

IV. TACTICAL POSITIONING

Positioning of operating companies can severely affect the safety of such companies. Personnel must use caution when placed in the following positions:

- Above the fire floor
- Where fire can move in behind them
- When involved with opposing fire streams
- Combining interior and exterior attack
- With limited access--one way in/out
- Operating under involved roof structures
- In areas containing hazardous materials
- Below ground fires (basements, etc.)
- In areas where a back draft potential exists
- Above/below ground rescue

Fire personnel should utilize safe positioning when possible/available, in an effort to safeguard against sudden hazardous developments such as back draft explosion, structural collapse, etc.

When operating in a defensive strategy, operating positions should be as far from the involved area as possible while still remaining effective. Position and operate from behind barriers if available (fences, walls, etc.).

When operating in an offensive strategy, be aggressively offensive. An effective, coordinated interior attack operation directed toward knocking down the fire eliminates most eventual safety problems.

V. LIMITING PERSONNEL

To minimize incident scene confusion/congestion, limit the number of personnel exposed to incident scene hazards to only those necessary to successfully control the operation. Individuals or crews should refrain from wandering about the incident scene or

congregating in non-functional groups. If personnel do not have a necessary staff function or operation to perform, they shall remain outside the incident cold zone. All personnel on the incident scene shall be:

- Positioned in the staging area
- Assigned to a task or operating within a division
- Having completed an assignment and no other assignment is available within that division or group, crews should be assigned to a staging area or rehabilitation area until such time as they can be reassigned to an operating division or group or released to in-service status

When it is necessary to engage personnel in exceptionally hazardous circumstances (i.e.- to perform a rescue), command will limit the number of personnel exposed to an absolute minimum and assure that all feasible safety measures are taken.

In extremely hazardous situations (flammable liquids, LP gas, special operations, etc.), command will engage only an absolute minimum number of personnel within the hazard zone. Unmanned master streams will be utilized wherever possible.

In situations where crews must operate from opposing or conflicting positions, such as front vs. rear attack streams, roof crews vs. interior crews, etc., utilize radio or face-to-face communications to coordinate your actions with those of the opposing crew in an effort to prevent needless injuries. Command should notify division supervisors and group leaders of opposing or conflicting operations.

Ground crews must be notified and evacuated from interior positions before ladder pipes go into operation. **Do not operate exterior streams, whether hand lines, master streams, ladder pipes, etc., into an area where interior crews are operating.**

VI. MEANS OF EGRESS

When operating either above or below ground level, establish at least two separate escape routes/means where possible, (such as stairways, ladders, exits, etc.), preferably at opposite ends or diagonal corners of the building or separated by considerable distance.

When laddering a roof, the ladder selected shall be one which will extend 2 ft. – 3 ft. above the roofline. This shall be done in an effort to provide personnel operating on the roof with a visible means of egress.

If possible, when laddering buildings under fire conditions, place ladders near building corners or firewalls, as these areas are generally more stable in the event of structural failure.

Division supervisors, group leaders, and company officers shall be able to account for the whereabouts and welfare of all crews/crew members under their assignment.

Division supervisors and group leaders shall insure that all crewmembers are operating within their assigned division or group only. Crews will not leave their respective division or group unless authorized by the division supervisor or group leader.

When crews are operating within a division or group, company officers shall keep the division supervisor or group leader informed of changing conditions within the division area or group work area, and particularly those changing conditions, which may affect the safety of personnel.

Hazards that will affect only a specific division or group area should be dealt with within that division or group and need not necessarily affect the entire operation.

VII. STRUCTURAL COLLAPSE

Structural collapse has been a major cause of serious injury and death to firefighters. The possibility of structural collapse should be a major consideration in the development of any tactical plan.

Structural collapse is always a possibility when a building is subject to intense fire. In fact, if fire is allowed to affect a structure long enough, structural failure is inevitable.

Regardless of the age and exterior appearance of the building, the possibility exists that a principal structural supporting member is being seriously affected by heat and may collapse, inflicting serious injury to firefighters. For example, a 100 ft. length of unprotected steel will expand 9 inches when heated to 1100 degrees Fahrenheit.

In the typical fire involved building, the roof is the most likely candidate for failure, however failure of the roof may very likely trigger a collapse of one or more wall sections. This is especially true if the roof is a peak or dome type, which may exert outward pressure against both the bearing, and non-bearing walls upon collapse. In multi-story buildings or buildings with basements, the floor section above the fire may collapse if supporting members are directly exposed to heat and flames.

Knowledge of various types of building construction can be invaluable to the firefighter from a safety standpoint as certain types of construction can be expected to fail sooner than others. For example, lightweight truss and bar joist roof construction can be expected to fail after minimal fire exposure.

Structures have been known to collapse without warning but usually there are indications, which may tip off an alert firefighter. Action shall be taken to avert any imminent hazard. Some signs of building collapse may include:

- Cracks in exterior walls
- Bulges in exterior walls
- Sounds of structural movement (creaking, groaning, snapping, etc.)

- Smoke or water leaking through walls
- Flexible movement of any floor or roof where firefighters walk
- Interior or exterior bearing walls or columns are leaning, twisting, or flexing
- Sagging or otherwise distorted rooflines
- Time of fire involvement

The following construction features or conditions have been known to fail prematurely or to contribute to early structural failure when affected by fire. Buildings containing one or more of the mentioned features must be constantly evaluated for collapse potential.

- Heavy roof loads
- Parapet walls
- Large, open (unsupported) areas (supermarkets, warehouses, etc.)
- Large signs or marquees, which may pull away from weakened walls
- Cantilevered canopies, which usually depend on the roof for support and may collapse as the roof fails
- Ornamental or secondary front or sidewalls, which may pull away and collapse
- Buildings with lightweight truss, bar joist, or bowstring truss, roofs.
- Buildings supported by unprotected metal (beams, columns, etc.)

It is a principal command responsibility to continually evaluate and determine if the fire building is tenable for interior operations. This on-going evaluation of structural/fire conditions requires the input of division supervisor, group leader, or any personnel witnessing changing conditions and advising command of the conditions in their area of operation.

Most structures are not designed to withstand the effects of fire, and can be expected to fail if exposed to heavy fire involvement. If after 10-15 minutes of interior operations heavy fire conditions still exist, command should initiate a careful evaluation of structural conditions, and should be fully prepared to withdraw interior crews and change to a defensive strategy.

If structural failure of a building or section of a building appears likely, a perimeter must be established a safe distance from the area, which may collapse. All personnel must remain outside this perimeter.

VIII. EMERGENCY EVACUATION

The method of evacuation selected will vary depending on the following circumstances:

- Imminence of the hazard
- Type and extent of hazard
- Perception of the area affected by the hazard

The emergency traffic announcement is designed to provide immediate notification for all fire ground personnel. The use of emergency traffic should be initiated only when the hazard appears to be imminent or has just occurred. Any member has the authority to utilize the emergency traffic announcement when it is felt that a notable danger to personnel is apparent. When an imminent hazard has been realized, the emergency traffic process should be initiated. The following procedures shall be used for emergency traffic.

1. Any firefighter finding a need for immediate evacuation shall radio the message "Emergency Traffic, Emergency Traffic"
2. Spartanburg Communications or Command shall acknowledge by radio "Emergency Traffic Received" and all other radio traffic shall cease.
3. The firefighter who communicated emergency traffic shall describe the apparent hazard and order a positive response. Example: "The roof is collapsing, evacuate all personnel from the structure."
4. If possible, the division supervisors or group leaders of those areas to be evacuated should conduct an acknowledgment of the emergency traffic dispatch. Example: "Division 2 copy emergency traffic, evacuating now."
5. Any available personnel on the exterior shall sound apparatus air horns in a single, long blast for approximately 30 seconds.
6. Division supervisors or group leaders in the affected area shall assemble their crews and promptly exit to a safe location, where the company officer will report a PAR for all crewmembers.
7. Shortly after the evacuation order, command shall begin the process of accounting for all evacuated crews. At this time a more specific determination as to the reality/extent of the hazard can be made and efforts initiated to redeploy/redirect attack forces.

Building evacuation generally involves a shift from an offensive to a defensive strategy. In such cases, command must develop a corresponding operational plan and must communicate that plan to all operating companies. It is extremely important that everyone gets the word that a shift in strategy has been made. This transition can be time consuming based on company's interior positions.

VI. FIREFIGHTER MAYDAY

"MAYDAY" is a term to be used only in the event of a lost or trapped firefighter. A firefighter MAYDAY should be used in the following situations:

1. Firefighter(s) are entangled, trapped, or pinned
2. Firefighter(s) have fallen through a roof or floor and cannot be accounted for or have become injured
3. Firefighter(s) are caught in a flashover
4. Firefighter(s) are off a hose line or tag line with zero visibility and are disoriented
5. A low air alert activates, and firefighter(s) cannot immediately find an exit

A firefighter shall declare a MAYDAY using the following procedures:

1. Immediately after identifying a MAYDAY situation, the firefighter shall radio the message “MAYDAY, MAYDAY, MAYDAY.”
2. Spartanburg Communications or Command shall acknowledge by radio “MAYDAY received” and issue an order to switch all units to an alternative channel (with the exception of the MAYDAY personnel, the incident commander, and the Rapid Intervention Team)
3. If Command does not acknowledge the MAYDAY, Spartanburg Communications or incident scene personnel shall notify Command as soon as possible.
4. MAYDAY personnel shall advise Command of the following information (acronym LUNAR):
 - a. L = Location and situation of MAYDAY personnel
 - b. U = Unit number and assignment (example – Engine 1 Firefighter 1)
 - c. N = Name(s) of MAYDAY personnel
 - d. A = Air supply situation
 - e. R = Resources needed

Example: “Engine 1 Officer and Engine 1 Firefighter 1 have fallen through the floor into the basement, quadrant A, fire in the basement, Captain Blue and Firefighter Red. We have half a cylinder left, but are injured and can’t move. We need a hose line right away to protect us.”

5. Any personnel with direct knowledge of the MAYDAY situation should communicate this knowledge through the Command structure.

6. When a MAYDAY is transmitted with no follow-up transmission, Command will make one attempt to contact the firefighter verbally. If the firefighter does not acknowledge, the firefighter will be considered a MAYDAY.
7. A firefighter who is not accounted for in a PAR will be considered a MAYDAY.
8. Command will activate the Rapid Intervention Team. For procedures regarding the Rapid Intervention Team, reference SOP102.11.

When a MAYDAY occurs, incident scene personnel shall follow the procedures below:

1. Switch to the designated alternative channel (with the exception of the MAYDAY personnel, the incident commander, and the Rapid Intervention Team).
2. All other units must continue their assigned operation, unless the Incident Commander directs otherwise.
3. Command will conduct a PAR by beginning with the divisions, groups, and/or units operating in the most hazardous locations. Division, groups, and/or units that do not report after two (2) attempts will be considered MAYDAY, and Command will follow MAYDAY procedures to identify and locate the missing personnel.
4. Command will announce to all operating units and Spartanburg Communications when the incident has stabilized and operations have returned to normal.

IX. SEARCH AND RESCUE

Search and rescue should be performed according to an efficient, well-planned procedure, which includes the safety of search crew personnel. The object of the search effort is to locate possible victims, not create additional ones by neglecting the safety of the search crew.

Prior to entering the search area, all search team members should be familiar with a specific search plan including the overall objective, a designation of the search area, individual assignments, etc. This may require a brief conference among crewmembers before entering the search area to develop and communicate the plan.

Whenever a search is conducted that exposes search crews to fire conditions (particularly above the fire floor) the search team should be protected with a charged hose line, in

order to ensure a safe escape route. If search personnel are operating without a hose line, lifelines should be used when encountering conditions of severely limited visibility.

X. HIGH-RISE SAFETY

Fire personnel conducting operations in high-rise buildings are faced with many non-typical hazards due to the design, elevation, limited access and egress, etc., inherent in these buildings. High-rise buildings containing a working fire are considered a high hazard area. For more information on high-rise firefighting safety, consult SOP 102.14.