Policy: **Fireground Safety**

Purpose: To establish a policy to ensure the safety of all fire department personnel while working on a fireground. This policy shall provide direction on placement of personnel and resources on the fireground, as well as personnel accountability. It will also provide guidelines for firefighter rehabilitation. This policy will also develop guidelines for emergency evacuation and discuss the possibilities of structural collapse.

Scope: This policy will pertain to all Northern Piatt Fire Department personnel.

Tactical Positioning

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

- Above the fire (floors/roof)
- Where fire can move in behind them
- Where sector cannot control position/retreat
- 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 backdraft potential exists
- Above/below ground rescue

The safety of firefighting personnel represents the major reason for an effective and well-timed offensive/defensive decision and the associated write-off by Command. When the rescue of savable victims has been completed, Command must ask: "Is the risk to my personnel worth the property I can save?"

When operating in a defensive mode, 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.).

The intent is for personnel to utilize safe positioning where possible/available, in an effort to safeguard against sudden hazardous developments such as backdraft explosion, structural collapse, etc.

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

Due to the inherent hazards of the immediate fire or incident scene, efforts will be made by Command to limit the number of personnel on the fireground to those assigned to a necessary function. All personnel shall be:

- Positioned in Staging.
- Assigned to a task or operating within a sector.
- Having completed an assignment and no other assignments available within that sector - crews should be assigned to a Resource, Staging, or Rehabilitation Sector until such time as they can be reassigned to an operating sector or released to in-service status.

The intent of this procedure is to minimize fireground confusion/congestion and to limit the number of personnel exposed to fireground hazards to only those necessary to successfully control the operation. Individuals or crews shall be restricted from wandering about the fireground or congregating in non-functional groups. If personnel have not been assigned to a sector or do not have a necessary staff function to perform, they shall remain outside the fireground perimeter.

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, hazardous materials, 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 Sector Officers or Company Officers of opposing or conflicting operations.

Ground crews must be notified and evacuated from interior positions before master streams go into operation.

Do not operate exterior streams, whether hand lines, master streams, ladder pipes, etc., into an area where interior crews are operating. This procedure is intended to prevent injuries to personnel due to stream blast and the driving of fire and/or heavy heat and smoke onto interior crews.

Ladders

When laddering a roof, the ladder selected shall be one which will extend 2' - 3' 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 fire walls, as these areas are generally more stable in the event of structural failure.

When operating either above or below ground level, establish at least two (2) 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.

Many safety principles revolve around action that takes place within the fire ground perimeter or on the fireground.

Fireground Perimeter

For the purpose of Northern Piatt Fire Department operations, the fireground perimeter can be defined as: The area inside an imaginary boundary that has been determined by safety considerations according to the foreseeable hazards of the particular incident.

The flexible boundary that determines the fireground can be altered by various safety factors.

All personnel entering the fireground perimeter shall:

- Wear protective clothing and S.C.B.A.
- Have crew intact.
- Be assigned to a sector.

ALL OTHERS STAY OUTSIDE !!!!!!

The fireground perimeter is not necessarily marked by any warning device. The area is defined, in most cases by standard definitions described in this procedure. Where a hazard exists, banner tape may be used to identify the specific area where special precautions are necessary.

Yellow FIRELINE tape is intended to keep civilians and spectators out of an area where a hazard exists or where operations are in progress. This tape may also be used as a warning device for personnel authorized to operate on the fireground. Yellow tape

indicates that personnel should be aware of a hazard and should cross the tape only when precautions have been taken.

Sectors

The safety of firefighting personnel represents a major reason for fireground sectorization. Sector commanders must maintain the capability to communicate with forces under their command so that they can control both the position and function of their companies.

Sector officers and company officers shall be able to account for the whereabouts and welfare of all crews/crew members under their assignment.

Company officers shall insure that all crew members are operating within their assigned sector only. Crews will not leave their respective sectors unless OK'd by the sector officer.

When crews are operating within a sector, company officers shall keep the sector officer informed of changing conditions within the sector area, and particularly those changing conditions which may affect the safety of personnel.

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

Rehabilitation

In an effort to regulate the amount of fatigue suffered by fireground personnel during sustained field operations, sector officers should frequently assess the physical condition of their assigned companies. When crew members exhibit signs of serious physical or mental fatigue, the entire crew should be reassigned to a Rehabilitation Sector if possible. Company officers shall request reassignment to Rehabilitation Sector from their sector officer. The company officer's request shall indicate the crew's position, condition, etc., and shall advise as to the need for a replacement crew. Individual crews shall not report to the Rehabilitation Sector unless assigned by the Fireground Commander. Crew members should report to and remain intact while assigned to Rehab.

It is the on-going responsibility of Command to summon adequate resources to tactical situations to effectively stabilize that situation, and to maintain adequate resources during extended operations to complete all operational phases.

The rotation of companies will be utilized by Command during extended operations to provide an effective on-going level of personnel and their performance.

It is the intent of this procedure to reduce the fatigue and trauma experienced during difficult operations to a reasonable (and recoverable) level and is in no way intended to

lessen the individual and collective efforts expected of all members during field operations.

Personnel Accountability System

As an accountability measure Sector officers must record and maintain the identity of all personnel assigned to operate in high hazard areas such as: basements, high rise, etc., particularly where individual assignments are made which may place members in precarious positions.

The following standard method for insuring this vital accountability shall be utilized as conditions dictate the need.

- All firefighting personnel will have two ID Tags
- Each firefighter will place one tag on the tag for the respective apparatus they are working from.
- As sector officers make assignments which may place personnel in precarious positions they shall collect from each assigned crew the tag from their truck with a tag for each crew member in place
- Command shall place this truck tag under the space provided for the task being performed by the crew
- Sector officers shall account for each member upon completion of the assignment by returning to each member his/her respective ID tag.

Safety Sector

The recognition of situations which present inordinate hazards to fireground personnel and the proper response to safeguard personnel from those hazards is of critical importance to all Fire Department operations.

Command has the responsibility to recognize situations involving a high risk to personnel and to initiate appropriate safety measures.

Command shall establish a Safety Sector at all incidents.

Command may designate any available personnel to establish a Safety Sector. This should be a high priority assignment.

The establishment of a Safety Sector or the presence of a Safety Officer in no way diminishes the responsibility of all officers for the safety of their assigned personnel.

Each and every member shall utilize common (safety) sense and work within the intent of established safety procedures at all times.

Structural Collapse

In recent times, structural collapse has been a leading cause of serious injuries and death to fire fighters. For this reason 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, some structural failure is inevitable.

Regardless of the age and exterior appearance of the building, there is always the possibility that a principal structural supporting member is being seriously affected by heat and may collapse suddenly inflicting serious injury to firefighters.

Example: A 100' length of unprotected steel will expand 9" when heated to 1100 degrees F.

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 Fire Officer from a safety standpoint as certain types of construction can be expected to fail sooner than others.

For example: Under fire conditions light weight 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 signs that may tip off an alert fire officer. Action might be taken to avert any imminent hazard.

Tell Tale Signs:

- 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 - leaning, twisting or flexing.
- Sagging or otherwise distorted rooflines.

The following construction features or conditions have been known to fail prematurely or to contribute to early structural failure when affected by fire.

Contributing Factors:

- 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 light weight truss, bar joist, or bow string truss, roofs.
- Buildings supported by unprotected metal beams, columns, etc.

Buildings containing one or more of the above features must be constantly evaluated for collapse potential. These evaluations should be of major consideration toward determining the tactical mode, i.e. offensive/defensive.

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 company officers advising their sectors and of sectors advising Command of the conditions in their area of operation.

Structures of other than fire protected/heavy timber construction are not designed to withstand the effects of fire, and can be expected to fail after approximately twenty minutes of 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 resort to a defensive position.

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.

EVACUATION

Interior firefighting operations should be abandoned when the extent of the fire prohibits control or the structure becomes unsafe to operate within. When such conditions make the building untenable, evacuate, regroup, account for personnel, re-communicate, and re-deploy.

Our primary concern, when a hazard which may affect the safety of fire personnel becomes apparent, is the welfare of those personnel. In an effort to protect personnel who may suffer the adverse effects of such hazards such as structural collapse, explosion, backdraft, etc., a structured method of area evacuation must be utilized, one which will provide for the rapid/effective notification of those personnel involved, and one which will be able to accurately account for those personnel.

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

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

The emergency evacuation tone is designed to provide immediate notification for all fireground personnel of a notable hazard that is either about to occur, or has occurred.

The use of the "Emergency Evacuation Tone" should be initiated only when the hazard appears to be imminent.

Any member has the authority to utilize the "Emergency Evacuation Tone" when it is felt that a notable danger to personnel is apparent; however, considerable discretion should be applied to its use - emergency traffic announcements become ineffective if overused.

The “Emergency Evacuation Tone” shall be three blasts of an airhorn from the closest equipped piece of apparatus to the building.

When an imminent hazard has been realized, the emergency traffic process should be initiated. Usually either a company or sector officer will be the initiator. The initiator should describe the apparent hazard and order a positive response, usually to evacuate a particular area or section, according to the scope of the hazard.

If possible, the sector officers of those areas to be evacuated should request an acknowledgment of the emergency traffic dispatch from those crews to be evacuated.

Upon receipt of the emergency traffic evacuation order, company officers shall assemble their crews and promptly exit to a safe location, where the company officer will again account for all crew members. Shortly after the evacuation order, sector officers shall

begin the process of accounting for all evacuated crews. When all affected crews and crew members are accounted for, the evacuation process is complete. At this time a more specific determination as to the reality/extent of the hazard can be made and efforts initiated to re-deploy/redirect attack forces.

Building evacuation generally involves a shift from offensive to defensive as an operational strategy. In such cases, Command must develop a corresponding operational plan and must communicate that plan to all operating elements. This can be a difficult shift to complete as units are committed to positions in an offensive manner. It is extremely important that everyone gets the word that a shift in strategy has been made.

Hazards noted of a less than imminent nature should usually be handled by a consultation of Command, sector officers and/or the Safety Officer, Fire Protection Engineers, company officers or outside agency authorities. These officers or specialists should make a determination as to the nature and possible effect of the suspected hazard, and advise Command so that a more knowledgeable decision as to the proper course of action can be made.

Crews retreating from interior operations often require hoseline protection. The personal protection afforded to fire fighting personnel in such situations represents a major function of back-up lines.

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 crew members before entering the search area to develop and communicate the plan.

Individual search activities should be conducted by two or more members where possible.

Company officers must maintain an awareness of the location and function of all members within their crew during search operations.

A brief look around the floor below the fire may provide good reference for the search team, as floors in multi-story occupancies usually have a similar layout.

Whenever a search is conducted that exposes search crews to fire conditions (particularly above the fire floor) the search team should be protected as soon as possible with a charged hoseline, in order to insure a safe escape route.

If search personnel are operating without a hoseline, life lines should be used when encountering conditions of severely limited visibility.

Whenever a search is conducted that exposes search crews to fire conditions (particularly above the fire floor) the search team should be protected as soon as possible with a charged hose line, in order to insure a safe escape route.

By the Order of: _____
Fire Chief

Date: _____