ALBUQUERQUE FIRE DEPARTMENT

STANDARD OPERATING GUIDELINES

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Standard Company Operations

Purpose

The purpose of this guideline is to establish the Albuquerque Fire Department's standard company operations. Standard company operations assign fireground functions and activities to various companies based upon the capability and characteristics of each type of unit to assure safe, effective and efficient accomplishment of fireground objectives including rescue, fire control and loss control activities.

Guideline

Standard company operations reduce the amount and detail of orders required to get companies into action on the fireground, increase the confidence of company members in performing duties and raise awareness of all personnel as to the activities of other companies operating on the fireground.

Operational Guidance

I. Standard company functions

A. Engine company

1. Search, rescue and treatment
2. Initial Rapid Intervention Team (IRIT) duties
3. Stretch hoselines
4. Operate nozzles
5. Pump hoselines
6. Loss control

B. Ladder company functions

1. Search and rescue
2. Ventilation
3. Forcible entry
4. Raise ladders
5. Provide access/check fire extension

6. Utility control

7. Operate aerial master streams

8. Perform overhaul

9. Extrication

10. Loss control

11. Provide lighting

C. Rescue Company functions

1. Transportation of sick and injured to hospitals.

2. Initial Rapid Intervention Team (IRIT) duties (depending on arrival order of units)

3. Search, rescue and treatment - Rescue companies should communicate their commitment and location to Command, and maintain a retrievable status for victim treatment and transportation.

4. Utility control (gas and electric)

5. General firefighting duties as assigned by Command

D. HazMat Squad functions (Squad One and Squad Three)

1. Safety

2. Accountability

3. Rehab

E. Squad Two functions

1. Confined space rescue

2. High-angle rescue

3. Heavy vehicle extrication

4. Structural collapse

5. Trench rescue

6. Swiftwater rescue

7. Mountain rescue

8. Machinery and elevator rescue

9. Squad Two can perform the following functions if their specialty training is not required on scene

   a. Forcible entry (doors,windows,secondary egress, etc)

   b. Utility control

   c. Ventilation

   d. Search and rescue

   e. Roof operations

   f. Rapid Intervention (RIT) team

   g. Squad 2 is a specially-equipped unit that can perform all fireground functions, except fire attack (unless they pull a line from another apparatus).

II. Standard company operations

A. Provide a basic framework for the safe and effective performance of duties on the fireground and should not restrict appropriate actions taken in response to dynamic fireground conditions

B. It is the ongoing responsibility of Command to utilize available on-scene units to complete required tasks and functions (e.g., if a ladder company is on a delayed response or unavailable, Command should assign ladder functions to an engine company)

C. These guidelines should enhance the decision-making process of all officers by establishing a standard operation framework; they should in no way limit the initiative of any Company Officer, who will determine, based upon conditions, priority functions for their unit

Tactical Priorities

Purpose

Tactical priorities identify the three separate tactical functions that must be completed in order to stabilize any fire situation. This purpose of this guideline is to establish the order in which the basic fireground functions must be performed.

Guideline

All Albuquerque Fire Department Incident Commanders must fulfill the functional objectives of each defined tactical priority in their respective order. The execution of each tactical priority may require different tactical approaches, as they are viewed from command or operational perspectives. Circumstances may require the overlap or combination of tactical actions in order to achieve the desired benchmarks. Such circumstances may include the need to achieve interior tenability (with active/extensive fire control efforts) while conducting a primary search; or the need to initiate loss control operations while active fire control efforts are being extended.

Operational Guidance

I. Command considerations

A. Tactical functions should be regarded as separate, yet interrelated, activities which must be dealt with in order. Command cannot proceed to the next priority until the current functional objective has been completed, or until sufficient resources have been assigned to complete it and it is being accomplished.

B. Basic tactical priorities include rescue, fire control, and loss control.

1. Rescue includes those activities that are required to protect occupants, remove those threatened by the incident, and to treat the injured.

2. Fire control includes those activities required to stop the forward progress of the fire and to bring the fire under control.

3. Loss Control includes those activities required to stop or reduce primary or secondary loss to property, as well as to mitigate the negative psychological and emotional impact of the event on the customers.

II. Benchmarks

A. The objectives of each tactical priority are reflected at specific bench marks of completion:

1. The rescue benchmark is completion of the primary search.

2. The fire control benchmark is the halt of a fire's forward progress.

3. The loss control benchmark is the halt or reduction of primary or secondary loss to property.

B. The completion of each tactical priority will be identified through specific radio transmissions.

1. Rescue - "All Clear"

2. Fire Control - "Under Control

3. Loss Control - "Loss Stopped"

Level I and Level II Staging

Purpose

This guideline establishes the Albuquerque Fire Department approach to providing a standard system for the initial placement of responding apparatus, personnel, and equipment prior to assignment at incidents. The staging parameters are described are described as Level I and Level II Staging.

Guideline

Effective staging at complex or large-scale incidents prevents excessive apparatus congestion at the scene and allows time for Command to evaluate conditions prior to assigning later-arriving units. Staging reduces radio traffic during the critical initial stages of the incident and allows Command to formulate and implement a plan without undue confusion and pressure.

Units staged in an uncommitted location - close to the immediate operational scene - become a resource pool from which Command may draw to accomplish tactical objectives. It is the responsibility of all company officers to understand and be able to coordinate effective staging operations. All personnel should maintain an awareness of staging concepts.

Operational Guidance

I. Level I Staging

A. Level I Staging is automatically in effect for all incidents involving three or more responding companies.

1. During any multi-company response, companies should continue responding to the scene until a company reports their arrival on-scene.

2. In situations where the simultaneous arrival of first-due companies is possible, officers shall use radio communications to coordinate their activities and to eliminate confusion.

3. It will be the on-going responsibility of AFD Dispatch to confirm the arrival of the first on-scene unit.

B. Following arrival and assumption of command, the first-in company officer will announce their strategic mode (either offensive or defensive) and begin the assignment of the remainder of the dispatch.

1. Staging during the fast attack mode.

    a. In the event of a fast attack, the first-in company officer will assume command and announce that a fast attack is in progress.

    b. The second-in or next closest unit will assume an operating position on the fireground and assume command.

2. Staging in cases other than a fast attack mode.

    a. Once the first-in unit announces arrival on the scene, Level I Staging is automatically implemented by the balance of the units responding to the incident.

C. Level I Staging for fires and hazmat incidents

1. The first-arriving Engine, Ladder, & Battalion Commander will respond directly to the scene and initiate appropriate actions upon arrival.

2. All other units will stage in their direction of travel, uncommitted, approximately one block from the scene until assigned by Command in positions providing a maximum of possible tactical options with regard to access, direction of travel, or water supply.

D. Level I Staging for multi-company response to major medical emergencies.

1. For multi-company response to medical incidents, the first-arriving company will go directly to the scene and place their apparatus in a location that will provide maximum access for medical or rescue support.

2. The first-arriving rescue will go directly to the scene or where directed and park their vehicle in a manner that will allow quick and unobstructed exit for patient transportation.

3. All other companies will proceed to Level I Staging.

    a. Staged companies or units will announce their arrival and report their company designation and their staged location and direction (such as, “Engine One, South”).

b. An acknowledgment is not necessary from either the AFD Dispatch or Command.

c. Staged companies will stay off the air until orders are received from Command.

d. If it becomes apparent Command has overlooked a company in a staged position, the company officer shall contact Command and advise of their available status.

E. Staging protocols are designed to reduce unnecessary radio traffic but in no way should reduce effective communications or the initiative of officers to communicate.

1. If staged companies observe critical tactical needs, they should advise Command of such critical conditions and their actions.

F. Arrival on-scene of staff Chief Officers, Staff Division Commanders, and Captains can enhance the Command organization and incident management.

1. Unless arriving staff officers have predetermined responsibilities (such as Safety or Arson Investigation), these officers should assume a Level I Staging position.

a. Staff Officers responding to a Level I Staging area will announce their arrival on the tactical channel.

b. If Staging Sector operations have been assigned to a fireground frequency, arrival notification should be on the fireground frequency.

c. Vehicle parking at an incident can be limited. Staff officers should leave their vehicles in the Staging area, or park well off the road (such as in parking lots) to avoid restricting on-site access by fire apparatus.

II. Level II Staging

A. Level II Staging is implemented when Command desires to maintain a reserve of resources on-scene and when the need to centralize resources is required.

B. Level II Staging places all reserve resources in a central location and automatically requires the assignment of a Staging Officer.

C. Level II Staging should be implemented in the following scenarios:

1. All second-alarm or greater alarm incidents.

2. First-alarm medical or hazardous materials incidents.

3. Incidents in which Command desires to centralize resources or simply to park apparatus in a central, unobstructed location.

C. Level II Staging parameters.

1. First alarm companies that are already staged, or are en-route to Level I Staging, will stay in Level I unless otherwise directed by Command.

2. All other responding units will proceed to the Level II Staging area.

a. The Company Officer will report in-person to the Staging Officer.

b. The crew will stand by in their unit with crew intact and warning lights turned off until assigned incident site duties, or until released from the scene.

3. When activating Level II Staging, Command will give an approximate location for the Staging Area.

a. The Staging Area should be some distance away from the Command Post and the emergency scene to reduce site congestion, but close enough for prompt response to the incident site.

b. The staging area should allow staged companies to access any geographic point of the incident without delay or vehicle congestion.

4. Command should consider Level II Staging when contacting AFD Dispatch for additional resources.

a. This is functionally more effective than calling for Level II Staging while units are en-route.

b. The additional units will be dispatched by AFD Dispatch directly to the Staging Area.

5. Command or AFD Dispatch may designate a Staging Officer.

a. In the absence of such an assignment, the first company officer to arrive at the Staging Area will automatically become the Staging Officer and will notify Command on arrival.

b. The arrival notification will be made to Command on the assigned tactical channel.

c. Due to the limited number of ladder companies, a ladder officer will transfer responsibility for Staging to the first-arriving engine company officer.

d. Staging Officers will assign their company members as needed to assist with Staging operations, or assign them to another company.

6. After being given an assignment on the incident site, companies leaving staging will communicate directly with Command or their assigned sector officer for instructions.

7. Once Level II staging has been implemented, all communications involving staging will be between Staging and Command or Logistics.

a. Command will request the assignment of an appropriate radio channel for staging operations when possible.

b. Radio designation will be “Staging Sector”.

D. The staging officer will also be responsible to complete the following:

1. Locate an area of adequate size for all apparatus and advise Command and AFD Dispatch of the location, indicating access and routing as needed.

2. Coordinate with the Albuquerque Police Department to block streets, intersections, or other access required for the Staging Area.

3. Ensure that all apparatus are parked in an appropriate manner for quick exit.

4. Maintain a log of companies available in the Staging Area and inventory all specialized equipment that might be required at the scene.

5. Maintain crews in a ready state with their apparatus.

6. Provide progress reports to Command indicating the number and type of units available.

7. Assume a position that is visible and accessible to incoming and staged companies (by leaving the red lights operating on the Staging Officer's apparatus).

8. Assign staged companies to incident duty according to Command's direction.

    a. When directed by Command or Logistics, the Staging Officer will verbally assign companies to report to specific sectors, telling them where and to whom to report.

    b. Staging will then advise Command or Logistics of the specific units assigned.

    c. Command will advise each sector officer of the companies being assigned to their area.

    d. The receiving Sector Officer may then communicate directly with the company by radio.

    e. When assigned to incident site duties, companies will activate their MDT "on-scene" button.

9. The Staging Sector Officer will provide Command with periodic reports of available companies in Staging.

    a. Command should use this information to request additional resources as needed.

10. The Staging Sector Officer should organize staging in a manner that will allow apparatus to effectively move into and out of staging.

    a. Adequate space between apparatus is required.

    b. Ladder companies should be placed in one area, engines in another, and rescues in yet another area.

    c. Where only manpower or specialized equipment is needed at the scene, staging should arrange a “transport” service using a single company to deliver multiple crews or specialized equipment to the scene in order to minimize site congestion.

E. During major incidents where a Logistics Section is implemented, Staging will fall under the direction of the Logistics Officer.

    1. Command will also determine, and advise the Staging Sector Officer of the radio channel to be used for communication between Command and Staging.

F. During incidents of very large scale or complexity, Staging will be appropriately included in an expanded ICS organization.

    1. The Staging Sector officer reports to the Operations Chief.

    2. The Operations Chief may establish, move, or discontinue the use of Staging Areas.

    3. All resources within the designated Staging Areas are under the direct control of the Operations Chief and should be immediately available for assignment.

    4. Staging will request logistical support (such as food, fuel, rehab, or sanitation) from Logistics.

Fire Control

Purpose

This purpose of this document is to establish the Albuquerque Fire Department's guidelines with regard to fire control. It is the AFD standard to attempt the stabilization of fire conditions by extending an aggressive, well-placed, and adequate offensive interior fire attack, wherever possible, and to support that aggressive attack with whatever resources or actions are required to reduce fire extension and to bring the fire under control.

Guideline

The mode of attack at a structure fire must correspond to the scope and complexity of the event. To effectively control a fire, the incident needs to be addressed appropriately. This guideline provides options that the Incident Commander can use in defining either an offensive or defensive mode of attack.

Operational Guidance

I. Command size-up and strategy

A. The determination of a mode of attack will be made by the Incident Commander, and will be based on various criteria.

1. Fire extent.
2. Structural conditions.
3. Entry capability.
4. Ventilation profile.
5. Ability to rescue occupants.
6. Resources.

B. It is the responsibility of the Incident Commander to assign the appropriate strategy to control the fire event.

1. Offensive Strategy.
2. Defensive Strategy.

C. It is important that all units on the fireground are aware of the Attack Strategy.

II. Basic offensive strategy

A. There are a series of strategic steps that can be taken in an interior attack and related support that are directed toward quickly bringing the fire under control.

B. These steps are:

1. Assume Command.
2. Use the first attack line for a fast, aggressive interior attack.
3. Provide support activities (such as ventilation).
4. Perform primary search.
5. Use a second line as a backup to the first line. The backup line should be used to protect a means of egress from the structure.
6. Secure an adequate water supply.
7. Quickly evaluate success and react.

III. Basic defensive strategy

A. There are a series of strategic steps that can be taken in an exterior attack and related support that are directed toward quickly bringing the fire under control.

B. These steps are:

1. Assume Command.
2. Evaluate fire spread and prepare to “write-off” the structure as lost, or as a “no win” property.
3. Identify key tactical positions.
4. Prioritize fire streams.
5. Provide large volume, well placed streams.
6. Establish adequate water supply to flow master streams.

6. Pump adequate amounts of water.

7. Quickly determine the need for additional resources.

8. “Surround and drown” the fire.

Salvage Operations

Purpose

Salvage operations include those activities that are required to stop any direct and indirect fire damage, and to minimize the negative effects of firefighting operations. Effective salvage operations should minimize losses from water, smoke, or actual firefighting efforts. This guideline provides the Albuquerque Fire Department approach to conducting salvage operations.

Guideline

Since almost every structural fire can create the need for some form of salvage operations, they must be considered as early activities in the operational plan. Aggressive salvage operations may involve early smoke removal or the use of salvage covers to protect a building's contents, and may stop or reduce damage. It is the responsibility of Command to ensure that salvage is performed at all fires or other incidents posing potential damage to property. All operational personnel should do whatever possible to minimize the effects of fire-related losses.

Operational Guidance

I. Salvage considerations

A. Salvage operations consist of efforts aimed to minimize damage from fire, smoke, heat, water, and weather.

B. Salvage operations are undertaken with the purpose of protecting the contents of the structure.

C. Salvage should begin early and continue throughout the firefighting operations.

D. Specific issues should be considered when addressing salvage.

1. The extent and location of the fire.

a. Salvage efforts should begin in areas most severely threatened by damage. In most cases these are areas directly adjacent to or below the fire area.

b. Additional salvage activities should expand outward until all areas of potential loss are protected.

2. The type, value, and location of contents.

   a. Consideration should be given to the inherent value of contents when performing salvage operations.

   b. Business records may have high value to their owners while photos or other family mementos may have a high personal value to the property owner.

3. Recognition of existing and potential damage sources.

   a. All firefighting activities have the potential to damage property and contents.

   b. The key to successful salvage is to distinguish between excessive damage and damage that is required to successfully put out the fire.

   b. Aggressive loss control activities reduce the damage incurred during firefighting operations.

4. Timely estimate of required resources.

   a. An early request for manpower and salvage equipment can significantly reduce loss.

   b. The first company assigned to salvage should consider the size-up factors and request sufficient resources to conduct successful salvage operations.

F. Two basic concepts for property protection exist:

1. Collect and cover.

   a. When removal is not practical, contents should be grouped in the center of rooms, raised off of the floor, and covered with salvage covers to provide maximum practical protection.

2. Remove.

   a. In some cases the contents of all threatened areas can be removed to a safe location.

G. Some amount of water damage is inevitable when fighting fire, but excessive water damage can and should be avoided.

1. It is incumbent upon company officers to assess the need for early salvage operations.

2. The following example illustrates the need for salvage duties to be initiated prior to the fire being determined "Under Control."

a. If the fire is in the attic space, aggressive fire attack operations are required and it is understood that much of the ceiling will need to be removed.

b. If the IC receives communication that the fire is above the attack team, the IC can coordinate and dedicate resources to salvage operations.

c. Once the Ladder has completed the Roof Sector priorities and the Rescue has completed the primary search, these units could be reassigned to salvage duties.

H. Once the fire is “Under Control,” salvage operations need to continue.

I. Salvage operations should not create needless loss to property.

1. Salvage cover placement not only protects remaining property of value, it may also serve as a means to protect the area of fire origin for pending fire investigation.

J. Salvage operations must be given high priority when faced with large and multi-story structures.

1. The contents of many large commercial occupancies may be of more total value than the structure itself.

2. The floor below a fire may have immediate salvage concerns, specifically from water used in firefighting operations.

3. Large and multi-story buildings will likely be protected with a wet sprinkler system.

a. Ladder company personnel must be familiar with sprinkler system design and shut down procedures.

b. A misunderstanding of sprinkler system design can lead to excessive water damage, as water continues to flow from the system even after the fire is knocked down.

K. De-watering is an important element in salvage operations.

1. Use of squeegees and mops to remove excess water not only decreases property loss, but demonstrates a high level of customer service to the public.

2. Common salvage equipment includes salvage covers, brooms and squeegees.

II. Command considerations

A. The Incident Commander or the loss control officer should meet with the property owner or responsible party, to determine or identify salvage priorities.

1. The earlier this can be performed, the greater the opportunity to identify high value or high priority items or areas and establish salvage priorities.

2. In some instances, when safe to do so, the property owner or occupant may be escorted through the building by AFD personnel.

B. Salvage operations will not be conducted in areas that are subject to or potentially subject to collapse.

C. Command is responsible to ensure that personnel are wearing SCBA until atmospheric monitoring confirms that it is safe to operate without such protection.

D. The benchmark “Loss Stopped” is transmitted to the Incident Commander upon completion of loss control activities.

E. Command or the Loss Control Officer should schedule a return walkthrough by Fire Department personnel to insure post-incident damage is not occurring.

F. Arrangements must be made to collect salvage covers when the salvage covers must be left on scene.

Overhaul Operations

Purpose

Overhaul operations include those activities that are required to find and eliminate all remaining fire, control fire loss, stabilize the fire event and secure the structure. Effective overhaul operations should eliminate the potential for a rekindle. This guideline provides the Albuquerque Fire Department approach to conducting overhaul operations.

Guideline

In addition to searching for and extinguishing hidden fires, operations that should routinely be conducted during overhaul include determining the causes of the fire, recognizing arson, and obtaining data for the official report. Additional elements of effective overhaul operations should incorporate efforts toward the preservation of evidence and securing the fire scene.

Command should ensure that overhaul operations are conducted safely and should coordinate any overhaul activities with fire investigators. All operational personnel should familiarize themselves with the operational basis for overhaul operations.

Operational Guidance

I. Overhaul

A. Overhaul should begin as soon as all visible fire is extinguished.

1. Fire suppression operations often overlook small pockets of fire concealed in construction voids or hidden under debris.

2. Overhaul activity must include a thorough search of the fire scene to detect and extinguish "hot spots" before they rekindle.

B. An overhaul operational plan should be based on specific criteria.

1. Fire location.

2. Fire intensity.

3. Fire extent.

4. Type of building construction.

5. Type, amount, and distribution of contents.

C. Firefighters assigned to overhaul operations must constantly be aware of the damage being done to the structure when overhauling.

1. Damage during overhaul is necessary, but it needs to be justifiable.

2. Unnecessary damage is unacceptable.

D. Techniques and considerations to be used in assessing possible fire extension and need for overhaul include the following:

1. All firefighters have felt warm walls at structure fires. To best determine the location of fire extension in walls, firefighters should LOOK, LISTEN, AND FEEL prior to breaching the walls.

a. LOOK at the fire's area of origin, follow the fire behavior, and consider the likely fire spread based on the building's construction.

b. LISTEN for the popping and snapping sounds of burning wood.

c. FEEL every location that was exposed to heat.

d. Breach walls appropriately.

2. Firefighters should use the "15-Second / 2-Minute Rule" to determine whether a wall, that is warm to the touch, needs opening.

a. It may be holding residual heat and may cool on its own.

b. Place the back of an ungloved hand on the wall. If the hand cannot be kept against the wall for at least 15 seconds, open the wall.

c. If the hand can be left in place for 15 seconds but is still warm, return to the same spot two minutes later. If still warm and the crew's instincts are to open it, open it.

3. Any sheetrock-sheathed wall that has any smoke or heat damage has no remaining value and will be torn down and replaced once reconstruction of the property begins. When in doubt, open it.

4. The thermal imaging camera (TIC) is a useful tool to locate hot spots and determining when and where to open walls and ceilings.

5. Specific locations in a structure which should always be considered for hidden fire extension.

    a. Any floor, wall or ceiling areas with evidence of extensive charring should be examined during overhaul.

    b. Other areas to check include any openings.

        i. Wooden door jambs.

        ii. Air conditioning vents and registers.

        iii. Baseboards, door and window casings.

        iv. Around light fixtures and electrical outlets.

    c. Attic fires can present a high potential for rekindle if the insulation has been exposed to fire.

        i. Large areas can receive fire damage and can be located in difficult-to-reach areas.

        ii. In some cases, all insulation must be removed to extinguish all remnants of fire.

    d. Plenum spaces, soffits, and pipe chases also can provide a possible route for fire to spread throughout a structure.

    e. Window and door frames.

    f. All shafts and vertical voids.

    g. All horizontal voids such as attic/cockloft and truss floor systems.

6. If potential for spread to the floor above exists, first remove baseboards on the floor above the fire to determine if more wall opening is needed.

7. If charring is present, open in all directions moving outwards from the charred area until charring is no longer present.

E. Tools utilized in overhaul operations include the following:

1. Axes.

2. Bars.

3. Pike poles.

4. Thermal imaging camera.

5. Scoop shovels.

6. Salvage covers.

7. A charged line should be considered mandatory.

F. Most fireground injuries occur during overhaul. Firefighter safety provisions which must be observed during overhaul operations include the following:

1. Structural stability must be assessed prior to overhaul beginning, and must continue throughout the entire overhaul operation.

2. All utilities must be secured prior to beginning overhaul operations.

3. Full PPE and SCBA must be worn.

   a. Incomplete combustion and accompanying CO production are at their height during overhaul operations.

4. Continued use of PPV to help maintain visibility and removal of residual heat and smoke.

   a. It must be remembered, however, that overhaul is the search for remaining HIDDEN fire.

   b. If the extent of fire spread and exact fire location is not known, PPV must not be initiated.

II. Preservation of evidence

A. Companies performing overhaul should weigh the importance of preserving evidence with the desire to immediately remove debris and completely extinguish all traces of fire.

1. It may be necessary to monitor spot fires until investigators arrive on the scene.

2. Overhaul operations may be supervised by an arson investigator. In this case, priorities include preserving the scene and any evidence for subsequent investigation.

2. Do not move possible evidence, such as containers or accelerants.

a. Where circumstances prohibit this, evidence should be removed under the direction of a fire investigator.

III. Securing the fire scene

A. Securing the fire scene is also a function of overhaul operations.

1. Securing refers to those actions required to protect the structure and contents from any further loss after fire suppression companies have left the scene.

a. Ventilation holes and broken windows should be covered to reduce weather damage and to help deter vandalism.

b. Broken glass should be removed from the frames of broken windows before installing any type of covering and always prior to leaving the scene.

c. Doors and windows may need to be boarded up to prevent unauthorized entry or vandalism.

2. It additionally includes any action required to insure the safety of all persons likely to visit the incident scene.

a. Once a hazard zone is established during firefighting operations, it cannot be abandoned prior to removing or stabilizing the hazard.

b. Overhaul operations provide a means of identifying and guarding hazards that cannot be removed or stabilized.

i. Depending on the severity of the hazard, it may be necessary to secure the scene with barricades, hazard tape, or a fire watch.

IV. Command considerations

A. The Incident Commander will ensure that fire area has been thoroughly overhauled and no hidden fire remains.

1. Command will be responsible for scheduling a post-incident drive-by or walk-through inspections of the fire building to eliminate any rekindles.

B. The last Company Officer leaving the scene will be responsible for insuring total fire extinguishment.

Loss Control

Purpose

Loss control is primarily a ladder company function; however. as with other fireground operations, it may also be performed by any AFD unit operating on the fireground. This guideline defines approaches for minimizing damage and maximizing the remaining value of the owner's property while ensuring firefighter safety.

Guideline

Loss control tactics are performed in an effort to minimize property damage resulting from either fire or firefighting operations. Salvage and overhaul operations are both considered elements of loss control. Firefighters must keep in mind that fire events are an uncommon experience for most people.

Members of the public, along with their property, must be treated with the utmost respect. AFD crews must do whatever possible to minimize the effects of fire-related losses. Loss control is not glamorous work; however, there are few better opportunities for AFD to demonstrate a high level of commitment and professionalism than through loss control activities.

Operational Guidance

I. Overhaul

A. Overhaul consists of any action taken to expose hidden fire and ensure its extinguishment.

B. Overhaul should begin as soon as all visible fire is extinguished.

C. An overhaul operational plan should be based on specific criteria.

1. Fire location.

2. Fire intensity.

3. Fire extent.

4. Type of building construction.

5. Type, amount and distribution of contents.

D. Firefighters assigned to overhaul operations must constantly be aware of the damage being done to the structure when overhauling.

1. Damage during overhaul is necessary, but needs to be justifiable. Unnecessary damage is not acceptable.

E. Techniques and considerations utilized in assessing possible fire extension and need for overhaul.

1. All firefighters have felt warm walls at structure fires. To best determine the location of fire extension in walls, firefighters should LOOK, LISTEN, AND FEEL prior to breaching the walls.

   a. LOOK at the fire's area of origin, follow the fire behavior, and consider the likely fire spread based on the building's construction.

   b. LISTEN for the popping and snapping sounds of burning wood.

   c. FEEL every location that was exposed to heat.

   d. Breach walls appropriately.

2. Firefighters should use the "15-Second / 2-Minute Rule" to determine whether a wall that is warm to the touch needs opening.

   a. It may be holding residual heat and may cool on its own.

   b. Place the back of an ungloved hand on the wall. If the hand cannot be kept against the wall for at least 15 seconds, open the wall.

   c. If the hand can be left in place for 15 seconds but is still warm, return to the same spot two minutes later. If still warm and the crew's instincts are to open it, open it.

3. Any sheetrock-sheathed wall that has any smoke or heat damage has no remaining value and will be torn down and replaced once reconstruction of the property begins. When in doubt, open it.

4. The thermal imaging camera is a useful tool to locate hot spots and determining when and where to open walls and ceilings.

5. Specific locations in a structure which should always be considered for hidden fire extension.

   a. Areas around man-made openings such as electrical outlets, switches, and pipe chases.

   b. Window and door frames.

   c. All shafts and vertical voids.

   d. All horizontal voids such as attic/cockloft and truss floor systems.

6. If potential for spread to the floor above exists, first remove baseboards on the floor above the fire to determine if more wall opening is needed.

7. If charring is present, open in all directions moving outwards from the charred area until charring is no longer present.

F. Tools utilized in overhaul operations include the following:

1. Axes.

2. Bars.

3. Pike poles.

4. Thermal imaging camera.

5. Scoop shovels.

6. Salvage covers.

7. A charged line should be considered mandatory.

G. Most fireground injuries occur during overhaul. Firefighter safety provisions which must be observed during overhaul operations include the following:

1. Structural stability must be assessed prior to overhaul beginning, and must continue throughout the entire overhaul operation.

2. All utilities must be secured prior to beginning overhaul operations.

3. Full PPE and SCBA must be worn.

a. Incomplete combustion and accompanying CO production are at their height during overhaul operations.

4. Continued use of PPV to help maintain visibility and removal of residual heat and smoke.

a. It must be remembered, however, that overhaul is the search for remaining HIDDEN fire.

b. If the extent of fire spread and exact fire location is not known, PPV must not be initiated.

H. Overhaul operations may be supervised by an arson investigator. In this case, priorities include preserving the scene and any evidence for subsequent investigation.

1. Do not move possible evidence, such as containers or accelerants.

II. Salvage

A. Salvage operations consist of efforts aimed to minimize damage from fire, smoke, heat, water, and weather.

B. Salvage operations are undertaken with the purpose of protecting the contents of the structure.

C. Salvage should begin early and continue throughout the firefighting operations.

D. Two basic concepts for property protection exist:

1. Collect and cover.

a. Contents should be gathered and covered for protection.

2. Remove.

a. Contents should be removed from the interior or to another location, if feasible.

E. Some amount of water damage is inevitable when fighting fire, but excessive water damage should and can be avoided.

1. It is incumbent upon company officers to assess the need for early salvage operations.

2. The following example illustrates the need for salvage duties to be initiated PRIOR to the fire being determined "Under Control."

a. If the fire is in the attic space, aggressive fire attack operations are required and it is understood that much of the ceiling will need to be removed.

b. If the IC receives communication that the fire is above the attack team, the IC can coordinate and dedicate resources to salvage operations.

c. Once the Ladder has completed the Roof Sector priorities and the Rescue has completed the primary search, these units could be reassigned to salvage duties.

F. Once the fire is “Under Control,” salvage operations need to continue.

G. Overhaul should not create needless loss to property.

1. Salvage cover placement not only protects remaining property of value, it may also serve as a means to protect the area of fire origin for pending fire investigation.

H. Salvage operations must be given high priority when faced with large and multi-story structures.

1. The contents of many large commercial occupancies may be of more total value than the structure itself.

2. The floor below a fire may have immediate salvage concerns.

3. Large and multi-story buildings will likely be protected with a wet sprinkler system.

a. Ladder company personnel must be familiar with sprinkler system design and shut down procedures.

b. A misunderstanding of sprinkler system design can lead to excessive water damage, as water continues to flow from the system even after the fire is knocked down.

I. De-watering is an important element in salvage operations.

1. Use of squeegees and mops to remove excess water not only decreases property loss, but demonstrates a high level of customer service to the public.

III. Communication considerations

A. The benchmark “Loss Stopped” is transmitted to the Incident Commander upon completion of loss control activities.

Roof Operations and Ventilation

Purpose

Vertical ventilation requires firefighters to operate in a very dangerous area location, above the fire. Extreme caution must be observed at all times. The purpose of this guideline is to identify the responsibilities and objectives of companies assigned to roof operations, and to define safe and effective ventilation practices.

Guideline

Vertical ventilation performed by companies assigned to roof operations is often required to allow the escape of heated air, fire gases, smoke, and other products of combustion. Doing so will allow interior crews to complete fire control and rescue activities. Early ventilation is often critical to the safety of firefighters and to the survivability of fire victims. Effective ventilation reduces the chance of flashover and backdraft hazards.

Operational Guidance

I. Ventilation objectives

A. Vertical ventilation, as close to directly over the fire as possible, is the most effective form of ventilation for fighting interior fires. The objective is to alter interior conditions.

1. If the fire self-vents by burning through the roof, it will generally do so in the best location (directly over the fire).

2. If vent holes are cut in the wrong places, the fire will naturally be channeled to them possibly increasing hazards to interior crews and occupants, and increasing damage and loss.

3. Existing openings such as skylights, roof hatches and doors can be used to accomplish ventilation without cutting the roof.

B. The best operating position to determine if a building requires ventilation and the location and timing of that ventilation is the interior division.

C. Interior and roof forces must communicate via portable radio in order to coordinate the fire control effort effectively.

D. For optimal results, ventilation should be completed before attack hoselines are advanced into the fire structure.

II. Roof safety

A. Roof Sector responsibilities will be assigned to company or chief officers who must be on the roof to supervise crews.

B. Roof Sector crews must enter the roof from an established safe area and must always have a secondary means to escape the roof, or to access safe refuge on an unexposed and structurally sound roof surface.

1. Ladder trucks and ground ladders should be strategically placed to allow safe access to the roof, emergency exit from the roof, and tactical positions that would permit effective defensive operations if needed.

2. Roof ladders shall be used for operations on any roof where slopes present a problem or crews cannot effectively operate aerial ladders or aerial platform appliances.

C. The first personnel reaching the roof must quickly evaluate the degree and extent to which the roof may be damaged.

1. The roof must be confirmed as structurally sound before committing personnel above the fire.

2. Firefighters working on the roof must continually assess the structural integrity of the roof.

a. Attention must be paid to any hazards (such as concentrated loads, including heavy heating or cooling units), especially if fire conditions change or worsen.

3. Time and fire conditions will be constantly working to weaken the roof.

4. Effective roof ventilation will tend to keep roofs intact longer.

5. If ladder crews cannot get on the roof to ventilate because of advanced fire conditions, Command must consider switching to a marginal offensive or to a defensive strategy.

a. It is always better to abandon the building a bit too soon rather than a bit too late.

D. The Roof Sector will be responsible for obtaining its own protective hose line as needed.

1. Roof lines will be operated only for the purpose of protecting personnel and external exposures, unless Command orders a coordinated roof attack.

E. Hoselines (especially aerial or master streams) should not be operated into ventilation holes.

F. All Roof Sector personnel should wear full (PPE) protective clothing and SCBA (with facepiece) when operating above a fire.

G. Minimal tools to bring to the roof include the following:

1. Pick axe.

2. Pike pole.

3. Radio

4. Saws with the proper blade for the job.

H. The Roof Sector must monitor the radio at all times.

1. Radio contact must be monitored over the noise of saws.

2. When providing using portable radios during high noise operations, the radio should be shielded from the noise, by mass or space.

a. Minimize background noise by stepping a short distance away, only if it is safe to do so to.

I. All crewmembers operating on-scene should be aware of wind direction and should communicate any observations of changes to the Roof Sector.

III. Roof operations

A. Command should establish a Roof Sector during offensive fire operations to evaluate roof conditions and to complete roof ventilation.

B. The initial Roof Sector Officer must report to Command the following conditions:

1. Roof design and construction (such as flat, peaked, bowstring, or other).

2. Structural conditions.

3. Fire conditions or effects of the fire on the roof's integrity.

4. Locations of fire walls.

5. Locations of heavy objects that are affected by fire conditions.

6. A ventilation plan.

C. Roof Sector operations include specific actions.

1. Determining a safe working surface.

2. Cutting adequate size ventilation hole(s) and achieving effective ventilation.

a. A rule of thumb to consider is to make ventilation hole(s) of at least 10% (of the total roof surface) over the involved area.

b. In some cases, more than one hole will be required.

i. Crews must move from the first hole towards safer areas with each consecutive ventilation hole.

ii Additional holes consume time and crews must constantly evaluate the structural stability with changing conditions over time.

3. Coordinating roof ventilation with positive pressure ventilation.

a. The Roof Sector must advise Command when ventilation holes are completed and the effect that ventilation has on the fire.

b. Command must closely coordinate positive pressure ventilation when it is being used in conjunction with roof ventilation.

c. Positive pressure should not be utilized until an exhaust exit can be established on the fire floor (horizontal) or until roof ventilation is completed.

5. Coordinating roof fire control operations as directed by Command.

6. Maintaining roof-top monitoring of roof structure and fire conditions.

7. Getting off of the roof, as soon as possible, after ventilation objectives have been accomplished.

Purpose

This purpose of this guideline is to identify the tactical use of positive pressure ventilation during structural fire operations. It also defines other techniques for use of ventilation equipment.

Guideline

Companies are equipped with high volume positive pressure fans. Since most offensive fire operations qualify for early application of positive pressure ventilation (PPV), Command should order PPV, where appropriate, early in the operation. Ladder companies should expect to apply PPV, and crews should dismount their apparatus planning to take fans to the fire scene.

Operational Guidance

I. PPV benefits

A. Positive pressure ventilation has many benefits to fire operations.

B. Among these benefits are the following:

1. Rapid removal of heat and smoke from the building.

   a. Leads to a reduction of the fire's ability to propagate and advance.

2. Improvement in tenability of the fire building's atmosphere.

   a. Increases the likelihood of patient survival.

3. Rapid removal of smoke.

   a. Improves firefighters' ability to conduct search and rescue operations and effective loss control operations.

4. Improvement of atmosphere and visibility.

   a. Leads to increased ability of firefighters to conduct attack and extinguishment operations.

5. Improvement of atmosphere leading to a reduction of firefighter heat stress.

6. Reduction of loss caused by smoke and fire damage to the structure.

7. Reduction of the need for and risk of roof ventilation at many fires.

II. Fan placement

A. Positive pressure fans should be placed at the point(s) of entry, on the unburned side of the fire building, 12 to 15 feet back from the opening (to create a pressure seal of air current around the door).

B. Fan placement should not obstruct any access or egress.

C. Where additional fans are required, placing two or more fans in “tandem” at separate entrances is more effective than in “relay,” or one behind the other.

III. Tactical considerations

A. Positive pressure ventilation is effective only when applied properly.

B. Three major elements are required for effective ventilation.

1. “Exits” for the pressurized air must be provided and must be located in the fire area.

   a. These are generally windows, doors or other openings.

   b. Larger openings are preferable.

2. Positive pressure ventilation must be injected from the unburned side of the fire.

3. PPV must be closely coordinated with the Interior/Attack Sector.

C. It will be the ventilation group officer’s responsibility to ensure that these three requirements are completed prior to injecting positive pressure into the structure.

IV. Controlling air flow

A. PPV air flow must be controlled throughout the operation. Too many openings or exit points may reduce the effectiveness of PPV.

1. In some cases, windows and doors that are already open may need to be closed to direct the air flow into the fire area, or the most densely affected smoke area.

B. As one area is cleared of smoke, that area may need to be sealed off and another exit created (in another area of the structure) to direct the air flow into the next area needing to be cleared.

1. Coordination of this work is essential.

2. Ladder company officers or Ventilation Group officers will be responsible for coordinating this effort.

V. Attic fires

A. Attic fires are especially vulnerable to pressure and ventilation factors.

B. Isolated attic fires can benefit from PPV.

1. During the initial attack, fire crews should use small openings in the ceiling for water application.

a. This will prevent the clear environment below the ceiling from rapidly filling with smoke.

2. Moving from one room to another and “punching” the nozzle through the ceiling and using a fog application is very effective.

3. The use of penetrating nozzles is also recommended.

a. Loss control measures should be initiated simultaneously with a fire attack.

4. An “exit” for PPV in the attic must be in place. Most roofs or attics have pre-existing vents, typically at the end of the attic space in a vertical wall. These are often adequate for a ventilation “exit.”

5. Some structures may have a “sealed” attic space with no in-place vent openings. In this case, opening a vertical wall on one end of the attic or cutting a vent hole in the roof may be required.

    a. If pre-existing vents are too small, they may need to be enlarged. Once PPV is in place, large sections of the ceiling can be pulled.

    b. PPV will keep the environment below the ceiling clear. Salvage covers or black plastic should be applied first before ceiling is pulled.

6. In occupancies with a common attic space, PPV must be used with caution.

    a. If used improperly it is possible to spread the fire.

    b. Consider vertical ventilation in conjunction with PPV.

VI. PPV use at multi-story or highrise events

A. Greater coordination and additional fans are required when utilizing positive pressure ventilation tactics at multi-story or highrise fires.

1. Stairwells should be used to direct air flow from PPV. A stairwell should be selected specifically for such use.

2. An air flow exit, in the fire area (such as a window), should be selected as a first choice.

    a. In some situations, a stairwell on the opposite side of the fire area can be used.

    b. An exit for the exhaust must be obtained; roof doors are appropriate.

3. Multiple fans may be required. Two or more fans may be needed at the base of the building.

    a. Additional fans may be needed on landings at various levels in the stairwell.

    b. A fan will be needed at the entry to the fire floor.

4. Positive pressure ventilation in multi-story and highrise structures is complex.

    a. A Ventilation Group should be established to coordinate all aspects of PPV on all floors.

VII. Use of PPV for exposure control

A. In some cases, PPV can be used for exposure control. This is most effective with common attics (such as strip malls or apartment complexes) or where separating walls may have been breached (as with plumbing penetrations or cracks).

B. The objective is to introduce PPV ahead of a moving fire and force it back into the fire area. An exit point (for products of combustion) in the fire area is needed in most cases.

1. For exposure control, the fans(s) would be placed at an entry point in the most severe exposure first.

2. If a heavy smoke condition exists, it may be beneficial to create a temporary opening (such as a door) to allow an exit for the pressure and smoke.

3. Once the smoke has cleared, the exit should be closed, with the building sealed, so that it will “over pressurize” the exposure.

    a. An opening in the ceiling will be required to pressurize the attic area.

    b. Over-pressurized air will force hot gases back across the breaches, or back down common attic spaces towards the fire area.

    c. This can prevent fire spread extension.

4. The second most critical exposure would then receive PPV in a similar manner.

    a. The next priority would be the fire occupancy.

VIII. Use of PPV in large buildings

A. Buildings with areas of large square footage may require multiple fans, perhaps at more than one location to effectively remove smoke.

1. These situations are more complex and require close coordination of PPV with all sector officers.

B. Command should consider a Ventilation Group to coordinate all ventilation operations in large buildings.

IX. Precautions

A. Positive pressure ventilation can create problems if not effectively managed, monitored, and coordinated.

B. Be aware of the problems listed below and take appropriate precautions.

1. An exit (for the flow of heated air, gases and products of combustion) must be available in the burned area, or the fire may be pushed into the unburned portion of the fire structure.

2. Because of positive pressure, a “blow torch” effect of fire blowing far out of the exit may occur.

a. This fire behavior is normal and predictable; adjacent exposures may need protection.

3. Do not direct a fire stream into an operating PPV exit point.

4. All concealed spaces need to be checked for fire extension.

5. Ladder company officers and/or Division/Group officers will be responsible for monitoring and coordinating the application of PPV.

6. Gas-powered fans produce carbon monoxide, so breathing apparatus may be required when PPV is used during overhaul operations.

Ladder Company Ventilation

Purpose

The purpose of this guideline is to provide an overview of ventilation advantages and tactics. While ventilation is typically considered a Ladder Company operation, it is routinely performed by other units operating on-scene; because the ladder company may be needed for tasks involving their specialized equipment, or because the ladders often arrive later on scene then other units.

Since all Albuquerque Fire Department engine companies carry positive pressure fans, ventilation efforts can be accomplished by any unit on-scene when ordered and should not be considered the sole responsibility of ladder crews.

Guideline

Ventilation is the process of removing heat, smoke, and fire gases from a building and replacing those products of combustion with fresh air. When employed in conjunction with fire control efforts, ventilation allows crews to make rapid entry into a fire building to save lives, extinguish the fire, and achieve fireground objectives.

Removing products of combustion by ventilation provides better visibility, allowing victims and the seat of the fire to be located more quickly and easily. Ventilation reduces the amount of heat stress that firefighters endure when effecting a search or conducting an interior attack. Ventilation also improves the chances of victim survivability by lowering interior temperatures and introducing fresh air.

Operational Guidance

I. Ventilation size-up considerations

A. Is ventilation necessary?

B. Are there any victims that can be saved?

1. Where are the victims located?

C. How old is the building and what type of construction is it?

D. Where is the fire and how far has it extended?

E. What type of ventilation is required?

F. If considering vertical ventilation, what type is the roof?

II. Natural ventilation versus mechanical ventilation

A. The fire service uses both natural and mechanical ventilation to achieve ventilation.

B. Natural ventilation depends on convection currents, wind, and other natural air movements to allow atmospheric contaminants to flow out of the structure.

1. This method of venting is used when quick ventilation is needed (such as in a rescue situation).

2. Natural ventilation may be limited in effectiveness by wind speed and wind direction.

C. Mechanical ventilation aids natural ventilation by using one of three mechanical means.

1. Positive-pressure ventilation.

a. Positive-pressure ventilation (PPV) is the preferred method of ventilation.

b. PPV uses powerful fans to force fresh air into the structure.

c. PPV can be rapidly deployed by one firefighter.

d. Because every ladder and engine company has them on their apparatus, PPV can be incorporated early into the operational plan.

i. Example: The first-in engine driver can place the positive pressure fan at the attack entrance while firefighters are stretching hose lines.

2. Negative-pressure ventilation.

a. Negative-pressure ventilation requires the use of smoke ejectors which are only carried on ladder trucks.

b. Smoke ejectors draw heat, smoke, and fire gases out of the building - creating a negative pressure which draws fresh air in the building.

c. Negative pressure ventilation has disadvantages.

i. Awkward positioning of equipment.

ii. Requirement of a power source.

iii. Poor air flow control.

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3. Hydraulic pressure ventilation.

a. Hydraulic ventilation requires a hoseline with a broken stream or fog pattern to create a pressure difference in front of and behind the nozzle.

b. The stream should be pointed out a window or door, and can be very effective.

III. Horizontal and vertical ventilation tactics

A. Horizontal ventilation can be accomplished by opening doors and windows to direct air flow (using either natural and mechanical currents).

B. Vertical ventilation usually requires that crews open roofs and floors to allow convection currents to move the smoke and fire gases out of the building.

1. Vertical ventilation efforts can employ the use of PPV, or other mechanical methods, or it can rely on natural air flow (including the chimney effect).

2. Consider using existing roof openings (such as skylights) as alternatives to cutting through roofs.

Water Supply and Fire Stream Management

Purpose

This document provides guidance to Company and Command Officers in determining water supply needs and selecting the most effective hose line size.

Guideline

Adequate water supply during fire attack operations has a critical impact on fire control outcomes. A good water supply and adequate Gallons Per Minute (GPM) flows from attack lines result in good outcomes. Delayed or limited water supply and inadequate GPM flow lead to delayed fire control, increased risk to firefighters and victims, and greater fire loss. The use of excessive amounts of water and leaking couplings or nozzles may increase loss inside the structure.

Operational Guidance

I. Hydrant water supply

A. First-in engine companies approaching the scene with any evidence of a working fire in a structure should lay their own 5” supply line. This supply line allows a number different options. The 5” supply may also be dropped at the hydrant and secured with the hydrant strap while the engine proceeds to the scene.

B. Exceptions include: obvious critical rescue requiring a full crew, unclear where actual fire location is in multi-unit building complex, etc.

C. When choosing a water supply, choose the best method to supply enough water to effectively utilize apparatus (consider combination of primary and secondary attack lines, or a master stream) and extinguish the fire. A well-laid 5-inch supply line offers a vast array of options.

II. Firestream options

A. Engine mounted master streams

1. Characteristics include: very large GPM flows (500 to 1,000 GPM), quick operation, improved reach and penetration.

2. A solid bore tip offers greater reach and penetration with a more intact stream than a fog nozzle that is set on straight stream.

3. Should be considered for structures that are well involved, beyond rapid reach of attack lines, for exposure protection and in situations that pose an unusual safety risk to firefighters.

4. Engine mounted master streams may be detached and used as a portable monitor. This may provide better reach and placement. These have 2 ½ and 5" supply inlets.

B. Attack hoselines

1. Choose an attack hoseline adequate to provide enough GPM flow to overcome the volume of fire being produced, or adequate flow to effectively cool and protect exposures.

a. 1 3/4" attack line can be used for most small fires (i.e., one or two rooms in a residential fire.

b. 1 ¾" attack line can be used when maneuvering in tight quarters is required. The 1 ¾ " preconnect has it's limitations. Namely it's decreasing effectiveness beyond 250ft of hoseline.

c. 2 1/2" attack lines are appropriate for a larger volume of fire. You may use the ADULTS acronym. A- advanced fire, D- defensive, U- unknown location, L- Large undivided area, T- tons of water, S- sprinkler or standpipe. The 2 ½ " line should be reserved for attack or backup operations.

d. The Blitz attack, 150ft of 2 ½ ' hoseline with a vindicator tip offers 300- 350 GPMS. This may also be used in situations where the ADULTS acronym may be applied (this line is present on all frontline engines within AFD).

2. Attack lines must be ready and in place before forcible entry is initiated to fully protect the safety of attack crews.

III. Basic attack hoseline placement

A. Offensive attack mode

1. Attack hoselines capable of adequate volume should be advanced inside the fire building in order to put water on the fire and to control access to halls, stairways, or other vertical and horizontal channels through which people and fire may travel.

2. The first stream should be placed between the fire and persons endangered by it

3. When no life is endangered, the first stream should be placed between the fire and the most severe exposure or unburned areas so as to confine the fire to the smallest possible area.

4. A backup hoseline should protect interior crews and provide a way out of the structure (always bear in mind the presence of crews operating in opposing positions) The backup line should be equal to or greater than the size of the initial attack line. This may be an adequate use of the Blitz attack line, 2 ½".

5. Additional hoselines should cover other critical areas or back up in place hoselines.

6. Whenever possible, crews should position hoselines in a manner and direction that supports rescue activities, begins confinement, protects exposures, and controls loss.

B. Offensive operations to defensive operations

1. Pull handlines out of the fire building only if safe to do so.

2. Do not delay exit from the building for the sake of salvaging a few feet of hose and a nozzle if conditions are deteriorating rapidly unless the line is needed for crew protection during exit operations.

3. Once offensive operations shift to a defensive mode, Command must prioritize handline operations and choose which handlines will be shut down to provide adequate water supply for master streams.

IV. Firestream characteristics and considerations

A. Choose the most effective nozzle and stream for the task:

1. Solid/straight streams - Greater penetration, reach and striking power with less steam conversion.

2. Fog - Increased heat absorption/expansion with shorter reach. Most effective in confined spaces (indirect attacks).

B. Choose the proper sized attack hoseline/master stream:

1. 1 3/4" hoselines - Fast, mobile, volume @ 175 GPM.

2. 2 1/2" hoselines - Slow/difficult to move, volume @ 250 GPM.

3. Engine mounted master streams - Fast, great reach and penetration, large volume @ 500 to 1000 GPM (Portable monitors).

4. Elevated master stream - Mostly stationary, slower to set up, maximum water, 500 to 1000 GPM. Note: L13 is able to supply a total of 2000 GPM.

V. Fire attack effectiveness

A. Offensive attack activities must be highly mobile to be most effective. As mobility is reduced, attack activities become more defensive in nature.

B. An offensive attack mode should achieve an effect on the fire quickly. Contingency plans should be developed quickly in the event it does not.

C. If water is applied to the fire in an offensive attack position and the fire does not go out, react and consider:

1. Backing it up or redeploying hoseline to another position (consider more water and /or more ventilation or change tactics).

2. Focusing on what direction the fire is likely taking and puting crews in position ahead of the fire.

D. Beware of hoselines that have been operated in the same place for lengthy periods of time.

1. Fire conditions change during the course of fire operations (most things will only burn for a limited time) Always be aware of potential collapse and rapid change in interior conditions.

2. The effectiveness of any hoseline must be continually evaluated.

3. If the operation of such lines becomes ineffective, move, adjust, or redeploy them.

E. Beware of the limitations of operating nozzles through holes such as breached walls, floors, etc. The mobility of such streams is limited and it is generally difficult to evaluate their effectiveness.

F. Basement fires

1. When utilizing crews with handlines to enter basement fires, crews should not open nozzles until they can see and/or are near the fire

2. Straight streams should be used in basement fires. Consider using 2 ½ " handlines for below grade fires. The volume and intensity will most likely necessitate this.

3. Fog streams should never be used when operating in basement fires as steam production will be extensive and the risk of steam burns is significant.

G. Interior attacks

1. Extreme caution should be taken with interior and exterior attacks in the same building

a. Command must closely coordinate exterior streams (particularly aerial master streams and engine mounted master streams) if attack crews are committed to inside operations

b. Command will pull crews out of the building before an exterior master stream knockdown is initiated

H. Aerial master streams

1. Aerial master streams are particularly effective on large open-type fires or when operated from underneath the roofline (example: taxpayer fire). Aerial master streams are versatile, and maneuverable.

2. Typically deploying an aerial master stream indicates the overall strategy has shifted from offensive to defensive operations and the structure (or a portion of the structure) has been written off

3. Aerial master streams may be used offensively. The stream may be brought to the ground level when the volume of fire exceeds the capability of handlines. The stream may be directed at the ceiling level to halt further fire spread. Interior crews must be pulled before operation of Master streams.

4. Ground crews should be warned that aerial master streams are to be imminently deployed before the streams go into operation.

5. Consider establishing collapse zones and defensive positions when the potential for master stream operation exist. When master streams go up, the tendency is that buildings come down.

6. Applying water to the outside of a roof is not an effective method of fire extinguishment.

   a. Applying water to the outside of a roof may offer effective exposure protection

   b. An intact roof will shed water and prevent water from reaching the seat of the fire

   c. An aerial master stream should be operated above the roof when the threat of extension to exposures higher than the fire building exist.

7. Never direct aerial master streams down ventilation holes during offensive operations as ventilation efforts may be compromised and interior attack crews may be seriously endangered.

8. Continuing operation of large volume master streams can prevent entry and complete extinguishment of the fire. Consider shutting down nozzles periodically to reassess fire conditions.

9. Operating fire streams into smoke is not effective. Fire location must be determined for effective application of firestreams.

VI. Command considerations

A. Company Officers and Division/Group Officers must maintain active responsibility for the effectiveness of firestreams being deployed.

B. Officers must be aware of where firestreams are being directed and whether they are effective.

C. Company officers must continually be aware of current operations and of any potential adjustments or improvements which might increase firestream effectiveness (e.g., nozzle diameter adjustment or nozzle tip reduction).

D. Company Officers must keep Division/Group Officers or Command informed of firestream effectiveness.

Fireground Hydraulics

Purpose

The purpose of this document is to provide a guideline for personnel on fireground hydraulics and applications as endorsed by the Albuquerque Fire Department. It also provides hydraulic calculations as practiced by the Albuquerque Fire Department.

Guideline

Apparatus drivers must possess a clear understanding of Engine Company operations and possess knowledge of firestreams, nozzles, fire pump theory, pump operations and hydraulics. Familiarity with the capabilities and limitations of the apparatus and its components makes a professional and effective Driver.

Without a thorough knowledge of how and why the pump and its components work, a Driver may not be capable of effectively troubleshooting when problems arise. All Drivers must be capable of safely and quickly supplying adequate firestreams and sustaining a dependable water supply on the fireground.

Operational Guidance

I. Fire streams

A. A fire stream is a stream of water or other extinguishing agent after it leaves a fire hose and nozzle until it reaches the desired point.

1. As a fire stream passes through space, it is influenced by specific factors.

   a. Velocity.

   b. Gravity.

   c. Wind .

   d. Friction with air.

2. The condition of the stream as it leaves the nozzle is influenced by specific factors.

   a. Operating pressure.

   b. Nozzle design.

   c. Nozzle adjustment .

d. Condition of the nozzle orifice.

3. Choice of nozzle determines the type of fire stream.

a. Drivers must be familiar with the different types of nozzles carried on their apparatus.

b. Each type of nozzle has its own required flow rate and discharge pressure which effect values utilized in hydraulic calculations.

c. A Driver must understand the capabilities of each nozzle in order to choose the correct nozzle for a particular evolution.

II. Fire hose nozzles and flow rates

A. The fire service utilizes three basic types of fire streams.

1. Solid.

2. Fog.

3. Broken.

B. Nozzles have been developed for each type of stream. It is important to emphasize that no nozzle is capable of delivering any other stream than the one for which it was designed.

1. Solid stream nozzles.

a. A solid stream is a fire stream produced from a fixed orifice, smooth bore nozzle. The solid stream nozzle is designed to produce a stream as compact as possible with little shower or spray. A solid stream has greater penetration and as a result may be able to reach areas that other streams might not be able to reach.

b. Solid streams may be used on handlines, deck guns, portable monitors or aerial master streams.

c. The velocity of the stream (nozzle pressure) and the size of the discharge opening determine the flow from a solid stream nozzle.

d. Solid stream nozzle pressures.

i. Handlines - 50 psi (flowing up to 350 GPM).

ii. Master streams - 80 psi (flowing 350 GPM or more).

e. Solid stream nozzle discharges are calculated using the following formula and values.

i. $GPM = 29.7 \times D^2 \times \sqrt{NP}$.

ii. GPM = discharge in gallons per minute.
29.7 = a constant.
D^2 = diameter of the orifice in inches, squared.
$\sqrt{NP}$ = square root of the nozzle pressure.

iii. Using this formula, it is possible to determine water flow from any solid stream nozzle when the nozzle pressure and tip diameter are known.

f. Handline solid tip nozzles should be supplied with a maximum of 50 psi nozzle pressure (exceeding 50 psi compromises safety).

g. The following table lists the solid stream tip sizes used on AFD handlines and their discharge rates (GPM) at 50 psi nozzle pressure. These discharge rates can be rounded to simplify hydraulic calculations. See Table 1.

Table 1		
Handlines		
Solid tip orifice size	Discharge rate at 50 psi nozzle pressure	Value used for fireground calculations
1”	209 GPM	200
1 1/8”	265 GPM	250
1 ¼”	326 GPM	325

h. Solid stream nozzles for master stream appliances should be supplied with 80 PSI nozzle pressure. Using 80 PSI nozzle pressure for all master stream appliances with solid stream nozzles will greatly simplify pump operations and will not be a detriment to fire stream performance.

i. The following table indicates master stream solid tip sizes that are found on AFD master stream appliances and their discharge rates (in GPM) at 80 PSI nozzle pressure. These discharge rates can be rounded to simplify hydraulic calculations. See Table 2.

Table 2		
Solid Stream Master Streams		
Solid tip orifice size	Discharge rate at 90 PSI nozzle pressure	Value used for fireground calculations
1 3/8”	502 GPM	500
1 ½”	598 GPM	600
1 ¾”	814 GPM	800
2”	1,063 GPM	1,000

2. Fog nozzles.

a. Fog nozzles should be supplied with 100 PSI nozzle pressure.

i. While automatic nozzles can usually provide adequate stream patterns with less nozzle pressure, flows are dramatically reduced and crew safety may be compromised. For this reason, AFD fog nozzles will be supplied with 100 PSI nozzle pressure (unless otherwise noted by the manufacturer of the nozzle).

ii. Some nozzles will have labels that indicate pressures required for specific flows. Most of the fog nozzles carried by AFD are constant pressure, variable gallonage (automatic) nozzles.

b. The fog nozzles shown on Table 3 are some of the ones used at AFD.

Table 3		
Selected Fog Nozzles Used at AFD		
Fog Nozzle	GPM Range	Standard Use
SM20F	60-200	1 ¾" preconnects
SM20FG	60-200	1 ¾" preconnect
SM30F	75-325	2 ½" handlines
SM30FG	75-325	2 ½" handlines
Akromatic 2000	500-2,000	aerial platform and ladder master streams

3. Broken stream nozzles are not required by NFPA 1901 to be on engine companies

   a. Various broken stream nozzles are found on AFD units.

      i. Cellar nozzle.

      ii. Piercing nozzle.

      iii. Chimney nozzle.

   b. Due to the variety of broken stream nozzles in use in the department, Drivers must refer to the manufacturer's operating nozzle pressures for that specific nozzle. Nozzle pressures may range from but not limited to 100-150 psi.

4. Vindicator nozzles.

   a. Vindicator nozzle characteristics.

      i. The Vindicator satisfies the requirements of both a high rate of application and a broken stream for high heat absorption.

      ii. The Vindicator offers higher flow rates than found with either a spray nozzle or a solid stream nozzle, while doing so at less nozzle pressure, with increased mobility and safety, and with less steam generation.

iii. Because it is an aspirated water stream it has the advantage of being able to remove heat from the combustion zone to slow the reactions. This is an advantage not found in either the solid stream or the combination nozzle.

iv. The Vindicator has a higher surface-area-to-volume ratio due to the coupling of high application rate (GPM) and its effective aspiration. Therefore, it has better heat-transfer characteristics than solid stream nozzles and, consequently, is more effective in absorbing heat.

b. Because the application rate is coupled with a high surface-area type stream, it is unnecessary to break up the stream by deflecting it off hard surfaces such as bulkheads and overheads as required with a solid nozzle.

c. A dependable water supply must be established when using the Vindicator nozzle as it flows a significant amount of GPM at relatively low pressures.

d. Table 4 is a list of Vindicator nozzles that may be found on AFD units (flow indicator is stamped inside tip).

Table 4

Vindicator Nozzles Used at AFD

Vindicator Nozzle	GPM Range	Standard Use	Capable Of
Heavy Attack	175-250	1 ¾" pre-connects	250 GPM at 50 psi NP through 1 ¾" hose
Blitz Attack	250-500	2 ½" rear pre-connect	325 GPM at 50 psi NP through 2 ½" hose
Master Attack	675-1000	master streams	1000 GPM at 85 psi NP for monitors

III. Nozzle pressure and reaction

A. The psi needed to produce adequate flow through the nozzle is known as NOZZLE PRESSURE (NP). Nozzles used at AFD require one of five nozzle pressures (fog nozzle manufacturers may indicate a specific nozzle pressure). Table 5 shows nozzle pressure for AFD nozzles.

Table 5	
Nozzle Pressures for AFD Nozzles	
Nozzle	Nozzle Pressure
Solid tip handline	50 psi
Solid tip master stream	80 psil
Vindicator handline	50 psil
Vindicator master stream	85 psi
All fogs	100 psi

B. As water is discharged from a nozzle at a given pressure, a force pushes back on the firefighters handling the hoseline. This counter force is known as Nozzle Reaction (NR)

1. Nozzle reaction clearly illustrates Newton's Third Law of Motion, which states that for every action there is an equal and opposite reaction.

   a. The greater the nozzle discharge pressure and GPM, the greater the resulting nozzle reaction.

   b. It is the resulting nozzle reaction to a given pressure that forces us to limit the amount of nozzle pressure that can be supplied to an attack line.

2. Firefighters can be seriously injured and fire attacks greatly hampered by nozzles violently whipping around from excess nozzle reaction.

3. Determining the nozzle reaction from a given hose layout is certainly not necessary on every fire scene.

4. Calculating nozzle reaction is useful when specifying hose and nozzle configurations for preconnected attack lines on an apparatus. The following equations help determine whether it is realistic for the given number of crew members to handle the hose lay that is being proposed.

a. Calculating nozzle reaction for solid stream nozzles.

i. NR = 1.57 x D² x NP.

ii. 1.57 = A constant.

D² = Nozzle diameter in inches – squared.

NP = Nozzle pressure in psi.

iii. Example: Find nozzle reaction on a hoseline equipped with a 1 ¼" solid tip operating at a nozzle pressure of 50 psi

NR = $(1.57)(d^2)(NP)$.

NR = $(1.57)(1.25)^2(NP)$.

NR = (1.57)(1.56)(50).

NR = 122.5 pounds.

b. Calculating nozzle reaction for fog nozzles.

i. NR = 0.0505 x Q x √NP.

ii. 0.0505 = A constant.

Q = Total flow through the nozzle in GPM.

√NP = Square root of the nozzle pressure.

iii. Example: Find the nozzle reaction on a hoseline with a fog nozzle flowing 200 GPM at 100 psi

NR = (0.0505)(Q)(√NP).

NR = (0.0505)(200)(√100).

NR = (0.0505)(200)(10).

NR = 101 pounds.

IV. Theoretical pressure calculations

A. A Driver's prime objective is to provide fire suppression crews with the water flow and pressure needed to achieve efficient fire control and/or extinguishment. Drivers rarely, if ever, perform the calculations contained in this section while on the fireground.

B n the fireground Drivers are more likely to use the methods described in the next section, "Fireground Calculations." Drivers should be able to complete theoretical calculations for the following reasons

1. To better understand the basis for "Fire Ground Calculations"

2. To calculate accurate pump discharge pressures for preconnected hose lines and common hose lays used on their apparatus (prior to ever being dispatched to a fire)

3. To use the knowledge as a tool when pre-planning incidents at structures requiring unusual hose lays

C. Pump Discharge Pressure (PDP) is the actual velocity pressure (measured in psi) of the water as it leaves the pump and enters the hoseline.

1. To produce effective fire streams and to accurately calculate Pump Discharge Pressure, it is necessary to know the amount of friction loss in the fire hose and any pressure loss or gain due to appliances and elevation.

2. To calculate the PDP, add the nozzle pressure of the nozzle in use, the friction loss in the hose, the pressure loss in the appliance (if applicable) and the elevation pressure loss or gain (if applicable).

a. PDP = NP + FL + AP +/- EL.

C. Friction Loss (FL) is the loss of pressure created by the turbulence of water moving against the interior walls of the hose or pipe.

1. The four Principles of Friction Loss.

a. All conditions being the same, friction loss is more if the hose is longer.

b. If the hose is the same size and velocity is increased, friction loss increases much more quickly.

c. The bigger the inside diameter of the hose, the less friction loss.

d. The bigger the hose, the less velocity it takes to flow (feet per second).

2. To accurately calculate Friction Loss you must determine the size and length of the hose as well as the amount of water flowing through it. The primary determinant when calculating friction loss remains the volume of water flowing per minute.

3. There is a formula to find friction loss in fire hose of any size.

a. $FL=CQ^2L$.

b. FL = Friction loss in psi.

C = Friction loss coefficient (different for each size hose).

Q = Flow rate in hundreds of GPM (flow/100).

L = Hose length in hundreds of feet (length/100).

c. Coefficients used to calculate hose line friction loss are shown in Table 6.

Table 6	
Coefficients used to calculate hose line friction loss	
1 ¾" hose (100')	15.5
2 ½" hose (100')	2
5" hose (100')	.08

4. AFD Drivers must know the following information about various hoselines

a. 1 ¾" hose

i. The coefficient used to calculate friction loss for 1 ¾" hose with 1 ½" couplings is 15.5 (per 100' section).

ii. Friction loss for 1 ¾" hose (at various GPM flows) is shown in Table 7.

Table 7	
1 ¾" hose friction loss per 100'	
100 GPM	15.5 psi
150 GPM	35 psi
200 GPM	62 psi
250 GPM	97 psi

iii. Max operating pressure for 1 ¾" hose is 300 psi.

iv. A dry 50' section of 1 ¾" hose weighs 18 lbs and a charged 50' section of 1 ¾" hose weighs 68 lbs and contains approximately 6 gallons of water.

v. 1 ¾" preconnects rarely require fireground hydraulic calculations because the length of hose is constant, and the nozzle selection is constant. If GPM was predetermined, the pump discharge pressure could be determined before we leave the station.

Example for calculating friction loss for 1 ¾" hose.

125 GPM flowing through a 100' section of 1 ¾" hose would have how much friction loss?

$FL=CQ^2L$

C = 15.5 (coefficient for 1 ¾" hose).

Q = 1.25

$Q^2 = Q \times Q = 1.25 \times 1.25 = 1.5625$

$CQ^2 = 15.5 \times 1.5625 = 24.21875$

FL=24

125 GPM flowing through a 100' section of 1 ¾" hose would have 24 psi of friction loss.

b. 2 ½" hose.

i. The coefficient used to calculate friction loss for 2 ½" hose with 2 ½" couplings is 2 (per 100' section).

ii. Friction loss for 2 1/2" hose (at various GPM flows) is shown in Table 8.

Table 8	
2 ½" hose friction loss per 100'	
150 GPM	5 psi
200 GPM	8 psi
250 GPM	13 psi
300 GPM	18 psi
325 GPM	21 psi

iii. Max operating pressure for 2 ½" hose is 300 psi.

iv. A dry 50' section of 2 ½" hose weighs 25 lbs and a charged 50' section of 2 ½" hose weighs 125 lbs and contains approximately 12 gallons of water.

v. Calculations for 2 ½" preconnects should be predetermined.

vi. When supplying a 2 ½" handline that is not the rear preconnect, keep an accurate count of how many sections of hose is being pulled off the hosebed (as well as what nozzle/tip size is being used).

Example for calculating friction loss for 2 ½" hose.

300 GPM flowing through a 100' section of 2 ½" hose would have how much friction loss?

$FL=CQ^2L$

C = 2 (coefficient for 2 ½" hose)

Q = 3

$Q^2 = Q \times Q = 3 \times 3 = 9$

$CQ^2 = 2 \times 9 = 18$

FL=18

300 GPM flowing through a 100' section of 2 ½" hose would have 18 psi of friction loss.

c. 5" hose.

i. The coefficient used to calculate friction loss for 5" hose is .08 (per 100' section).

ii. Friction loss for 5" hose (at various GPM flows is shown in Table 9).

Table 9	
5" hose friction loss per 100'	
750 GPM	5 psi
1,000 GPM	8 psi
1,250 GPM	13 psi
2,000 GPM	32 psi

iii. Max operating pressure for 5" hose is 185 psi.

iv. A dry 100' section of 5" hose weighs 105 lbs and a charged 100' section of 5" hose weighs 900 lbs and contains approximately 95 gallons of water

v. Example for calculating friction loss for 5" hose.

1,500 GPM flowing through a 100' section of 5" hose would have how much friction loss?

$FL=CQ^2L$

C = .08 (coefficient for 5" hose)

Q = 15

$Q^2 = Q \times Q = 15 \times 15 = 225$

$CQ^2 = .08 \times 225 = 18$

FL = 18

1,500 GPM flowing through a 100' section of 5" hose would have 18 psi of friction loss.

D. Fire ground operations often require the use of appliances which then must be factored into hydraulic calculations (Appliance-AP). Appliances are categorized as hoseline appliances or master stream appliances.

1. Hoseline appliances.

a. Reducers, increasers, gates, wyes, any siamese or manifolds are all hoseline appliances.

b. 10 psi friction loss must be added for each hoseline appliance if the total water flowing through it is greater than 350 GPM (i.e., master streams).

c. Flows less than 350 GPM through a hoseline appliance do not require any additional friction loss.

d. Special potential circumstance regarding flowing water to aerial master streams.

i. All AFD Aerial Apparatus have LDH inlets to supply the aerial master stream.

ii. Not all AFD Engines have a LDH discharge to supply the aerial device and may have to use multiple 2 1/2”hose lines to supply the aerial master stream.

ii. If a gated siamese (multiple 2 ½” inlets into a 5” storz) is attached to the LDH inlet of the aerial apparatus, you must account for this FL as well.

2. Master stream appliance.

a Any device that supplies a heavy, large-caliber water stream, such as an apparatus-mounted deck gun, portable monitor mounted on ground in appropriate stand, or aerial master stream nozzle mounted to an aerial device.

b. 15 psi friction loss must be added for each master stream appliance.

E. Elevation Pressure (EP) refers to the additional pressure needed to move water vertically, as to upper floors of a multi-story building, or to an objective up a significant incline.

1. Water that must be lifted requires an additional 0.434 psi per foot lifted. This is rounded to 0.5 psi per foot for calculation purposes.

2. When water is pumped to the upper floors of a multistory building, 5 psi is added for every floor above the first floor

3. If water is being pumped to a lower elevation, 0.5 psi per foot or 5 psi per floor must be subtracted.

F. The use of Multiple Supply Lines requires a friction loss consideration which can be calculated using one of two approaches.

1. Method #1: Calculate the fiction loss for the total GPM as if it were flowing through one hoseline. Then divide that friction loss by the number of hoselines squared. Divide the FL by 4 if two lines are used, 9 if three lines are used or 16 if four lines are used.

2. Method #2: Divide the total GPM by the number of hose lines. This will tell you the GPM flowing in each hose line. Then calculate the friction loss for an individual hose line.

G. When supplying Wyed Hoselines.

1. Calculations must account for the nozzle pressure and friction loss in all hoselines past the appliance, 10 psi FL (if flowing over 350 GPM) for the hoseline appliance and the friction loss of the supply hoseline.

2. When calculating the supply, add the total handline flows together to determine the GPM flowing through the supply line.

3. When determining the PDP, add the highest pressure hoseline, appliance and the supply hoseline together.

H. Standpipe operations to prevent over-pressurizing standpipe systems and keep nozzle flows (and reaction) to safe levels while providing sufficient water for operations include the following steps.

1. Establish an adequate water supply (5” hose).

2. Connect a minimum of two 2 ½” hoselines to the Fire Department Connection (FDC), keeping the hoselines as short as possible in order to reduce friction loss.

3. Ensure firefighters have closed additional outlets on other floors, have connected lines, and are ready for water on the appropriate floor.

4. Charge system to 100 psi + 5 psi per floor above the first floor.

5. Communicate with Company Officer on the fire floor to determine pressure changes.

6. Example.

Fire is on the fifth floor. What is the PDP?

PDP = 100 psi + (5psi x 4)

PDP = 100 psi + 20 psi

PDP = 120 psi

I. Sprinkler systems are supplied according to the following parameters.

1. One of the first arriving engines should supply the sprinkler system as soon as possible. This engine will NOT supply any other attack lines.

2. The following are the steps for supplying a sprinkler system.

a. Establish an adequate water supply (5" hose).

b. Connect a minimum of two 2 ½" hoselines to the Fire Department Connection (FDC), keeping the hoselines as short as possible to reduce friction loss.

c. Ensure all necessary control valves are open (OS&Y, PIV, WIV).

d. Upon orders from the Incident Commander, charge the sprinkler system maintaining a PDP of 150 psi.

i. 150 psi gives the sprinkler system the maximum rated capacity of the engine's pump.

ii. Newly-installed sprinkler systems are tested to 200 psi, but pumping the system at this pressure or higher may cause significant damage.

V. Fireground calculations

A. These vary from the formulas and calculations presented as "Theoretical Pressure Calculations." The sense of urgency and excitement present on the emergency scene seldom allow these types of calculations in the field. The following methods are used on the fireground to quickly determine friction loss and PDP.

B. Tools.

1. Flowmeters are mechanical devices installed in a discharge line that senses the amount of water flowing and provides readout in GPM.

2. Hydraulic calculators include a manual, mechanical or electronic device used to determine the friction loss for hoselines.

3. Pump charts are laminated sheets referencing the required PDP for various pre-connected hoselines for a specific apparatus.

B. Methods.

1. 1 ¾" Hose Quick Method to determine the FL in a 100' section.

a. This method requires memorizing the friction loss in a 100' section of 1 ¾" hose flowing various GPM. All of the numbers are rounded to simplify calculations on the fireground. See Table 10.

Table 10	
Fireground Calculation Values for 1 ¾" hose friction loss per 100'	
100 GPM	15 psi
125 GPM	25 psi
150 GPM	35 psi
175 GPM	45 psi
200 GPM	65 psi
250 GPM	100 psi

2. The 2 ½" Hand Method is a quick way to determine the friction loss in a 100' section of 2 ½" hose. This method is very accurate and can be written on the glove for reference.

   a. Starting with the numbers of the left hand, as illustrated in Figure 1.0, each finger is numbered at the base in terms of hundreds of GPM. Returning to the thumb, and again moving from the left to the right, the tip of each finger is given a successive even number, beginning with two.

   b. The friction loss for 100' of 2 ½" hose can be determined by selecting the finger to which the desired flow has been assigned, and multiplying the number at the tip of the finger by the first digit at the base of the finger.

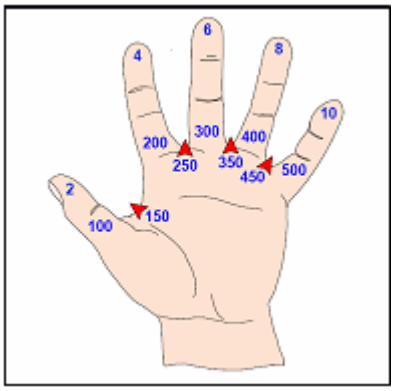
   c. Example.

      To determine the friction loss for 100' of 2 ½" hose flowing 300 GPM. Using the numbers assigned to the middle finger, use only the first digit ("3" in this case) and multiply by the number at the tip ("6"). See figure 1.

      FL = 3 x 6

      FL =18 psi per 100' section of 2 ½" flowing 300 GPM.

Figure 1.



VI. Hydrant capacity and fire flow pump capacity

A. Both are standards established by the NFPA.

B. NFPA pump requirements are shown in Table 11.

Table 11	
Pressure of	Percentage of Rated Capacity
150 psi	100%
200 psi	70%
250 psi	50%

C. Example:

A 1,250 GPM pump should be capable of flowing 1,250 GPM at 150 psi, 875 GPM at 200 psi and 625 GPM at 250 psi.

D. A fire pump must produce its capacity while drafting from a static water source.

E. If the engine company is connected to a strong hydrant, the intake pressure from that hydrant can be added to the net pump pressure.

F. Pumping more than 250 psi can be very dangerous for the pump and other components, and should be avoided at all times.

G. Hydrant Capacity is calculated by finding the difference between static pressure and residual pressures and indicates how much more water the hydrant can supply.

1. Hydrant capacity.

a. When an engine is connected to a hydrant and is not flowing water, the pressure shown on the intake gauge is the static pressure.

b. When the engine company is flowing water, the intake gauge reading is the residual pressure.

c. The difference between these two pressures is used to determine how much more water the hydrant can supply.

2. There are times when an engine company may have sufficient pressure and flow from a hydrant to supply additional water.

   a. This additional water not being used by the first engine may either be used to supply additional lines, if needed, or shared (dual-pumping) with another engine company on the fireground.

   b. Knowing how much water a hydrant can flow is critical when large amounts of water are needed and hydrants are not plentiful on the fire scene. Without this information time will be wasted deploying additional lines that the engine company may not be capable of supplying.

3. AFD uses two methods to determine hydrant capacity.

   a. The 1st Digit Method.

      i. Establish an adequate water supply (5" hose).

      ii. Find the difference in psi between the static and residual pressures.

      iii. Multiply the first digit of the static pressure by 1, 2, or 3 to determine how many additional lines of equal flow may be added, as explained in Table 12.

Table 12

Change in psi	Number of Additional Lines of Equal Flow which may be Added
Equal or less than the first digit of the static pressure multiplied by "1"	Three additional lines
Equal or less than the first digit of the static pressure multiplied by "2"	Two additional lines
Equal or less than the first digit of the static pressure multiplied by "3"	One additional line

iv. Example:

An engine is supplying one hoseline flowing 250 GPM.

Static pressure was 65 psi.

Residual pressure is 58 psi.

Difference in psi = static pressure - residual pressure.

Difference in psi = 65 – 58.

Difference in psi = 7.

Multiply the 1st Digit of the Static pressure x 1, 2 or 3 (whichever value is equal to or greater than the difference in psi).

6 x 1 = 6 (not greater than 7).

6 x 2 = 12 (greater than 7) indicating two more lines @ 250 GPM can be added without compromising the water supply.

b. Percentage method.

i. Establish an adequate water supply (5” hose).

ii. Find the difference in psi between the static and residual pressures (static pressure - residual static) and multiply by 100.

0 - 10% = 3 times the total GPM.

11 - 15% = 2 times the total GPM.

16 - 25% = 1 time the total GPM.

iii. Example:

An engine is supplying two hoselines flowing a total of 500 GPM. Static pressure was 60 psi. Residual pressure is 45 psi.

(60 - 45⁄60) x 100

(15⁄60) 100

(.25) 100 = 25%

An additional 1 time the total GPM can be flowed.

c. These methods may provide slightly different answers to the same problem. None of these methods provide precise answers under a full range of conditions. In each case, the answers provided by these methods provide reliable enough figures to use in fireground applications.

H. The National Fire Academy (NFA) formula for calculating Fire Flow is a quick and easy method to determine the amount of water needed to mitigate a structure fire, presuming a direct attack. The NFA fire flow formula utilizes the estimated square footage of a structure.

1. Formula.

a. NF = A/3.

b. NF = needed flow in GPM.

A = area of structure in square feet (length x width).

3 = a constant .

c. If only a portion of the structure is involved with fire divide the NF by the involved percentage of the structure.

d. Example:

A structure (60' x 50') is ½ involved with fire. What is the needed flow (NF)?

(60' x 50') = 3,000 sq. ft. structure.

3,000 sq. ft. divided by a constant (3) = 1,000.

1,000 divided by the % involved with fire (1/2).

NF = 500 GPM.

Rapid Intervention Team

Purpose

This purpose of this guideline is to define the roles and responsibilities of Albuquerque Fire Department Rapid Intervention Team (RIT) members. The objective of a RIT is to have a fully equipped rescue team on-site, in a ready state (equipment staged), to immediately react and respond to rescue injured or trapped firefighters or civilians.

Guideline

The Albuquerque Fire Department often responds to incidents that present a high risk to firefighter safety. It is the direction of the Albuquerque Fire Department to meet the requirements for and the operation of Rapid Intervention Teams (RITs).

The appropriate practice of these guidelines increases firefighter safety at emergency incidents by providing for firefighter rescue at the outset of an incident. A RIT shall be in-place before a fire team enters an unknown atmosphere, or one that is potentially or actually immediately dangerous to life and health (IDLH). This guideline integrates with provisions that are already in effect, such as the requirement for a back-up rescue team for hazardous materials entry.

Operational Guidance

I. Command considerations

A. These guidelines will be implemented at all “working” structure fires that are beyond the incipient stage, as well as other incidents where fire department members are subject to hazards that would be immediately dangerous to life and/or health (IDLH) in the event of an equipment failure, sudden change of conditions, or other unforeseen mishap.

1. Examples of special hazards may include, but are not limited to the following examples:

a. “Working” fire operations.

b. Hazardous materials incidents - any condition that is immediately dangerous to life and health (IDLH), potentially IDLH, or is an otherwise unknown atmosphere.

c. Trench rescue.

d. Confined space rescue.

e. Any other incident having significant – actual or potential – risk.

B. An Initial Rapid Intervention Team (IRIT) is a temporary two-person RIT assigned at the outset of an incident to allow crews to enter an IDLH, potential IDLH or unknown atmosphere.

1. It is the priority of the Incident Commander is to upgrade the IRIT to full RIT as soon as is practically possible.

2. One IRIT member must be solely dedicated to tracking interior personnel. This person's function is to account for and initiate a firefighter rescue.

a. Portable radio, PPE and SCBA are mandatory.

3. The second member of the two-person IRIT is permitted to take on other roles, such as incident commander, safety officer, or equipment operator.

a. A portable radio is required.

b. PPE and SCBA should be donned as soon as possible.

II. Standard implementation initial RIT

A. An initial RIT may be used when the first-arriving company officer is directing an interior attack on a working fire (with a nozzle person), and working under a mobile command mode. In such cases, the hydrant person will assume the primary RIT position and the pump operator will assume the secondary RIT position. This will allow for an interior attack if the second-due company has a delayed response.

III. Standard exceptions to RIT requirements

A. Some exceptions may be made to RIT requirements at structure fires when specific conditions exist.

1. When there is a life hazard where immediate action could prevent the loss of a life.

2. When the fire is in an incipient stage that could be controlled with a portable fire extinguisher, and without the need for PPE.

IV. Dispatch and implementation

A. If the initially responding company declares a "working" fire in their size-up, AFD Dispatch will dispatch an additional engine company to serve as a RIT.

B. The Incident Commander will designate which engine company has RIT responsibilities based on the needs of the incident.

1. The assigned RIT unit will acknowledge their arrival via radio, such as "RIT (Unit ID) on scene".

2, The RIT should stage on-scene in a location to maximize their options and await instruction from the Incident Commander.

3. During major operations, RITs will normally be assigned near the Command Post. A minimum of one four-person company will be required.

C. The Incident Commander may assign more than one company if deemed necessary. Operations of a large or more complex nature may call for multiple RITs to standby at different entry points.

D. After the dispatch of a RIT company, the Incident Commander has specific options available.

1. Assign the company to RIT duties at the scene and be designated "firefighter rescue group."

2. Cancel the in-coming company after the fire has been declared "under control," and Personnel Accountability Reports (PAR) have been obtained from all crews.

3. Assign the in-company company to other duties, such as relief for working crews.

4. If the in-coming company is assigned to anything other than RIT duties, an additional company must be requested by the Incident Commander, or assembled from available resources, to serve as a RIT unit.

V. Deployment

A. All RIT members will assume a ready state, including the use of full protective clothing and SCBA.

1. For incidents other than structural fires, the protective clothing and equipment will be appropriate for the hazards.

2. The RIT company officer will closely monitor both the dispatch and assigned tactical radio channels at all times.

B. Upon arrival at the incident, the RIT officer will report to the Command Post for a face-to-face briefing with the Incident Commander.

1. The RIT officer must size-up the incident and maintain an accurate tactical worksheet of the position of all working companies.

2. Appropriate rescue tools, including SCBA, will be staged at the RIT location -- based on the RIT officer's size-up of the incident.

C. In some cases, the RIT may need to conduct a reconnaissance to maintain awareness of working companies.

1. The team must be able to react immediately to sudden emergency events at the incident site. In all cases, the RIT must have the ability to rapidly deploy.

2. In some situations, protective hoselines and ground ladders may need to be pre-deployed.

D. In the event of a lost or trapped firefighter (or other emergency), AFD Dispatch will immediately be advised with a "May Day" declaration. AFD Dispatch will repeat the "May Day" over the air, dispatch an additional full alarm, and advise all responding units of the situation. Whenever a RIT is deployed it should be replaced as soon as possible to back up the crews involved in the rescue operation.

E. If RIT crew units are needed to respond to a sudden emergency in which the division/group officer is incapacitated, the RIT team officer will assume division/group responsibilities for the area in which the emergency exists.

1. Additional resources will be requested and sent to the rescue area as the emergency dictates.

2. An additional alarm may be requested if the need dictates.

F. If a previously assigned company is not needed as a RIT, the Incident Commander may assign this company as a relief unit, but not until it is certain that all crews are out of danger and a full PAR has been obtained.

VI. High-rise fires

A. For high-rise fires, RITs will be assigned to standby positions in the "resource division" location, or other appropriate locations. A secondary standby location may be in the "lobby division" location.

VII. RIT commitment to the rescue of a lost or trapped firefighter

A. Upon a report of a lost or trapped firefighter, the Incident Commander should deploy the RIT(s) to the last reported location of the lost/trapped firefighter(s).

B. The RIT should take an additional SCBA (from either a ladder truck or squad unit) for each firefighter reported to be lost/trapped.

C. The RIT company officer may be assigned a "firefighter rescue group" designation.

1. Appropriate rescue equipment and crews must be quickly assembled and organized.

2. The RIT Officer should utilize the RIT checklist to help organize and focus the team.

VIII. RIT checklist

A. Size-up

1. Building Dimensions (length X width X height).

2. Building occupancy.

3. Building construction type.

a. Wood frame.

b. Heavy timber.

c. Ordinary construction.

d. Noncombustible.

e. Fire resistive.

f. Placement of windows, doors, fire escapes, porches, etc.

g. Potential danger of high security doors barred windows building modifications.

B. Tactics

1. Offensive, defensive, offensive-to-defensive.

2. Command operations.

a. Check tactical worksheet and/or Command board.

b. Check accountability (PAR).

c. Communications/Incident Command.

d. Ladders and ladder company operations.

e. Fireground time versus progress.

C. Other operations

1. Contact Rehab Officer / assess condition of firefighters.

2. Contact Safety Officer and share information.

3. Relocate or add another RIT.

4. Assess the potential for collapse and identify a collapse area.

5. Plan for EMS for the RIT.

D. Equipment should be staged based on construction types.

1. Suggested equipment for wood frame/heavy timber/ordinary construction.

a. Pickhead axes and pike poles.

b. Circular saws fitted with blades for cutting wood.

c. Chain saws.

2. Suggested equipment for noncombustible/fire resistive construction.

a. Halligan bars.

b. Sledgehammers.

c. Circular saws fitted with blades for cutting metal.

d. Torch(es).

3. Suggested equipment for all events.

a. Search ropes.

b. Extra SCBA.

c. Charged hoseline.

d. Ground ladder(s).

Lost or Trapped Firefighter

Purpose

The nature of firefighting places the firefighter at risk of becoming lost or trapped. The toxic environment of a fire provides only a narrow window of survivability for a lost or trapped firefighter. Survival depends on a mix of predictable self-survival actions by the lost firefighter and a sequence of actions directed by the Incident Commander. This guideline identifies individual, company and Command level activities for the search and rescue of a lost or trapped firefighters.

Guideline

The rescue of trapped or lost firefighters in a burning building is especially time sensitive. There is a very narrow “window of survivability” for a firefighter who is out of SCBA-supplied air, or is trapped by approaching fire. The following are basic guidelines for firefighters to follow if they become lost or trapped in a fire to increase their chances of survival.

Operational Guidance

Rescue needs generally fall into two categories. Either the firefighter (or firefighters) is trapped by a collapse or lost in a smoke filled and burning building. The most significant problem and difference between the two categories is that the search area can be substantially larger for a lost firefighter than that encountered in a collapse situation.

On the other hand, a collapse presents a major extrication situation. In some cases, lost or trapped firefighters may be able to radio to Command that they are lost and in need of rescue, prior to being incapacitated when the SCBA goes empty. Other problems may include: a possible secondary collapse, separated and scattered crews and confusion of the last known location of the crew (or member).

I. Command considerations

A. “May-Day” will be used by lost or trapped firefighters to report their status as being in trouble and needing rescue. Any member may use “May-Day” to report a lost firefighter.

1. Any report of “May-Day” will receive priority radio traffic. The term “May-Day” will be reserved *only* to report lost or trapped firefighters.

2. The term “Emergency Traffic” will be used to report other emergencies.

B. The Incident Commander must always assume that the missing firefighter is lost or trapped in the building until the firefighter is accounted for. Rapid, concise decisions and actions must be taken to increase survivability. The following is a list of actions to be taken by Command for a reported missing or trapped firefighter. These are guidelines and do not necessarily need to be accomplished in the order listed. The first five (5) must be accomplished very rapidly.

1. Immediately upon a report of a missing or trapped firefighter "Emergency Traffic" will be sounded to alert all personnel working on the fireground of the situation.

2. The incident Commander must restructure the plan to include a high priority firefighter rescue effort. A rapid, well thought out, rescue plan must be developed and the command organization expanded. The plan and objectives must be communicated to other Command staff and Sector Officers for implementation.

3. At least one additional alarm should be immediately requested including a medical component. Additional multiple alarms may be requested based on circumstances and potential. Level two staging should be implemented. Early consideration should be given to heavy equipment resources and Heavy Technical Rescue (HTR) assistance in structural collapses.

4. A Personnel Accountability Report (PAR) must be immediately requested from all companies operating on the fireground. This is especially important in situations of structural collapse. Command cannot develop an effective rescue plan until accurate information is available on the number of missing firefighters, their identify, their last reported work area, and which companies are affected.

5. Command should immediately send the rapid intervention team (RIT) to the most appropriate location to initiate search and rescue efforts (typically the last reported work area). The RIT will be designated as "Rescue Sector" and coordinate activities at that location. Any additional available resources in staging may also be committed to rescue efforts.

6. Command will immediately send the rapid intervention team(s) (RIT) to the most appropriate location to initiate search and rescue efforts (typically the last reported work area).

a. The RIT will be designated as “Rescue Sector” and coordinate activities at that location. Additional available resources in staging may also be committed to rescue efforts.

7. In some situations, such as collapse, crew members can get separated. The only practical method to obtain an accurate roll call for a PAR may be to withdraw crews to the exterior. Withdrawal is a judgment call based on circumstances at the time, information available, and resources. It may not be practical or possible to do. However, the absolute need for an accurate roll call (PAR) and information on missing firefighters remains a critical priority.

8. Abandoning firefighting positions during the rescue effort should be avoided. Command and crews should take aggressive measures to protect trapped or missing firefighters from the effects of the fire. Efforts should be concentrated on reinforcing existing positions and keeping the fire out of the rescue area and providing appropriate ventilation and lighting. In some situations it may be appropriate to write off some areas of the building in order to relocate companies and crews to better protect the rescue effort.

9. A Command Officer should be assigned to direct the Rescue Sector and rescue operations. Depending on the size of the rescue area and the complexity of operations, more than one Command Officer may be needed to fill additional support positions or sectors. The Sector Officer will assign specific areas or grids of the building to each rescue team (company) to conduct searches before entering the building. Search efforts must be closely coordinated between Sectors and Command must be kept informed.

10. Rescue operations are high risk, and the operation may be taking place in a postcollapse environment or one in which a flashover may have occurred. A Safety Sector in the affected area will help control the risk taking.

a. A Safety Sector must be implemented, with a Command Officer assuming this Sector as soon as possible.

b. Other Safety Sector responsibilities will be to conduct an assessment of the hazards, thus, allowing time for the Rescue Sector Officer to concentrate on the critical rescue effort.

11. With additional resources en-route, along with the critical rescue needs, the Command organization must expand ahead of the demand. The incident may eventually escalate to a Branch level operation. The Incident Commander must be proactive and aggressive in developing and expanding the Command organization.

12. Additional Chief/Command Officers will be needed to fill key Sectors and Command team positions. Command should special call additional Command Officers, and initiate a call back of off-duty Command Officers, as needed.

13. The Incident Commander must have treatment personnel in a position to immediately treat any rescued firefighters. A Transportation Sector must also be in place and coordinating activities with the Treatment Sector Officer.

14. All doors in the immediate area should be unlocked or forced open, and at least the immediate interior area quickly searched. In most cases the doors should be left open to provide an emergency escape route, unless doing so will have negative effects on the fire fight. In all cases, the doors must remain unlocked.

15. Reducing smoke conditions, through effective ventilation, improves the air quality for any victims, and will enhance search and rescue capabilities through increased visibility of the interior. Both vertical and positive pressure ventilation should be aggressively employed. Early fighting of the operation (both interior and exterior) needs to be included.

16. The Incident Commander must insure that a complete, coordinated and controlled search is conducted. Close coordination of all search efforts is a must in order to eliminate duplicate searches that waste time. All areas must be thoroughly searched.

17. Each rescue (RIT) team should enter the building with an additional SCBA for each reported lost/trapped firefighter. Missing firefighters may have exhausted their SCBA air supply or may be trapped and cannot be quickly extricated. In each case, the firefighter must be provided “clean” air to increase survivability.

18. Heavy Technical Rescue Teams (HTR) and other specialized equipment should be requested at all structural collapses that have trapped firefighters.

    a. Due to the high risk nature of rescue operations, Command must establish another RIT to protect rescue crews. The RIT should stand-by at a location near the rescue operation. More than one RIT may be needed.

19. All personnel must watch the structural stability of the building throughout the rescue effort. Where a structural collapse has occurred, or the fire (or other event) has compromised the structural integrity of the building, a structural engineer affiliated with the New Mexico, Urban Search and Rescue Taskforce-1 should be called in to evaluate the structure. Heavy Technical Rescue taskforce (HTR) personnel may be called upon to assist with shoring the rescue area, or for the use of other specialized equipment.

20. Strong supervision and control will be required by all officers. Emotions will be very high. Firefighters in this situation will tend to want to free lance or take higher risk.

    a. Treatment personnel will need to be restricted to only those needed. Crowd control of our own non-essential personnel may be required.

    b. Command will need to direct the control of news media early-on, and throughout the incident. Information on the identities and conditions of lost firefighters must be restricted until after next of kin are notified. Media film crews should be restricted to areas that are safe and at a distance that will prevent visual/facial identification of any victims.

21. A Welfare Sector or Branch will need to be established early. This will aid in notification of next of kin and allow Command to stay ahead of the media identification. Chief officers should be assigned to direct this Sector/Branch. Additional Chief or Staff Officers will be needed to fill subordinate positions within the Sector or Branch.

22. Command must ensure that Dispatch monitors all radio channels. Should a lost firefighter declare emergency on a channel other than the fireground tactical channel, Command must be immediately directed to the lost firefighters channel for direct communications.

II. General search considerations

A. When searching for a lost firefighter, rescue crews should keep in mind the following considerations.

1. Visible sighting of trapped firefighters such as arms or legs.

2. Knowledge of their last known location.

3. The sound of the PASS device's audible tones.

4. Shouts for help from the collapsed area.

5. The sound of tapping or other noises.

6. Sounds of portable radio broadcast in the collapse area.

7. Breathing or moaning sounds.

8. The sound of SCBA audible alarms sounding.

9. Radio requests for help from portable radios from within the collapse area.

10. Tracing attack hoselines into the collapse area.

11. Tracing of life lines into the area.

12. Evidence of building structures or locations that were described by lost firefighters.

13. Flashlight beams.

14. Location of ladders, fans, lights, or other equipment being used by missing firefighters.

B. The following actions should be performed during any search for lost or trapped firefighters.

1. Open or unlock all doors.

2. Search the immediate area of doorways first.

3. Search hallways before interior rooms.

4. Search exterior walls (interior sides) before searching interior spaces.

5. Search large interior spaces in a detailed grid pattern.

6. Ensure that all areas are searched.

7. Take one SCBA for each lost firefighter in the search area.

8. Use life lines when searching “off hoseline” to ensure the safety of rescuers.

III. Fireground considerations

A. All crews on the fireground must have a portable radio.

B. Minimum crew size is two and crews must remain together.

C. Crews must have an assignment and must be working under the direct supervision of a Company Officer, Division or Group Officer or Command.

D, Individual firefighters must not delay reporting to Command if they become lost, trapped or in need of assistance.

E. Company officers must also not delay the reporting of lost firefighters or inability to complete accountability reports.

F. Command and Division or Group Officers must always assume that the missing firefighter is lost in the building until the lost firefighter can be accounted for and must immediately restructure the fireground action plan to include a priority rescue effort.

G. A May Day radio transmission will be used by a lost or trapped firefighter to report their status as being in trouble and needing rescue. Any member may use May Day to report a lost firefighter. Any report of May Day will receive priority radio traffic.

H. The term “May Day” will be reserved only to report lost or trapped firefighters. The term “Emergency Traffic” will be used to report other emergencies.

IV. Basic self-survival responsibilities for lost or trapped firefighters.

A. Firefighters who find themselves lost or trapped must immediately use "May Day" to announce their situation while they continue to attempt to find their way out.

1. Firefighters should not delay notification of distress. Notifications should occur as soon as the firefighter recognizes they are in trouble. Delay significantly compromises the window of survivability.

2. Lost firefighters should give Command the following information:

a. Who they are.

b. How many firefighters are with them.

c. What sector they were operating in/what their assignment is.

d. Where they think they are as accurately as possible.

e. Description of building structures surrounding them.

f. Sounds of nearby activities (e.g., ventilation saw noise).

g. Any other information that might direct rescue crews (RIT) to their location.

B. If a lost firefighter cannot contact Command, Dispatch, or other units on the tactical channel assigned to the incident, the firefighter should switch channels and declare a May Day until the transmission is acknowledged. Dispatch Channel 1 is preferred.

C. A lost firefighter must manually activate their Personal Alert Safety System (PASS) device to sound the audible tone as soon as they recognize they are lost or trapped.

1. The device must remain on until rescued.

2. Only if the device interferes with the lost firefighters communicating critical radio messages to Incident Commander or rescuers may the device may be turned off temporarily. Once messages are completed, the device must again be manually activated.

D. Firefighters lost together are to stay together.

1. Crew members who become lost together and then separate from each other make it difficult for rescuers to find all firefighters.

2. Crewmembers who become lost and stay intact as a crew enhance their chances for all being rescued and allow easier, more efficient rescues.

E. Lost firefighters must stay in contact with the hoseline and make every effort to follow the hoseline (or lifeline, if being used) out of the building.

1. The female side of the couplings always leads toward the nozzle and the fire.

2. The male side of the couplings always leads toward the pump and outside.

3. The hoseline should always be treated as a safety line to the outside.

4. Where lifeline ropes are in use, follow the lifeline to the exterior.

F. A lost firefighter should always attempt to get out of the building by whatever means possible.

1. Primary means of egress include doors or windows.

2. If doors or windows are not available, a lost firefighter should next attempt to reach an exterior wall.

a. The lost firefighter will then be able to search for doorways, windows, and hallways, which generally lead to the outside.

b. Lost firefighters situated near walls increase their chances of being located by rescue crews as rescue crews will first search hallways, around walls and around windows and doors before sweeping large interior areas.

c. A lost firefighter nearing collapse should make every effort to move from the middle of middle of open spaces nearer to exterior walls to improve their chances for rescue and survival.

G. Failing to find a way out of the fire building, the lost or trapped firefighter should retreat to a point of safe refuge.

1. Safe refuge may be a protective room or floor away from the fire.

2. Walls and hallways are the safest areas in the event of structural collapse.

3. The lost/trapped firefighter must use any means available to advise Command and the rescuers of their location, including:

a. Pointing a flashlight toward the ceiling so that rescuers have another visual cue as to the location of the downed firefighter.

b. Making tapping noises (e.g., hitting a tool against a metal roll-up door) so that rescuers have another audible cue as to their location.

4. The firefighter should assume a horizontal position on the floor.

a. Horizontal position maximizes the audible affects of the PASS device.

b. The firefighter should attempt to take this position at an exterior wall, doorway or hallway that maximizes quick discovery by rescue crews who will initially search along walls before searching open expanses.

H. A conscious effort must be made by the lost firefighter to stay calm and conserve breathing air.

1. Unnecessary talking or physical activity must be ceased.

2. Firefighters must control and pace their physical activities and breathing in order to extend their SCBA air supply.

3. “No air” maneuver to undertake if SCBA air supply is depleted.

a. Position facepiece close to the floor and remove the regulator (do not remove the facepiece).

b. Place the facepiece opening down on the floor.

c. Cover the facepiece opening with hood or gloved hand (crude filter).

d. Make efforts to leave the hazard and get to an area of safe haven.

V. Lost crew

A. Company Officers or Division or Group Officers who are unable to locate a crew or firefighters assigned to them must immediately notify Command and use “May Day” to notify all personnel operating on the fireground.

B. When possible the officer should report:

1. Who is/what crew is missing.

2. How many firefighters are missing.

3. Last known location.

4. Last assignment.

5. Any other information to help direct rescue crews to their location.

6. Any actions being taken to locate the lost firefighters.

VI. Command and control considerations

A. Firefighting positions must not be abandoned during the rescue effort

1. Company and Division/Group Officers must control freelancing.

2. Command will initiate a rescue effort.

B. It is critical that all crews on the fireground continue to work together in a coordinated effort under designated Incident Action Plan after a May Day transmission. This will ensure the continued safety of all personnel and will give the lost/trapped firefighter(s) the best chance of survival.

Fireground Factors

Purpose

This purpose of the guideline is to identify a standardized list of basic factors that are to be considered by an Incident Commander in the evaluation of tactical situations. It identifies the basic issues that Incident Commander should address at all emergency incidents for which AFD maintains management responsibility.

This guideline should provide an Incident Commander with a checklist of the basic issues that are involved in size-up, decision-making, initiating action, review, and revision on the fireground.

Guideline

An effective Command Officer can only deal with a limited number of factors of any kind on the fireground. Within the framework of that limitation, the identification of critical factors is extremely important. Not all factors are critical in any given tactical situation. Command must identify those that are significant for each tactical situation. This guideline offers a framework for that process.

Operational Guidance

I. Fireground factors

A. Operations are often begun before critical fireground factors are adequately considered. Size-up should be a conscious process that involves the rapid, but deliberate, consideration of critical factors. It includes the development of a strategy and rational plan of attack based on existing conditions. A fire attack is an action-oriented process that involves taking the shortest and quickest route directly to the fire.

B. Fireground factors represent an array of items that are dynamic during the entire fireground process. The relative importance of each factor necessarily changes throughout that time frame. Command must continually deal with these changes, and base decisions on factor information that is timely and current. Beware of developing an initial plan of attack and sticking to that same initial plan throughout the fire, even though conditions continue to change. Effective fire operations may require revisions based upon information feedback.

C. In critical fire situations, Command may develop an initial plan and initiate an attack based on an incomplete evaluation of fireground factors. In such cases, efforts must continue throughout the operation to improve the information on which those decisions are based. Command will seldom operate with complete information during initial operations.

D. The effective management of each fireground factor requires Command to apply a somewhat different form of information management (visual, reconnaissance, or preplanning) to each factor. This is particularly true among the major categories of factors. Command must deal with each factor in the most effective manner.

E. Most tactical situations represent a complex problem with regard to how Command deals with fireground factor information. There are factors that can be determined from a command position on the outside of the structure and other factors that can only be determined from other operating positions outside and inside the structure. Fireground intelligence available to Command is developed utilizing an overlapping variety of information management factors and forms. These forms of information management revolve around the three basic information factors:

1. Visual factors are categorized as the type of information that can normally be gained by actually looking at a tactical situation from the outside.

2. Reconnaissance factors include information that is not visually available to Command from a position on the outside of a tactical situation. This generally involves Command making a specific assignment and then receiving an information-oriented report.

3. Preplanning and familiarity factors include the intelligence that is gained from formal pre-fire planning, general informal familiarization activities, and from AFD Dispatch - through the Mobile Data Terminal (MDT). It may include building drawings or the location of hazardous materials. This information would otherwise have to come from a reconnaissance report or might not be available.

F. The following are fireground factors which should be evaluated by Command as they pertain to each tactical situation. They can be obtained by using the above-mentioned information management factors.

1. Building construction.

   a. Size.

   b. Roof type (bowstring, bar joist, etc.), and condition.

   c. Interior arrangement/access (stairs, halls, elevators).

   d. Construction type.

   e. Age.

   f. Structural condition/faults/weaknesses.

   g. Compartmentalization/separation.

2. Building factors

   a. Vertical or horizontal openings, shafts, or channels.

   b. Outside openings--doors and windows/degree of security.

   c. Utility characteristics (hazards/controls).

   d. Characteristics of concealed spaces or attic spaces

   e. Exterior access (wrought iron security bars, etc.).

   f. Effect the fire has had on the structure (to this point).

   g. Time projection of continuing fire effect on building.

3. Fire factors

   a. Size.

   b. Extent of structure involved.

c. Location.

d. Stage (incipient through to flashover).

e. Direction of travel (most dangerous).

f. Time of involvement.

g. Type and amount of material involved.

h. Type and amount of material left to burn.

i. Products of combustion.

4. Occupancy factors

a. Specific occupancy.

b. Type (business, mercantile, public assembly, institutional).

c. Time of day (e.g., occupancy open/closed, occupied/vacant).

d. Occupancy associated characteristics or hazards.

e. Type/value of contents (based on occupancy).

f. Status (abandoned/under construction)

g. Loss Control profile/susceptibility of contents to damage.

5. Life hazard factors

a. Number of occupants.

b. Location of occupants (in relation to the fire).

c. Condition of occupants (by virtue of fire exposure).

d. Capacity and age of occupants.

e. Commitment required for search and rescue.

f. Fire control required for search and rescue.

g. Needs for EMS.

h. Time estimate of fire effect on victims.

i. Exposure of spectators/control of spectators.

j. Hazards to fire personnel.

k. Access rescue forces have to victims.

l. Characteristics of escape routes/avenues of escape (type, safety, fire conditions).

6. Exposure arrangement

a. Access, arrangement, and distance of external exposure.

b. Combustibility of exposures.

c. Capability or limitations on apparatus movement and use.

d. Severity and urgency of exposures (fire effect).

e. Value of exposures.

f. Most dangerous direction/avenue of spread.

g. Time estimate of fire effect on exposures (internal and external).

h. Obstructions to operations.

7. Resource factors

a. Personnel and equipment on scene.

b. Personnel and equipment responding.

c. Personnel and equipment available in reserve or in Staging.

d. Estimate of response time for additional resources.

e. Condition of personnel.

f. Capability of personnel.

g. Capability of Command personnel.

h. Availability, location and adequacy of hydrants.

i. Supplemental water resources.

j. Outside agency resource and response time

k. Status of built-in private fire protection systems (sprinkler, standpipe, alarms).

8. Other conditions and factors

a. Time of day or night.

b. Day of week.

c. Season.

d. Special hazards by virtue of holidays and special events.

e. Weather (wind, rain, heat, cold, humid, visibility).

f. Traffic conditions.

g. Social conditions.

Forcible Entry

Purpose

This guideline addresses the tactical objective of forcible entry into a building during a structure fire. In particular, it identifies the role of Ladder Companies. Since forcible entry is a basic firefighting function, conventional forcible entry techniques and the associated tools are considered to be implied knowledge and will be referred to but not reviewed within this guideline.

Guideline

All fire companies and all firefighters are capable of performing forcible entry. This guideline addresses forcible entry issues from the Ladder Company perspective, as performed during a structural fire emergency.

It is understood that the primary objective of ALL firefighters, above any other tactical or strategic consideration, is the preservation of human life. In order to insure an organized firefighting effort, specific companies are assigned individual tasks that define that company's strategic and tactical role while operating on-scene. The responsibility for forcible entry has been directed to Ladder Companies.

Operational Guidance

I. Entry guidelines

A. When a structural fire progresses past the incipient stage, the fire area will be considered an IDLH atmosphere.

B. Every member entering the IDLH must be equipped with their full complement of PPE, SCBA, portable radio, flashlight, and some type of hand tool.

C. No one will enter an IDLH atmosphere unless that member teams up with at least one other member and remains within voice or visual contact with that member.

D. Additionally, there will be at least two firefighters outside the IDLH assigned as IRIT.

E. If a known life hazard is discovered, and immediate action can prevent the loss of life, rescue actions may be initiated by an individual member - without waiting for an IRIT.

1. If such action is undertaken by the individual member, the Incident Commander must be made aware of such activity.

2. This applies ONLY for an Urgent Rescue Profile, such as a known life hazard, and not for standard Search and Rescue activity during Medium and Low Rescue Profiles.

II. Forcible entry

A. Forcible entry is a descriptive job term commonly used by firefighters to include a number of tactics and techniques.

B. For the purposes of this guideline, the working definition is as follows:

1. The methods used by firefighters to gain access to an area or structure when the entrance is either locked, blocked, or not provided.

C. It should be understood that performing forcible entry will result in damage to the structure being entered, regardless of the tools or techniques employed.

1. The acceptable or justifiable damage resulting from forcible entry depends on the situation, as well as the tools and techniques employed.

III. Reasonable expectations during forcible entry

A. All companies, and all crewmembers have the requisite capability to perform forcible entry during a routine structural fire event.

1. It is reasonable to assume that any company can provide forcible entry for themselves as needed.

2. This will free up the resources of Ladder Companies, freeing them to be used where they will have the greatest impact on the fire scene.

IV. Required forcible entry by a Ladder Company

A. The Ladder Company will be required to perform forcible entry on the fireground under specific circumstances.

1. When more than one occupancy door must be forced, such as at multiple apartments.

2. Whenever access is complicated by burglar bars.

3. When the forcible entry problem is complicated by unusual and/or difficult locks.

4. When the forcible entry problem is complicated by an unusual door, such as rolldown doors, scissor gates, or commercial occupancy rear doors.

5. Whenever forcible entry requires the use of specialized tools, such as a rabbit tool, duckbill lock breaker, or saw.

6. When the Ladder Company is performing forcible entry in order to carry out another tactical assignment, such as Search and Rescue

7. Whenever Engine Company members are delayed and/or preoccupied with other tactical assignments.

B. The Incident Commander should not hesitate to call for additional Ladder Companies as may be required by operational needs.

V. Forcible entry location considerations

A. In choosing the location to perform forcible entry, overall strategic considerations should be evaluated.

B. The first choice, and best location, for any company to perform forcible entry should be the front/main door to the occupancy.

C. Entry should be performed to accomplish specific goals.

1. Provide Search and Rescue companies with the highest probability of locating a trapped or overcome victim in need of rescue.

a. The immediate area of the occupancy's front entry is where most fire victims will be found.

2. Create easier conditions for the suppression advance.

3. Make it easier, safer, and faster for all operating firefighters to enter the occupancy.

4. Create a safer and orderly escape route if interior fire conditions worsen.

C. Using windows or a garage door as the primary entry/exit point creates a series of dangers for firefighters and is discouraged.

D. If the occupancy has a rear door, it should be opened - and forced open if necessary - to create a secondary escape route for interior operating companies.

1. The most efficient vantage point from which to force these doors is from the exterior.

VI. Basic principles of forcing entry

A. Try before you pry.

B. Force the door the occupant is most likely to use.

C. Maintain the integrity of the door.

D. Don’t ignore the obvious.

1. It is often easier to knock out a small pane of glass (to reach in to unlock a door) than to destroy an entire door.

VII. Special considerations

A. In the case of multiple doors, hydraulic tools (such as rabbit tools) should be used to improve the speed of the forcible entry team and reduce the fatigue factor of the operating firefighters.

B. Doors covered with an external iron security door, commonly referred to as burglar bars, can be forced using conventional methods

C. If crews are faced with the task of forcing entry or providing means of egress through burglar bar-equipped windows, conventional forcible entry tools can be used to shear the lag bolts or bolt heads securing the bars to the window or wall.

1. These lag bolts have good compressive strength but lack shear strength and can be attacked to exploit this weakness.

2. Although windows should not be the first option as an entry point into a fire building, windows routinely need to be prepared as an alternate entry/exit

D. While garage or rolldown doors should not be the first option as an entry point, they routinely need to be prepared as an alternate entry or exit. In very rare circumstances garage/rolldown doors will need to be used as a primary entrance.

1. Forcing a garage or rolldown door is problematic using conventional tools and techniques.

a. When viewing these types of doors from the exterior, there is no reliable way for firefighters to know if these doors are mechanically operated or manually operated.

b. These types of door may provide an opening which can compromise firefighter safety if they are not secured against accidental closing.

c. In the event that garage or rolldown doors are already open (or are forced using conventional methods) every effort should be made to ensure that these doors remain in the open position. This can be achieved by:

i. Placing a hook in the guide rails.

ii. Clamping a vice grip plier on the guide rails.

iii. Using a tool such as a halligan bar to bend the guide rails so that the door will not be able to traverse the rails, remaining open.

2. A circular saw is the best tool for performing forcible entry through garage or rolldown doors.

   a. An opening cut into the door eliminates the possibility of accidentally closing and trapping firefighters inside.

   b. Forcible entry is achieved by making a diagonal cut from highest reachable middle point of the door one of the lower corners.

   c. A second cut is made from the same point to the other lower corner, making an inverted “V” in the door.

   d. The cut must include any channel rail that may be present at the bottom of the overhead door.

   e. Once the “V” is complete, Ladder personnel should enter the structure and assess whether opening the adjacent swinging door or enlarging the “V” cut into a large rectangular opening is more appropriate to accomplishing operational goals.

E. Scissor/security gates are typically found on the front of stores and high traffic commercial occupancy areas such as inside a shopping mall.

1. These gates can be either manually or mechanically operated.

2. Many of these gates have a hidden bypass method for operating the gate.

   a. Locating the hidden bypass control may not be easy while operating under emergency conditions.

   b. Do not waste time locating the bypass control.

3. Scissor/security gates use a variety of locking mechanisms, including padlocks to secure the gate.

4. The most efficient method for circumventing a scissor/security gate is by using a circular saw to cut the gate, lock, or both.

   a. The lock should be the first choice.

b. When the lock cannot be accessed to force or cut, then the entire gate should be approached with the same techniques utilized with a rolldown door.

F. Padlocks are used to lock a variety of doors and gates and can be found in numerous combinations and types.

1. Padlocks can be forced with a variety of tools including those illustrated below:

a. Duck bill lock breaker.

b. Halligan bar.

c. Circular saw.

d. Boltcutters.

e. Cutting torch.

2. Picking a padlock is not recommended.

a. It is a specialize skill and requires a significant amount of time to perform.

b. The tools required for the performance are not found on a Ladder Company.

G. The front doors of commercial occupancies are often 90% glass. Despite the significant amount of glass, they doors should be forced using the through-the-lock method whenever possible.

1. Through-the-lock forcible entry is the fastest and most professional approach to negotiating this particular forcible entry situation.

a. The glass on these doors is tempered security glass and very difficult to break and/or cut.

b. Breaking glass also removes the ability to control air movement through the entry opening.

c. Commercial occupancy doors usually have unusually large throw/deadbolts which are very time and labor intensive to force using conventional methods.

H. Even though it is often time-consuming, the rear doors of a commercial occupancy will typically respond to conventional forcible entry methods.

1. Factors that affecting the speed of forcing entry into commercial occupancies are detailed as follows:

a. The experience of the firefighters.

b. The type and number of locks used on the door.

c. Access to the door.

2. Specific actions should be taken in gaining access into the rear of a commercial occupancy:

a. Hydraulic tools should be used to force the rear door, whenever possible.

b. The use of a circular saw or torch may be considered.

c. A wall breach may be the best alternative.

Ground Ladders

Purpose

Ground ladders allow for a variety of operational capabilities, such as providing access to rescue routes, escape routes, and ventilation points. This guideline provides the Albuquerque Fire Department's approach to the deployment and use of ground ladders.

Guideline

Ground ladder placement can facilitate fireground operations including rescue, access to upper floors/roof, ventilation, emergency egress, and above ground-level hoselines.

Ground ladder operations should begin with proper ladder selection. AFD uses the 10' attic, 14' and 16' roof, 14' extension, 24' extension, and two-section and three-section 35' extension ladders. All personnel must know the capabilities and limitations of ground ladders used on the fireground.

Operational Guidance

I. Ladder specifications and applications

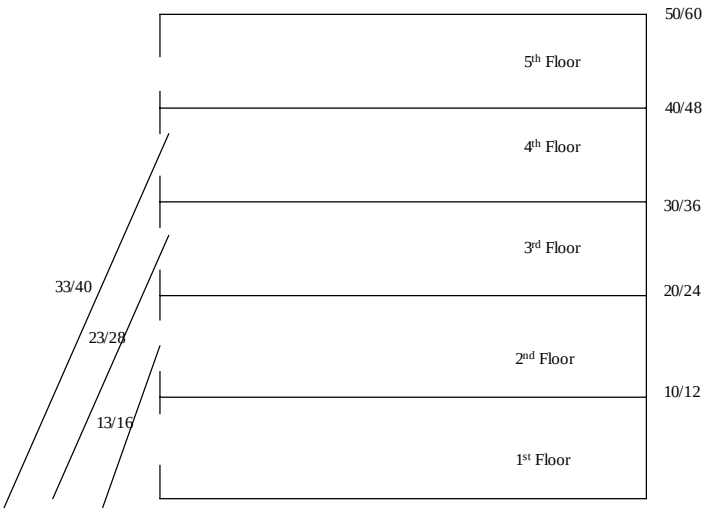
A. Ground ladder applications are detailed in Table 1.

Table 1

Ladder type	Applications
10' attic	Access to attics in interior of residential structures
14' extension	Interior use
14' roof 16' roof	Access to first-story residential roof. Access to second-story residential window. Used on roof for weight distribution and footing.
24' extension	Access to third floor windowsill and lower on residences. Access to second floor window and lower on commercial structures.
35' extension	Access to fourth floor windowsill and lower on residences. Access to third floor window and lower on commercial structures.

B. Figure 1 illustrates typical ground ladder applications.

Figure 1.



C. When in doubt, use a longer ladder than you think you will need.

D. The bedded length of all ground ladders should be indicated at the butt end of the ladder, next to the total ladder length sticker.

E. Table 2 details ladder types and the bedded length of those ladders.

Table 2	
Ladder type	Bedded length
24' extension	14'
2-section 35' extension	20'
3-section 35' extension	15'

II. Climbing angle and proper tip placement

A. The proper climbing angle for most ground ladder operations is approximately 70 degrees.

1. One exception to the 70 degree rule is when positioning the ground ladder at a windowsill for rescue or as a means for rapid escape.

2. When positioning for rescue or rapid escape, the ladder should be positioned at about a 60 degree angle to achieve a more comfortable, stable position for firefighters to work and rapidly deploy from a window.

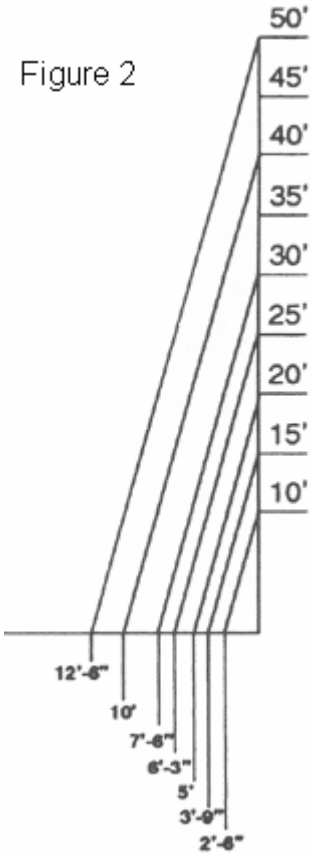
B. Climbing guidelines.

1. A critical component ladder safety is the correct placement angle of ground ladders.

2. A simple formula for correct ladder placement is to position the bottom of the ladder at a distance from a vertical plane equal to 1/4 the total working length of the ladder.

3. Figure 2 illustrates a method for the proper placement of ladders of varying lengths.

Figure 2



3. Using this method, the ladder is placed against the vertical plane (such as a wall) at a 75-1/2 degree angle.

C. Proper tip placement parameters include the following:

1. For rescue or firefighter access, place the tip of the ladder below the windowsill.

2. For breaking glass or ventilation, position the tip of ladder at the top of window on the windward side.

3. For roof access, position the ladder with a minimum of five rungs extending above the edge of the roof.

a. This will facilitate getting off and on the ladder, and make locating the ladder easier if conditions change and firefighters need to get off the roof quickly.

b. Parapet height may require a second ladder to provide access over the parapet and onto the roof.

III. Safety guidelines

A. All ground ladders should be secured in place before climbing.

B. Keep all ground ladders away from electrical lines.

C. Always set up two ladders to provide access to/exit from the roof, preferably at opposite ends of the structure.

D. Ladders to the roof should be placed away from the section of the roof that is being ventilated, in order to create a strong platform for use in walking to the venting location.

E. Ladder the strongest areas of the structure, specifically, at the corners.

1. Corners are structurally strong.

2. If ladders are positioned at the corners of the building, a disoriented firefighter on the roof can go to a corner with a 50% chance of finding a ladder.

F. Ladder the windward side of the proposed vent area.

G. Avoid setting up ground ladders directly in front of entry/exit routes or where fire is likely to vent.

H. Consider that fire service ladders are assumed to be able to safely support a 750-pound working load with a 4:1 safety factor.

IV. Click method

A. The click method is a guide for having the tip of an extension ladder reach its objective the first time it is raised.

1. Rarely, on the fireground, is there sufficient time to extend the ladder, place the tip, assess the tip position as unworkable, bring the tip away from the building, raise the ladder to the appropriate tip height and place the tip against the building again.

B. The click method refers to the “click” that the fly section makes as the locks pass over a rung when the fly is extended.

1. Each “click” is equal to 14” of vertical travel.

2. To ensure that the ladder is extended the correct length for proper tip placement the first time, the following quick calculation can utilized:

a. Determine the target height (at the location where the tip makes contact with the building).

b. Subtract the bedded length of the ladder being used from the target height. This number equals the number of "clicks."

i. If the target is above the second-floor, subtract one “click”. This is due to the fact that the ladder travels 14 inches per “click”, not 12 inches.

ii. If a three-section 35-foot ladder is used, the fly section travels twice as far with each “click”. So, divide the number of “clicks” by two, then subtract the one “click” for being above the second-floor.

V. Inspection and maintenance

A. Ground ladder Inspection.

1. According to NFPA 1932, all ground ladders are to be tested at least annually.

2. Ground ladders should be inspected for damage after each use.

3. Ground ladders should be inspected for damage quarterly.

B. A complete visual inspection should include the following parameters:

1. The base section.

a. Side rail condition, rail alignment, rung condition, rung to rail attachment, butt spurs/foot pads, ladder stops, stay poles, toggles, rail guides/lubrication.

2. The second section.

a. Side rail condition, rail alignment, rung condition, rung to rail attachment, ladder stops, pawl operation and lubrication, rail guides/lubrication.

3. The third section.

a. Side rail condition, rail alignment rung condition, rung to rail attachment, ladder stops, pawl operation and lubrication, rail guides/lubrication.

4. The fly section.

a. Side rail condition, raid alignment, rung condition, rung to rail attachment, ladder stops, pawl operation and lubrication, rail guides/lubrication.

5. Halyard condition.

a. Rope size and condition, anchors, thimbles, clamps, pulleys, and adjustment.

6. Roof hooks.

   a. Hook size, hook condition, operation and sharpness, hook housing and adjustment.

7. General issues.

   a. Heat sensor labels., NFPA 1931 certification, electrical hazard stickers, serial number identification, and ladder length marking within 12 inches of the butt.

   b. Heat sensors are labels with a heat indicator. If the heat sensor in the label turns black, the ladder should be removed from service.

      i. Figure 2 illustrates a ladder heat sensor.

Figure 2.

C. Ground ladder testing.

1. Ground ladders should be tested if any of the following conditions occur:

   a. If they are suspected of being unsafe.

   b. If the ladder has been subjected to overloading.

   c. If the ladder has been subjected to impact loading or unusual conditions of use.

   d. After any heat exposure.

   e. After any deficiencies have been repaired, unless the only repair was replacing the halyard.

   f. Before the ladder is placed in-service for the first time

D. Ground ladder maintenance.

1. Clean and well-maintained ladders last longer.

a. General maintenance for ladders is a simple process of taking time to visually inspect all the parts: beams, fasteners, and rungs for damage or wear.

b. Candle wax or paraffin wax should be applied to all contacting surfaces.

i. Properly lubricated ladder sections slide easily and work better.

2. If in doubt of the condition or quality of any ladder halyard, always replace It.

a. AFD Logistics should be contacted to have any ladder rope replaced.

b. Standard ground ladder pulleys accommodate 3/8" - 1/2" diameter ropes.

3. Heat sensor labels are made of heat-sensitive material that turns black in temperatures higher than approximately 300 degrees F.

a. Once aluminum fire ladder materials reach this 300 degree F temperature (even if only for a moment), the ladder material may have lost at least 25% of its load capacity.

b. This heat exposure effect is not reversible in the ladder and can continue to accumulate over time.

c. Any ground ladder with a blackened heat sensor label should be removed from service at once and that ladder should be load-tested before being put back into service.

Electrical Utilities

Purpose

The purpose of this guideline is to provide a basic description of electricity and any electrical utilities relevant to emergencies encountered by Albuquerque Fire Department units, as well as to identify relevant response considerations.

Guideline

Electricity is a utility that is often taken for granted. It is usually when an electrical problem arises that electrical hazards are fully considered. The Public Service Company of New Mexico (PNM) maintains the primary accountability for electrical utilities; however, AFD responds to reports of downed power lines and other electrical malfunctions. The most important factor at any incident involving electricity is life safety of first responders and the public.

Operational Guidance

I. Electricity

A. Electrical conduction can be more easily understood when compared to water flow.

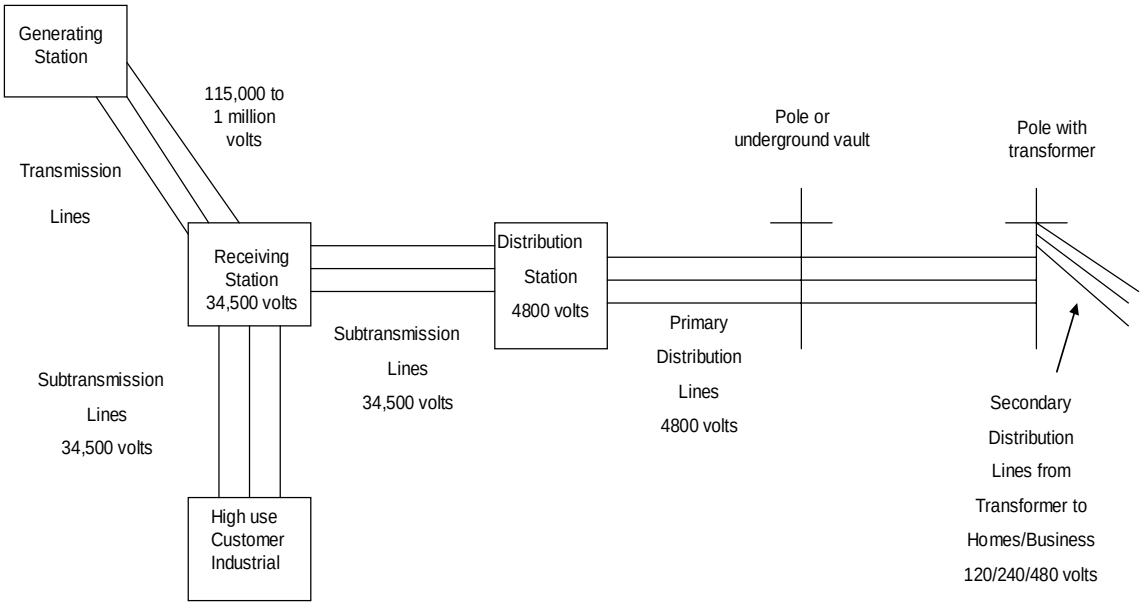
1. Table 1 illustrates the comparison between water flow and electricity.

Table 1		
Water	Can be compared to	Electrons
Hose lines		Conducting wires
Friction loss		Electrical resistance
Water pressure		Voltage
Water flow		Amperage

B. The electrical distribution system is much more complex.

1. Figure 1 illustrates a typical electrical distribution system.

Figure 1.



Wire Rules:

1. Larger wires do not always carry larger current. Look at the insulators and distance between them. Larger voltage = larger insulator size and greater distance between them.
2. Usually the highest crossarms have the highest voltages
3. 750+ volts = high voltage

C. Electrical utilities and delivery to specific occupancies.

1. Dwellings or small commercial occupancies.

a. Power is delivered at 240 volts maximum.

b. Overhead or underground wire delivery systems.

c. If delivered overhead (from a pole to the structure), it may be a two-wire or three-wire system.

i. A two-wire system is older service, providing 120 volts and single-phase service.

ii. A three-wire system is newer service, providing two lines with 120 volts each and one line neutral.

d. The main power disconnects are identified as follows:

i. Fuse(s).

ii. Circuit breakers.

iii. Levers at electrical utility boxes.

e. It is better to shut off branch circuits before shutting off the main power.

2. Commercial, industrial occupancies, large apartments, and hotels.

a. Power is delivered at 120 to 34,500 volts.

b. Delivery is provided by either overhead or underground wires.

c. If there are overhead wires, they may be quadraplex or open-wire triplex.

i. Quadraplex is four insulated wires.

ii. Open-wire triplex is three insulated wires, wrapped around a single bare neutral wire.

d. If there are underground wires, they may be fed into the following:

i. Electrical rooms.

ii. Fenced enclosures.

iii. Pad-mounted transformers (and may deliver up to 34,500 volts).

3. Complex occupancies including highrises, hospitals, and malls.

a. In these occupancies, expect underground delivery of electricity.

b. They may have an Uninterrupted Power Supply (UPS) room with numerous batteries connected together to deliver over 500 volts of power in case of power failure.

D. "Open neutral" and grounding issues.

1. To make the flow of electricity safe, an electrical current is completed when grounded.

2. Grounding provides a low resistance path to ground for currents resulting from damaged wiring or faulty equipment.

3. A continuous path to ground also facilitates the operation of over-current safety devices like blowing fuses and tripping of circuit breakers.

4. When not properly grounded, electricity will seek the path of least resistance to complete a circuit and get to ground, producing a potential electrocution hazard.

5. The following example demonstrates grounding.

a. Above-ground electrical wires that provide electricity to structures typically extend from the pole to the weatherhead located on the roof.

b. Most homes have two insulated "hot" wires of 120 volts each. These are wrapped around a non-insulated "neutral" wire which completes the circuit (it returns current from the home back to the transformer, then to ground).

c. In older homes and structures that have only two (no neutral) wires entering the weatherhead, the grounding may be accomplished through the metal water pipes.

d. AFD responds often responds to electrical emergencies that are due to a faulty ground.

i. Faulty ground may be due to an “open” neutral.

ii. The neutral wire designed to carry electricity back to the transformer becomes inadequate and no longer has the capability to conduct electricity.

iii. This is usually due to a defective connection where the neutral wire enters the weatherhead.

iv. Electricity, always trying to find a means to ground, will then find another path to ground. This may be through the metal lath in lath-and-plaster wall construction.

v. Wall fires can begin when conductive metal lath heats up to a point that the wooden studs begin to char or burn.

e. A thorough investigation needs to be conducted when electricity is involved at an incident.

i. Recent plumbing work may interrupt electrical ground.

ii. As old metal pipes rust and begin to leak, they may be replaced with plastic pipe that is commonly used today.

iii. If the metal pipe was previously serving as a path to ground, that path has now been interrupted and ground will be sought through another means in the structure.

II. Electrical hazards and safety considerations at incidents involving electrical service

A. Events involving electricity create conditions of high potential hazard.

B. Responders should exercise extreme caution during these events.

1. Never open sealed electrical boxes.

2. Never enter rooms labeled “High Voltage.”

3. Never remove power meters.

4. Do not apply water to transformer fires.

5. Do not re-energize or re-establish electricity to a structure.

6. While it may be advisable to do so at single-family dwelling fires, removal of electrical service at multi-family, commercial or industrial occupancies should only be completed after diligent consideration of the effect power removal will have on the structure and incident operations as a whole.

7. Consider conduction or grounding possibilities.

   a. Do not use aerial devices unless otherwise advised by PNM.

   b. Consider the implications of staging apparatus or walking and standing in water near downed lines.

III. Mitigating electrical emergencies

A. Generating, receiving, or distribution facilities are not to be entered until de-energized and a utility company escort is present.

B. Transmission towers should have an identification number near ground level. Do not use an aerial device to effect a rescue until the utility company gives permission for that operation.

   1. Poles usually have an identification tag that indicates the party responsible. They usually also are equipped with grounding straps.

C. Responding to reports of **"**Downed wires."

   1. Specific considerations should be taken in events where the wires run pole-to-pole and/or pole-to-structure.

      a. Assume that all wires are live.

         i. Energized wires do not always jump, pop, or spark.

      b. Secure the area.

c. Clear the area at least one span (between transmission poles) away in each direction of the downed lines.

d. Remove civilians from danger.

2. Responding to events involving street vaults.

a. Street vaults can be identified by square manhole covers.

b. Do not enter and do not use water.

E. Streetlight emergencies.

1. Streetlights can carry either low or high voltage.

2. Newer lights - with photoelectric cell atop the pole or light - carry 240 volts.

3. Older lights may carry as much as 6,800 volts.

F. Traffic lights emergencies.

1. Traffic lights usually carry 240 volts.

2. Be aware that, if mounted on a street light pole, a traffic light may have street light voltages (as high as 6,800 volts).

G. Ballast emergencies.

1. A ballast is a transformer and capacitor combination designed to operate fluorescent lights.

2. A ballast can overheat and either smoke or leak.

3. Ballasts are normally hot to the touch.

a. If it is so hot that you cannot keep a hand in contact with it, it is likely the problem.

b. When investigating ballast emergencies, always wear PPE/SCBA – the drippings and smoke can be toxic.

4. Check the ceiling space above for fire and/or heat extension.

5. Either secure (remove) power to the fixture or remove the ballast.

H. Securing electrical utilities at fire incidents.

1. Whether by PNM or by firefighters, securing the electrical utilities is accomplished at most fire incidents.

2. Caution must continue to be exercised as faulty ground – through an open neutral, faulty wiring, or recent building modification - may prevent the elimination of electrical service.

Natural Gas Emergencies

Purpose

The purpose of this guideline is to describe commonly encountered natural gas emergencies, and to define the Albuquerque Fire Department's accepted response protocol to those events.

Guideline

Natural gas is used in both commercial and residential properties as a heating and utility fuel. While the Public Service Company of New Mexico (PNM) has primary accountability for natural gas, the Albuquerque Fire Department responds to reports of gas leaks, smell of gas and blowing gas lines. As with other incidents, strategic goals at a natural gas leak are life safety, incident stabilization, and property conservation.

Operational Guidance

I. Natural gas

A. The New Mexico Motor Vehicle Code (New Mexico Criminal and Traffic Law Manual (66-7-6) describes Properties of Natural Gas as the following:

1. It is lighter than air.

2. It has flammable range is between 4-14%.

3. It has a ignition temperature of 1,000 degrees Farenheit.

4. It is non-toxic but is an asphyxiant.

5. It is odorless but a sulfur-based odorant (mercaptin) is added for safety.

   a. The odorant makes the gas indentifiable long before it is present at a dangerous concentration.

   b. The odorant can be scrubbed out of the gas as it passes through sand and dirt.

II. Pressure classifications

A. Natural gas is a potentially dangerous, compressible gas.

1. Gas pipelines with the highest pressure contain the highest energy storage potential and present the greatest risk.

2. Caution is always warranted when working around natural gas facilities.

3. Extreme caution must be exercised whenever transmission pipelines are encountered.

B. Natural gas is distributed through transmission and distribution mains and service lines.

1. Transmission mains are generally constructed of steel.

a. Between 12-36" in diameter.

b. May deliver gas at pressures up to 100 psi.

c. Transmission mains deliver gas to smaller supply mains.

2. Distribution mains supply gas to customer areas, and are constructed of polyethylene, steel, or copper.

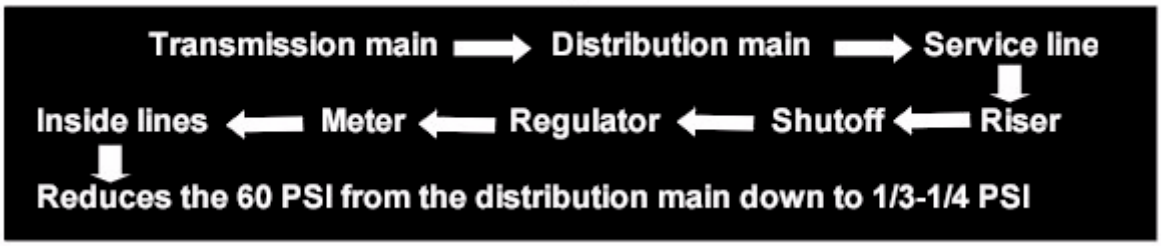
a. Distribution mains may deliver gas at pressures up to 60 psi.

b. Distribution mains provide delivery to service lines.

3. Service lines then serve gas customers.

C. A typical natural gas distribution system is shown in figure 1:

Figure 1



D. Figure 2 illustrates a natural gas distribution system.

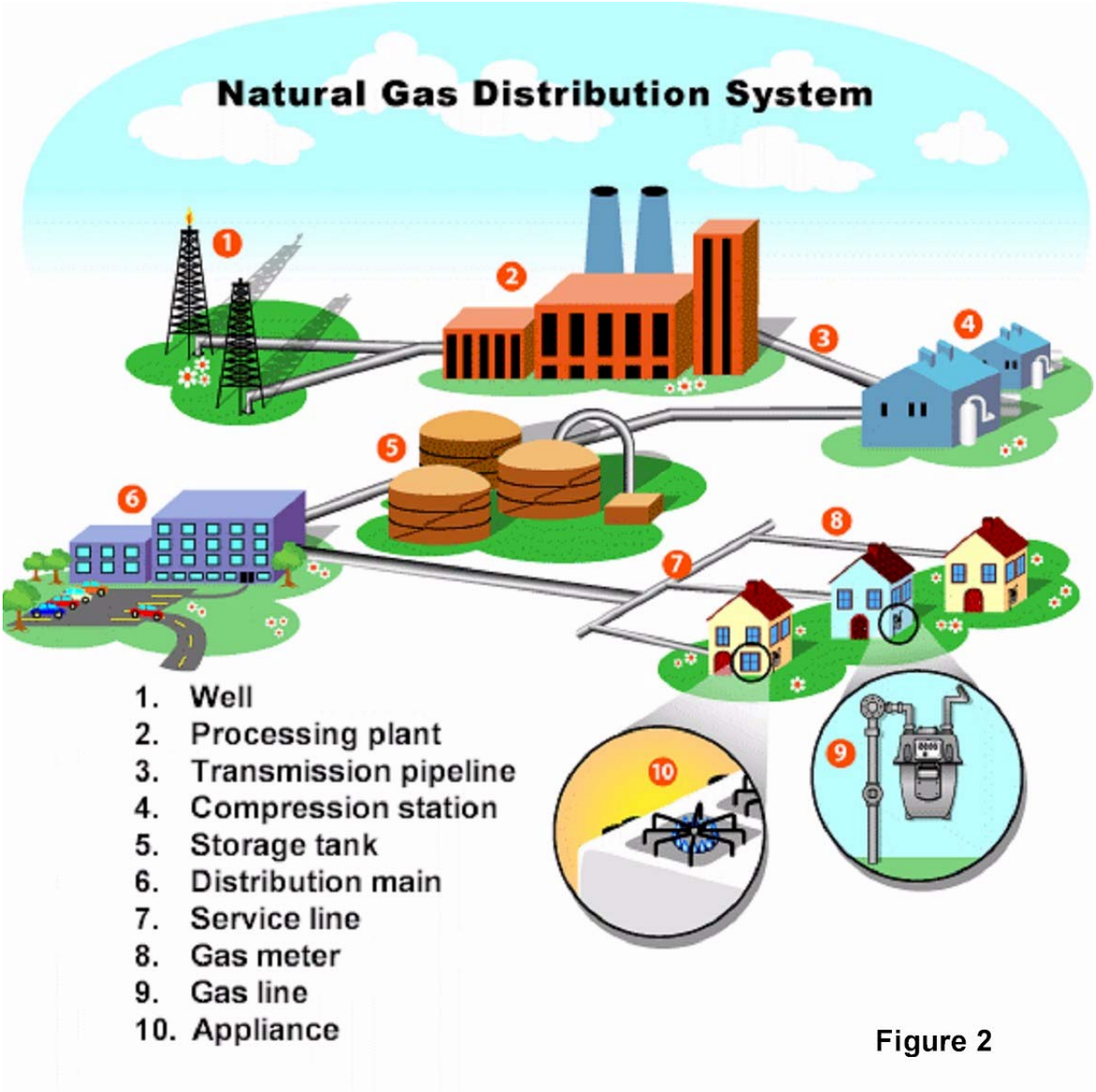


Figure 2

III. Shut-off valves

A. Multi-family dwellings and commercial occupancies will have groupings of multiple meters.

1. PNM requires each individual meter have an identification tag so that individual units can be located and shut down; this prevents shutting down an entire group of units unnecessarily.

2. Location of meters and shut-off valves

a. Meters and shut-offs are usually found on the outside wall of a structure.

b. Meters and shut-offs may be found in crawl spaces below the structure, beneath outside staircases, in outdoor closets, underground garages, sidewalk vaults and basements.

B. When shutting off the gas utilities, the order of priority is important.

1. Appliance quarter-turn shutoff.

2. Meter quarter-turn shutoff.

3. Curb valve.

4. Street valve – PNM only.

IV. AFD HazMat response

A. AFD's two HazMat Squads (Squad 1 and Squad 3) are equipped with monitors for measuring natural gas concentrations.

B. On any call with a reported or suspected natural gas leak, AFD Dispatch will dispatch one engine company and one HazMat Squad.

C. When an inside leak occurs, or if a natural gas from an outside source is suspected of entering a structure, the Squad's resources must be used to ensure that a safe atmospheric condition exists.

V. Natural gas emergencies

A. Natural gas emergencies typically present as one of three types.

1. Inside leak.

2. Outside leak.

3. Leak with fire.

B. Inside leak tactics.

1. Minimum firefighter protection should include bunker gear, SCBA, extinguisher and tools.

2. Determine the extent of the leak and any evacuation needs.

3. Take appropriate measures if a heavy odor of gas is detected.

a. Promptly evacuate occupants.

b. Turn off pilot lights and appliance valves to reduce any ignition sources and to reduce explosion hazards.

c. Do not operate light switches, flashlights, radios and avoid walking on carpets to minimize the generation of static electricity as an ignition sources.

d. Shut the gas off at the meter.

e. Open windows once gas is shut off.

f. Instruct the occupants to not re-enter the structure until PNM has turned gas back on and relit the pilots.

i. Stand by with occupants until PNM arrives.

4. Take appropriate measures if a faint odor is detected.

a. Check pilot lights to determine if they have gone out.

i. AFD personnel are not allowed to relight pilots.

b. Apply a soapy water solution on inside gas lines to identify the location of a leak.

c. Ventilate the occupancy by opening doors or windows.

d. Instruct a HazMat squad to assess conditions with a gas monitor.

e. Suggest that the occupants have PNM or plumbing/heating service investigate further.

i. Advise that the occupants call 9-1-1 if they start to feel ill.

5. Take appropriate measures when ventilating inside leaks at multi-story buildings.

a. Vent the highest level first, then move to the lower levels.

b. Consider positive pressure ventilation (PPV).

C. Outside leak tactics.

1. Minimum firefighter protection includes bunker gear and SCBA.

2. Eliminate all potential ignition sources to reduce explosion hazards.

3. Evacuate as needed.

a. See the Emergency Response Guide (ERG) for suggested perimeters.

4. Stage upwind of the suspected leak source.

5. Stretch and charge a handline.

6. If gas cannot be shutoff, gas can be dissipated using a wide fog pattern.

7. Note that static electricity can be created as gas leaks out of its piping.

a. If the pipe is metal, the static charge/current can be drawn off and safely dissipated into the ground by the conductive pipe itself.

b. If the pipe is plastic, a static charge should be expected. In this case, do not touch the piping, since it could cause a small spark to be created.

c. Class A foam may be used to prevent ignition from static electricity, but caution must be exercised in order to not flood the area.

8. Do not plug or clamp leaking gas lines.

D. Gas leak with fire tactics.

1. Protect exposures.

2. Let it burn until gas is shut off.

3. Evacuate the area as necessary.

Ladder Company Operations

Purpose

Ladder companies carry specialized equipment for specific operations, including forcible entry, search, and ventilation. They have at their disposal all the capabilities of the highly specialized aerial apparatus itself. The purpose of this guideline is to identify those circumstances when ladder company operations may appropriately be conducted by other units, and when situations require the specialized equipment found on the ladder. This guideline further addresses the responsibilities of the ladder company on the fireground, as defined by the Albuquerque Fire Department.

Guideline

Many functions must be accomplished to achieve a successful outcome at any fire incident. Delivery of water to the seat of the fire is the operation that saves more lives and protects more property than any other fireground operation. Operations which assist in the effective delivery of water by engine companies are referred to as “support functions.” Rescues, squads, and ladders perform these support functions.

It is incumbent upon ladder company personnel to control and direct fire conditions (or fire behavior), support the delivery of water needed for fire control, and to control the fire building’s environment as much as is possible.

Operational Guidance

I. Ladder company operations

A. Specific ladder company operations include the following:

1. Search.

   a. The purpose for conducting search operations is to locate and remove victims from the fire environment.

   b. The incident life hazard profile must be determined and appropriate actions taken as is deemed necessary.

2. Forcible entry and establishing exits.

   a. To provide a rapid and safe entry into the fire building and a safe egress from it.

3. Ventilation.

   a. "Venting for fire" is a tactic that allows the fire attack team to enter and operate within the structure by providing an exit for heat and products of combustion; thus improving visibility and lowering heat within the structure so the attack team can advance more easily to the seat of the fire.

      i. This ventilation method must be closely coordinated with the fire attack team so as not to increase fire and smoke spread.

   b. "Venting for life" is performed in a specific area with the objectives of providing fresh air for occupants to breathe and improving visibility for searchers.

      i. As soon as a life hazard is recognized, venting for life should immediately begin.

      ii. It must be understood that venting for life may intensify the fire; the purpose is to draw the fire away from the life hazard, not necessarily vent the structure.

      iii. The possible increasing of fire spread is acceptable under this condition and such action must be communicated to Command and all crews on scene.

4. Laddering the fire building.

5. Loss control, including salvage and overhaul duties.

6. Utilities control.

7. Delivering effective aerial master streams.

B. Fireground needs usually exceed the available staffing of Ladder Companies, so resource utilization and prioritization is crucial.

C. The four critical areas where ladder functions must be completed are the following:

1. The building roof.

2. The rear of the fire building.

3. The fire floor.

4. The floor above the fire.

D. Some of the equipment found on ladder companies is found on other units.

1. These tools include halligan bars, axes, K-tools, A-tools, 24-foot extension ladders, and utility rope.

2. All units are capable of performing common tasks, such as conventional and through-the-lock forcible entry, basic laddering, and ventilation.

E. Some equipment found on ladder companies is unique and can determine fireground assignment priorities.

1. Specialized equipment found on ladder companies includes the rabbit tool, the K-12 tool, and chain saws, the cutting torch, the thermal imaging camera, and CO detectors.

2. Because they carry specialized equipment, Ladder Companies should typically be assigned according to the need for specific tactical operations.

3. Examples:

a. When vertical ventilation is required at a fire, only Ladder companies have the equipment necessary to complete the required tasks.

i. Vertical ventilation is a true "ladder function."

b. The presence of overhead doors, excessive iron bars, multiple doors, or locks to force, are forcible entry situations that call for equipment carried solely by ladder companies.

c. An engine company encountering an inward-swinging, dead-bolted, wooden door in a wooden jamb during an initial attack should utilize the irons to force the door (and not require the assistance or specialized tools of the ladder company to gain access).

4. The aerial apparatus itself should be regarded as a specialized "offensive" tool used to complete ladder company operations.

a. Aerial apparatus should be positioned on-scene for “offensive” operations that include both equipment and resource delivery to the front of the structure, and effective aerial master stream delivery.

II. Assignment of ladder company operation duties

A. Several factors need to be considered when deciding which tactic will be assigned to ladder company personnel, including the following:

1. Building size, construction, interior arrangement, and the effect the fire is having on building.

2. Fire size, location, stage, and direction of travel.

3. Occupancy.

4. Life hazard.

B. All companies should be capable of completing basic ladder company operations if tasked to do so by the Incident Commander.

C. Factors which may cause reassignment of duties:

1. Ladder functions are often necessary well before the arrival of a Ladder Company.

a. Engine companies have the tools and training to provide entry and exit ventilation openings and PPV fans to carry out positive pressure ventilation.

b. Although ventilation is generally considered to be a ladder company operation, this example illustrates an effective use of available resources, especially if the Ladder Company has a slower response time to the scene.

D. The initial stages of a single family dwelling fire exemplify how search, a vital ladder company operation, is accomplished by members of other crews.

1. Example:

a. With the arrival of the first unit (typically an engine or rescue) at a single-family dwelling, Command is assumed and an Incident Action Plan (IAP) begins.

b. It is standard practice for AFD to have the first-in engine company begin fire attack and search for victims in the area of the fire's origin.

c. The first-arriving rescue should assume one of two roles depending on the situation.

i. OSHA regulations state that if "no known life hazard exists", a two-out RIT must be established.

ii. The rescue becomes the initial two-out RIT (IRIT) and the rescue officer assumes Command from the fast-attacking engine officer who was the initial IC.

iii. In only two situations may the the two-in / two-out rule be broken:

- If the fire is in the incipient stage, does not require the use of PPE, and can be controlled with a portable fire extinguisher.

- A "known life hazard" exists, and the rescue will immediately undertake a primary search.

2. The reality is that ladder companies will not typically be on-scene quickly enough to be assigned primary search duties.

   a. That is acceptable because all firefighters' skills and abilities can and should be used as appropriate.

   b. IRIT and primary search by any firefighter is not only appropriate, but vital under IDLH conditions.

   c. Even if a ladder company is one of the first units on-scene, assigning the ladder company primary search operations is not always the best use of available resources.

Apparatus Placement

Purpose

The purpose of this document is to provide a guideline for Albuquerque Fire Department personnel on Apparatus Placement and Positioning at emergency incidents. Apparatus function should regulate placement. Poor apparatus placement may limit the options or functions of a unit.

Guideline

This guideline shall be followed whenever placing apparatus in order to maximize both firefighter and civilian safety.

Operational Guidance

I. Placement decisions

A. The placement of all apparatus should be a reflection of defined standards, including;

1. Tactical objectives and priorities.

2. Staging protocols.

3. A direct order from the Incident Commander.

4. A conscious decision on the part of the company officer, based on existing or predictable conditions.

B. Avoid placing apparatus too close to the fire or other apparatus.

1. Do not drive all fire apparatus directly to the fire. Later arriving companies report to a nearby Level I staging area, and remain uncommitted until assigned by Command.

C. In large, complex, or extended fire operations, additional companies should be staged consistent with Level II staging guidelines.

1. Position apparatus where it will not compromise access: maintain an access lane down the center of streets.

II. Tactical considerations

A. Think of fire apparatus as an expensive exposure.

1. Position apparatus based on potential size of incident rather than current situation. Things to consider:

    a. Heat release.

    b. Structural Collapse

    c. Apparatus should generally be positioned at least 30 feet away from involved buildings, even with nothing showing.

2. Beware of overhead power lines when positioning apparatus. Do not park where lines may fall.

III. Command considerations

A. First arriving pumpers should be placed close enough to deploy handlines while leaving the front of the building open for Aerial Apparatus placement.

    1. Pumpers should attempt to view three sides of the structure on approach.

B. Use hydrants close to the fire. Secondary hydrants should be identified.

C. To maintain access, supply lines should be deployed close to the curb on the hydrant side of the street.

D. First arriving Aerial Apparatus should typically place their apparatus on the front of the building, unless conditions dictate otherwise. (i.e., imminent collapse, rescue profile, exposure protection, elevated stream operations, etc.).

E. Command vehicles should be positioned so the IC can see the incident, but not restrict the movement of other apparatus.

F. Rescue units should be positioned to allow for the most effective treatment and transportation of fire victims and firefighting personnel, while not blocking movement of other apparatus.

G. All other apparatus should position according to Level I staging guidelines, unless otherwise directed.

Rescue
It is standard operating procedure to extend a primary search in all involved and exposed occupancies which can reasonably be entered. Command must structure initial operations around the completion of the primary search. Primary search means companies have quickly gone through all affected areas and verified the removal and/or safety of all occupants.

Time is the critical factor in the primary search process, successful primary search operations must be extended quickly during initial fire stages.

The rescue functions that follow lengthy fire control activities will be regarded tactically as presenting a secondary search. Secondary search means that companies thoroughly search the interior of the fire area after initial fire control and ventilation activities have been completed. The secondary search should preferably be completed by different companies than those involved in primary search activities. Thoroughness, rather than time, is the critical factor in secondary search.

The completion of the primary search is reported utilizing the standard radio reporting term “All Clear”. It is the responsibility, of Command to coordinate primary search assignments, secure completion reports from interior companies and to transmit the “All Clear” report to Alarm. Alarm will, if possible, record the time of this report for Command.

The stage of the fire becomes a critical factor that affects the rescue approach developed by Command. The following items outline the basic Command approach to fire stages:

• In “nothing showing” situations, or in very minor fire cases that clearly pose no life hazard, Command must structure a rapid interior search and report “All Clear” (The interior search for victims will also verify no fire).

• In “smoke showing” and working fire situations, fire control efforts must be extended simultaneously with rescue operations in order to gain entry and control interior access to complete primary search. In such cases, Command and operating companies must be aware the operation is in a rescue mode until primary search is complete, regardless of the fire control required. In working fire situations, a primary search must be followed by a secondary search.

• In cases of fully involved buildings or sections of buildings, immediate entry and primary search activities become impossible and survival of occupants is improbable. Command must initially report fully involved conditions and that he/she will not report an all “All Clear”. As quickly as fire control is achieved, Command must structure what is, in effect, a secondary search for victims

Command and operating companies cannot depend upon reports from spectators to determine the status of victims. Search teams should utilize reports as to the location, number, and condition of victims to support primary search efforts and must extend and complete a primary search wherever entry is possible.

Command must consider the following factors in developing a basic rescue size-up:
• Number, location and condition of victims
• Effect the fire has on the victims
• Capability of the control forces to enter the building, remove/protect victims and control fire

Command must make the basic rescue decision:

Do we remove victims from fire? **Or** Do we remove the fire from the victims?

In some cases, occupants are safer in their rooms than moving through contaminated hallways and interior areas. Such movement may also impede interior firefighting.

Command must realistically evaluate the staffing needs required to actually remove victims and then treat their injuries. In cases involving such multiple victims, Command must call for the timely response of adequate resources and quickly develop an organization that will both stabilize the fire and provide for the removal and treatment of the occupants.

Rescue efforts should be extended in the following order:
• Most severely threatened
• The largest number (group)
• The remainder of the fire area
• The exposed areas

Command must make specific primary search assignments to companies to cover specific areas of large, complex occupancies and maintain on-going control of such companies until the entire area is searched. When primary search companies encounter and remove victims, Command must assign other companies to continue to cover the interior positions vacated by those companies.

All initial attack efforts must be directed toward supporting rescue efforts and must be placed in a manner to control interior access, confine the fire, and protect avenues of escape. Hoseline placement becomes a critical factor in these cases and Command and all operating companies must realize that the operation is in a rescue mode. It may be necessary to operate in a manner that “writes off” the structure in order to buy rescue time.

Normal means of interior access (stairs, halls, interior public areas, etc.) should be utilized to remove victims whenever possible. Secondary means of rescue (platforms, ladders, fire equip, helicopters, etc.) must be utilized in their order of effectiveness.

Command must structure treatment of victims after removal. Multiple victims should be removed to one location for more effective triage and treatment. Command should coordinate and utilize paramedic capability, wherever available and assign treatment companies as required to an exterior Medical Sector.

Once the primary search has been completed and an “All Clear” transmitted, Command must maintain control of access to the fire area, beware of occupants (and others) reentering the building.

The most urgent reason for calling additional alarms is for the purpose of covering life safety - Command must develop a realistic (and pessimistic) rescue size up as early as possible.

The term “Search and Rescue” should be used when structuring a primary search over the radio, “All Clear” should be used only as a completion report (benchmark).

Support Activities

Tactical support activities are those functions that assist active fire control and rescue operations. They generally include forcible entry, ventilation and the provision of access. Most confusion on the fireground is the result of lack of such support functions and does not generally relate to a breakdown of basic water application activities. Command must cause these support functions to be completed in a timely and effective manner-he/she must support the end of the nozzle. We lose most often because of a lack of support, not a lack of water.

Ventilation

You ventilate a building principally for two reasons:
• To prevent mushrooming, flashover and backdraft
• To gain (and maintain) entry

Vertical ventilation, as close to directly over the fire as possible, is the most effective form of ventilation in working interior fire situations.

The timing of ventilation becomes extremely important and must be coordinated with fire attack activities - ventilation should be provided in advance of attack lines. Portable radio communications between engine and ladder companies facilitate this interaction.

Fire will naturally burn out of holes in roofs, regardless if you cut the hole or if the fire does. If the fire burns through the roof (defensive ventilation), it will generally do so in the best location - directly over the fire. If ladder companies cut the roof they must locate ventilation holes in a manner that will support rescue activities and fire confinement. If vent holes are cut in the wrong places, the fire will naturally be channeled to them and expand loss.

When you cut a hole in a roof, cut a big one

We ventilate to alter interior conditions. The best operating position to determine if a building requires ventilation and the location and timing of that ventilation is the interior division. Interior and roof forces must communicate in order to coordinate the effort effectively.

Do not operate hoselines, particularly ladder pipes, down ventilation holes. Be cautious of hoselines to roofs - “candle moth” syndrome tends to overpower personnel operating on roofs when fire and smoke come out vent holes. Operate roof lines only for the purpose of protecting personnel and external exposures unless Command orders a coordinated roof attack.

Effective topside ventilation will tend to keep roofs intact longer and roof condition necessarily becomes extremely important to ventilation activities. If ladder crews cannot get on the roof to ventilate because of advanced fire, Command had best begin to react in marginal offensive/defensive terms. Hoseline crews can probably get inside and stay inside longer than ladder crews can stay on the roof. It is better to abandon the building a bit too soon rather than a bit too late.

Forcible Entry

Forcible entry involves a trade-off in time versus damage; the faster you force - the more damage you do. The more critical the fire, the less important forcible entry damage becomes and vice versa. If the fire is progressing and you must go in and attack from the unburned side, don't waste time trying to pick the locks - bash the doors.

The provision of access many times will determine if the fire is cut off and extinguished or not. These access - oriented activities generally involve pulling ceilings, opening up concealed spaces and voids, and the activities required to get fire attack efforts in to operate on hidden fire. Such operations beat up the fire building and must be done in a timely, well-placed manner. In such cases, do not hesitate - if you size up fire working inside a concealed space, get ahead of it, open up and cut it off.

Beware of the premature opening of doors, holes, access efforts, etc. before lines are placed and crews are ready to go inside. Good timing requires effective communication between engine and ladder companies.

Fire Cause & Determination

Scope/Purpose
It is the responsibility of Command to provide for fire cause investigation on the following fire- related emergencies: structure fires, explosions, fire code - related situations and of every fire incident causing serious injury/death or property loss/damage.

This must be accomplished after fire control activities and salvage, and before taking overhaul actions which could hinder the investigation.

There is a responsibility to determine fire cause in all cases. The Officer in Charge will be responsible for determining when a Fire Investigator is needed, based on information gathered or the circumstances of the fire. The on-duty Fire Investigators can be contacted via dispatch 24 hours a day by phone to consult with Command prior to or during response to assist Command.

An Investigator will be dispatched by Alarm or called by the Officer in charge and will respond to the scene in the following circumstances:
• Fire deaths or serious fire injuries
• On all working first or greater alarm structure fires
• Fires for which the cause cannot be determined by Command on the scene
• Explosions and bombings
• Requested by Albuquerque Police Department to respond to known arson fires

No Investigator is needed for the following situations but the company officer is responsible for the completion of an accurate Field Incident Report to document the fire cause:
• Minor fires where cause is determined to be accidental
• Scalding burns, electrical accidents, and minor accidental burn injuries
• Car fires originating in engine area during vehicle operation, or abandoned autos, or vehicle arson with no witnesses or suspects on scene
• Minor grass, fence, or trash fires with no witnesses or suspects.
• Traffic accident fatalities involving fire subsequent to collision are investigated by Albuquerque Police Department
• Known juvenile fire setters who have caused minor fires by playing with fire, matches, etc., can be referred to the Youth Fire setter Program.

If the incident is determined to be of a minor nature (e.g. accidental, with no injuries and slight fire damage) and the cause can be determined easily by the Company Officer on the scene through information received or by investigations of the fire scene (e.g. a stove fire with food remains on stove), units on the scene shall gather the information needed and accurately complete the required FD 200. If a victim requests information regarding their fire loss, for insurance purposes, the Company Officer can give the Fire Department Incident Number which will enable the victim to access Fire Department information regarding the fire. The victim should also be given a copy of the AFD “After The Fire” brochure to assist them.

When a Fire Investigator is on the scene or responding, companies shall delay nonessential overhaul and secure the fire scene until a Fire Investigator arrives. Salvage and all unnecessary interim activities which may alter or contaminate the fire scene, or which may interfere with a subsequent origin and cause investigation must be discontinued until authorized to continue by the responding Fire Investigator.

Command shall assign personnel to protect the fire scene and maintain custody of the scene until the arrival of a Fire Investigator, especially when delay in response to the scene by an Investigator has been indicated.

After achieving fire control, Command shall release companies not required to complete investigation and overhaul. In some cases involving lengthy investigation periods, companies may return to quarters and return later to the scene to complete overhaul activities when requested by a Fire Investigator.

Command shall turn over jurisdiction of the fire area to the Investigator as soon as possible after the fire is stabilized. The Investigator retains jurisdiction until the investigator releases it back to Command. The Investigator may inform Command that they intend to maintain custody of the scene for further investigation.

The Investigator shall request from Command any personnel or equipment necessary for the investigation. Command shall make every attempt to meet such requests, to the extent possible under the prevailing circumstances.

All personnel shall cooperate with the Fire Investigator and with the Arson Division. Protection of the fire scene and preservation of physical evidence must be a primary concern once life safety is secured and fire control is achieved. An attempt to identify the victim and any witnesses who are at the fire scene must be made as soon as possible, and shall not be delayed until the Investigator is actually on the scene. Obtaining the identification of witnesses is critical to the conduct of the subsequent investigative process. If police officers are at the scene, the Company Officer may request them to obtain such information and identification for Fire Investigators, but if police officers are unable to comply with the request (as the result of other circumstances which may take precedence) the Company Officer retains this responsibility.

Destruction of Evidence
It is incorrect to believe that evidence is completely destroyed by fire. This misconception is the reason many incendiary fires have never been brought to the attention of the courts.

Evidence is not destroyed in fires except in very rare cases. The form, shape, color, size, and weight may be altered, but evidence can still be identified upon trained examination. It is critically important to preserve evidence by not moving fire debris unnecessarily.

The Fire Department must protect the fire scene from unnecessary damage during firefighting operations. Special care must be exercised during extinguishment to avoid washing out evidence through misuse of fire streams. Overhaul presents the greatest potential for damage to evidence which may be used by the Fire Investigator and Police Department in subsequent court cases and prosecution. Salvage operations should be minimal until the investigation can be completed, and should be confined to diminishing eventual loss. Companies assigned to Loss Control Sector should incorporate scene security and evidence preservation into their plan to stop the loss.

The fire scene is the Investigator’s laboratory. They must search it carefully and thoroughly, photograph the scene in place, diagram all evidence placement, and collect and preserve all evidence.

The fire scene must be guarded. Evidence cannot be used in court unless the Investigator can establish a chain of custody by proving who found the evidence, where it was found and prove that evidence was not tampered with while in official custody. To ensure that the chain of custody remains unbroken, the scene must remain demonstrably in the custody of the Fire Department. Thus, at a fire scene where it has been determined that custody must be maintained, a guard must be posted, and custody must be maintained until the scene is released. No unauthorized persons may enter the scene. The Fire Department has the legal authority to close the scene

entirely, even to the property owner or to other interested person/s. It is vital that the Fire Department prevent personnel from unnecessarily walking through a fire area, walking on, obscuring evidence, or picking up and moving evidence. This shall include both Fire Department personnel and the media. If it is essential that evidence be moved or if necessary firefighting operations may damage evidence, the evidence must be covered or its location marked before moving it carefully to a secure location.

Joint Fire/Police Investigations at Fire Scenes. Albuquerque Fire Department Fire Investigators are trained and certified as specialty peace officers with authority to investigate arson crimes. This training and certification meets the requirements of the New Mexico Law Enforcement Academy. Fire Investigators exercise peace officer authority including the use of force and firearms, search and seizure, and arrest only when investigating arson crimes defined in New Mexico Statute.

The Albuquerque Police Department is responsible to investigate all non-arson crimes discovered at fire scenes and Fire Department personnel will report such crimes to police and cooperate with police officers and detectives. Albuquerque Police and Fire Department Investigators will conduct joint investigation of fire deaths or life - threatening injuries at fire scenes:

- Fire Department investigators determine the fire cause and arson crime only
- Albuquerque Police are responsible for identification and removal of all bodies from fire scene
- APD determines the cause and manner of deaths in cooperation with the Office of the Medical Investigator to whose office bodies are delivered at the direction of police.

Attack Teams

Scope/Purpose
In many tactical situations it is desirable to band companies together in Sectors to achieve more effective results. This consolidates the efforts of the companies toward tactical goals and makes command more manageable.

The Attack Team is an extension of this concept, in which companies are assigned on the fireground in groups to work toward a specific goal and/or in a specific area. An Attack Team is an effective size operational group for many fireground tasks and provides a sound basis for the creation of Sectors which may be built upon as the incident progresses.

A standard Attack Team consists of two engine companies plus a ladder company. The basic grouping of two engine companies and one ladder provides for adequate water supply and support capability to perform strong tactical operations. In most cases these "Teams" will be created on the scene from individual companies assigned by Command. The companies may be assigned at one time to assemble an Attack Team starting with a single company and adding resources as they become available. In other situations Command may be able to assign a full Attack Team directly from Staging. The Attack Team will either report to an existing Sector Officer or will become the nucleus of an additional Sector.

In the early deployment of companies at an incident, Command should try to identify tactical requirements in terms of Attack Teams and Sectors. An Attack Team assigned to establish a Sector should be able to perform as an effective unit as well as setting up a Sector command structure. One of the Company Officers will assume the role of Sector Officer unless or until a designated Sector Officer is assigned by Command.

Sector Officers should try to structure requests for additional resources in terms of Attack Teams whenever possible. Where this type of assignment is feasible, it leads to more effective teamwork. This does not mean that the officer may not request single companies or special units when the need is indicated.

A common deployment for an Attack Team involves a "forward" pumper supplied by one or two lines from a "key" pumper on a hydrant. With this configuration the Company Officer of the "forward" engine company normally becomes the Attack Team leader and initial Sector Officer.

This group could be assigned to take one side of an involved building and would be capable of significant action in either an offensive or defensive mode. Command would have the option of assigning a Sector Officer to supervise the tactical activity.

The deployment of first response units may be such that there are insufficient resources to place a full attack team at each strategic position. Command may elect to assign a single unit to a position and assign subsequent arriving units to fill out the team as they arrive. In this case the first engine would usually lay a supply line to the forward position and begin operations. The later arriving engine would pump the line or reverse a secured supply line to the hydrant and pump both lines. Personnel from this engine and the ladder company join the first crew at the attack location.

The decision could also be made by Command to utilize a full Attack Team in the most critical strategic position and leave less urgent positions for later arriving units. This is a strategic decision which must be made by Command

SCBA

Purpose
This policy is intended to apply to the proper and safe use of SCBA during emergency operations.

Scope
The scope of the SCBA Policy of the Albuquerque Fire Department is to provide all firefighters with the information available to avoid any respiratory contact with products of combustion, superheated gases, toxic products, oxygen deficient atmospheres, or other hazardous contaminants.

It is expected that all personnel responding and functioning in areas of atmospheric contamination, shall be equipped with self contained breathing apparatus (SCBA) and trained in its proper maintenance and use.

Shift Check Guidelines:

Facepiece Seal
Members shall achieve a non-leaking facepiece to skin seal with the mask at the beginning of each shift. Facial hair shall not be allowed at points where the SCBA facepiece is designed to seal with the face. Individual members shall be responsible for operational readiness, care, and cleanliness of this equipment.

Apparatus Check
The driver of each apparatus in the Operations division shall be responsible for the unit's SCBA and shall check the condition of the SCBA at the beginning of the shift, after each use, and at any other time it may be necessary to render the equipment in a ready state of condition.
The driver will also be held responsible for completing and maintaining the appropriate documentation as necessary. Company officers shall assign a specific SCBA to each crew member. Each crew member will be responsible for the proper use and function of that SCBA.

Required SCBA usage
The use of breathing apparatus means that all personnel shall have the facepiece in place, breathing air from the supply provided.

Self contained breathing apparatus shall be used by all personnel operating in the following atmospheres:
- In a contaminated atmosphere
- In a atmosphere which may suddenly become contaminated
- In an atmosphere which is, or suspected of, being oxygen deficient
- In an atmosphere which is suspected of being contaminated
- In an atmosphere that contains any product that has a published Permissible Exposure Limit (PEL)

This includes all personnel operating in the following areas:
- In an active fire area
- Directly above an active fire area (ie. roof)
- In a potential explosion or fire area, including gas leaks and fuel spills
- Where the products of combustion are visible in the atmosphere including vehicle and dumpster fires
- Where invisible contaminants are suspected to be present or may be released without warning, (ie. carbon monoxide during overhaul)
- Where toxic products are present, suspected to be present, or may be released without warning
- In any confined space which has not been tested to establish respiratory safety

PASS Devices
Whenever a SCBA is donned the PASS device shall be activated and remain activated.

Investigative Mode
SCBAs and facepieces will be carried and ready for use when responding in the following investigative modes:
- Nothing showing
- When investigating suspicious odor calls
- When ascending stairs during a high-rise response incident
- When determined necessary by the company officer

In these circumstances only, the SCBA shall be worn with the face piece removed. The wearing of the SCBA in these situations provides that it will be immediately available for use if conditions change or if personnel are to enter an area where the use of SCBA is required.

The active fire area is defined as the inner perimeter of the fire ground, this is any space where the fire situation creates a potential hazard to persons operating at the incident. This area at a minimum is any space within a 50 foot radius of the structure or fire area, however it may be expanded or reduced by the incident commander or safety officer.

Removal of SCBAs
The decision to remove SCBA shall be made by the Incident Commander. In single unit response situations, the decision to remove the SCBA shall be made by the Company Officer, based on an evaluation of the conditions. Premature removal of SCBA shall be avoided at all times. This is particularly significant during overhaul when smoldering materials may produce increased quantities of carbon monoxide and other toxic products. Prior to removal, fire areas shall be thoroughly ventilated and, where necessary, continuous ventilation shall be provided.

If there is any doubt about respiratory safety, SCBA use shall be maintained until the atmosphere is established to be safe utilizing the following procedures:
• Use the Hazmat Squad's detection equipment to monitor for Carbon Monoxide (CO)
• These monitors have an audible alarm set for 35 ppm (parts per million) of CO, this setting is for CO incidents other than determining what is necessary for safe removal of SCBA's during overhaul operations
• The Immediately Dangerous to Life and Health (IDLH) for CO is 1200 ppm (OSHA)
• The Permissible Exposure Limit (PEL) for CO is 35 ppm (OSHA)
• Safe exposure levels are based on the amount of CO absorbed by the blood over a given time period at a given level of exertion.
• The safe exposure level for AFD personnel for CO is the ppm that would lead to 5% carboxyhemoglobin levels under "heavy work" conditions
  - 120 ppm for 20 minutes
  - 90 ppm for 30 minutes
  - 55 ppm for 60 minutes
• All AFD personnel will continue to utilize SCBAs during overhaul and investigative operations until Haz-Mat personnel have monitored the atmosphere and received a reading of 120 ppm or less of CO.

Replacement of SCBAs
If an SCBA is found to be operating incorrectly or not operating at all, it shall be taken out of service, reported and replaced immediately. Replacement SCBA shall be obtained from Equipment/Supply Section of Support Services.

Fire Investigations
Upon arrival at the fire scene the fire investigators will make contact with the Incident Commander. Fire investigators shall use SCBA while conducting their investigation at the fire scene, when determined necessary by the Incident Commander.

Annual Evaluations
An evaluation of all members of the Operations Division in the use of the SCBA will be conducted annually and as required when the Commander in charge of the Battalion, section or division determines it is necessary. Each member shall be able to demonstrate a high level of proficiency and compatibility with the SCBA under conditions which simulate those expected as a job requirement. Each member shall also demonstrate an effective facepiece to skin seal of the SCBA during this evaluation.

Individual Facepieces
Proper care and maintenance of individually assigned facepieces will be the responsibility of the member. The Commander in charge of the Battalion will be notified to make final determination for replacement defective or malfunctioning facepieces. Every firefighter will keep the facepiece with their turn out gear for use during floating and acting assignments.

Use of soft contact lenses shall be permitted during SCBA use, provided that the member has previously demonstrated successful long-term soft contact lens use. Successful long-term use is defined as the wearing of soft contact lenses for at least six (6) months without any problems.

The use of hard contact lenses while wearing SCBA is prohibited.

Vehicle Fires

Purpose

This purpose of this guideline is to establish the Albuquerque Fire Department's operations at vehicle fires. It identifies accepted operational tactics for safety and efficiency in the extinguishment of motor vehicle fires.

Guideline

To ensure personnel safety, the minimum level of protection for firefighters is full protective clothing, to include the SCBA. Due to the unique hazards and safety considerations involved in vehicle fires, the role of the Safety Officer becomes critical.

Operational Guidance

I. Apparatus placement

A. Apparatus should be positioned upwind and uphill of the incident if possible.

B. Use the apparatus as a barrier to shield the incident scene from traffic hazards, when possible.

1. Warning lights should be left operating, in conjunction with the use of traffic cones where needed.

2. The use of flares by firefighters and police officers shall be prohibited, because of the potential for potential ignition of flammable liquids or vapors.

3. Additional consideration should be given to positioning the apparatus at an angle to better protect firefighters, and to allow the removal of any hose from the pre-connect cross-lay compartments.

II. Water supply

A. Consideration must be given to the acquisition of additional water supply sources in incidents involving more than one vehicle, parking structures, etc.

1. A supply line or another engine may be required.

2. Ladder companies may be used as an improvised standpipe at incidents on elevated freeways or in parking garages.

III. Fire attack

A. A working fire involving the interior of the vehicle passenger compartment will damage the vehicle beyond repair. As such, the attack plan should consider the vehicle as a "write off," and a safe and appropriate approach and fire attack must be implemented.

B. The selection of a handline is at the company officer's discretion, however, an effective fire suppression effort will require an 1-3/4" handline.as a minimum.

C. The use of foam is recommended for fires involving flammable liquids (if available),

D. Where patients are trapped in the vehicle, water should first be applied to protect the patients and permit rescue.

E. When rescue is not a factor, first water should be applied for several seconds to extinguish the fire or to cool down the area around any fuel tanks or fuel systems such as fuel tanks with Liquefied Petroleum Gas (LPG) or Liquid Natural Gas (LNG).

F. At least one member of the attack team must have forcible entry tools in their possession to provide prompt and safe entry into the vehicle.

IV. Hazards and safety considerations

A. Liquid Petroleum Gas (LPG) and Liquid Natural Gas (LNG) are becoming commonplace as fuel for vehicles. Pressure release devices can create a lengthy "blow torch" effect. If the pressure relief device fails, a boiling liquid expanding vapor explosion (BLEVE) may occur.

1. Vehicles may not be marked to identify this fuel hazard. If there is flame impingement on a visible LPG/LNG storage tank, take action to control the fire and cool the tank.

2. If vapors escaping from the storage tank relief valve have ignited, allow the LPG/LNG to burn while protecting exposures and cooling the tank. The flow of gas through piping can be controlled by shutting off the valve at the storage tank. A request for additional equipment should be a priority in this situation.

B. Energy absorbing bumpers

1. These assemblies include devices that consist of gas and fluid filled cylinders. When they are heated during a fire, they can develop high pressures which may result in the sudden release of the bumper assembly.

2. Sudden release can result in serious injury to anyone in the path.

a. Bumper assemblies have been known to travel up to 25 feet.

b. A fire attack should be from an angle, or from the side of engine compartment.

c. Use caution when operating extrication equipment around bumpers to avoid sudden release.

C. Batteries

1. Explosion hazards exist around batteries, because of the presence of hydrogen vapors.

2. Avoid contact with battery acid.

3. When the situation is stable, disconnect battery cables (ground cable first).

D. Combustible metals

1. Some vehicles have various parts such as engine blocks, heads, or wheels, made of combustible metals,.

a. When combustible metals are burning, attempts to extinguish them with water will usually add to the intensity of the fire. If using water on combustible metals, you must use large quantities of water to cool the metal below its ignition temperature. After some initial intensification, the fire should go out.

b. Dry chemical extinguishers can also be effective.

E. Trunk or rear hatch / engine hoods

1. Hold-open devices may employ any combination of various devices

a. Springs, gas cylinders, extending arms

i. When gas cylinders are exposed to heat, failure or rupture of these devices should be expected.

ii. Excessive pressure may develop in lift assists, causing a trunk, hatch, or hood to fly open with explosive force when the latch mechanism is released.

b. To ensure the safety of responding personnel, be sure to allow sufficient clearance when releasing latches.

c. Fires involving the trunk/cargo area should be approached with extreme caution.

i. Contents may include toxic, flammable, or other hazardous materials.

F. Fuel tanks

1. These may be constructed of sheet metal or plastic. A rupture or burn-through may occur, causing a rapid flash fire of the fuel.

2. Do not remove the gas cap, as the gas tank may have become pressurized.

3. Do not direct hose stream into tank, as this will cause pressurization of tank, which may result in the possibility of burning fuel spewing from the tank fill opening.

G. Cab interior

1. Well-sealed interiors of modern vehicles present the potential for backdraft.

2. Use caution when opening doors or breaking windows. Appropriate approach, ventilation, and safety concerns must be considered.

3. Have a charged handline ready before making entry.

H. Vehicle stability

1. Tires or split rims may explode when exposed to fire, causing the vehicle to drop suddenly.

   a. Expect exploding rim parts or tire debris to be expelled outward from the sides.

   b. Approach from the front or rear of the vehicle for maximum protection from potential flying debris.

2. Some larger vehicles, such as buses, employ air suspension systems. When these systems are exposed to heat or flame, they may fail, causing the vehicle to suddenly drop several inches.

Aircraft Emergencies

Purpose

This guideline establishes how the Albuquerque Fire Department will respond to aircraft emergencies.

Guideline

The Albuquerque Fire Department maintains mutual or automatic aid agreements with various agencies and neighboring jurisdictions. Since an aircraft crash can occur anywhere in the metropolitan area, it is likely that AFD personnel and equipment will be required to respond accordingly. Responding personnel need to be familiar with basic tactical information and guidelines for responding to events involving an aircraft crash.

Operational Guidance

The scope of the aircraft emergency will dictate the response, along with the number and type of resources necessary to manage the incident. A large commercial airliner with hundreds of passengers crashing into a building would require a dramatically different response than a single engine aircraft making an emergency landing on a roadway.

As with any incident, life safety is the priority. Initial actions should revolve around evacuation of survivors and assisting the injured, incident stabilization and property conservation.

I. Strategic considerations

A. Request that the AFD Dispatch Center make notifications of the event to all pertinent agencies.

1. The City of Albuquerque Emergency Operations Center may need to be activated.

2. The National Transportation Safety Board (NTSB) should be notified by contacting the FAA Air Traffic Control Tower at Albuquerque Sunport.

B. Additional notifications should include: The Salvation Army, The American Red Cross, Critical Incident Support Debrief (CISD) teams, Albuquerque Sunport communications center.

C. Consider requesting AARF response units from the Kirtland Air Force Base (KAFB) Fire Department, if they have not already been dispatched.

D. An airline representative should be requested to report to the Command Post, along with representatives from the Albuquerque Police Department, Aviation Police, CABQ Aviation Department, and any other agency that can assist with the incident.

E. The first-arriving company officer should assume command and direct additional incoming resources. The initial radio report should relay the general scope of the incident, i.e., the approximate number of patients, size of aircraft, and anticipated resources needed, etc. The initial IC should focus on strategic considerations rather than task level needs.

II. Tactical considerations

A. The first arriving crew may need to assist passengers in escaping from the aircraft. They may also need to provide an escape route for passengers, by using foam to cut a path through any burning flammable liquid -- from the escape area or exit door to a safe area outside the burn area.

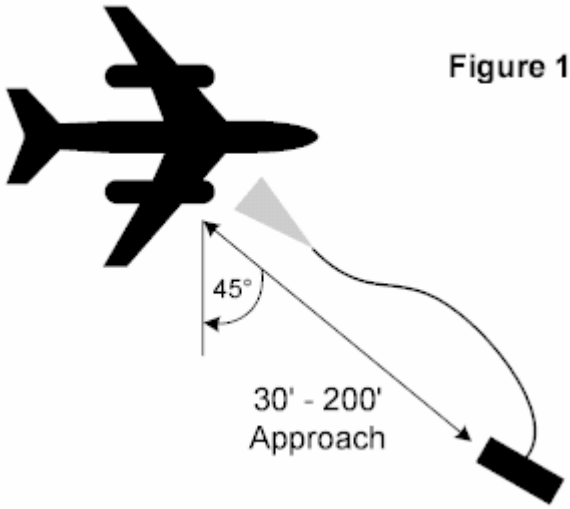
1. If foam is not available, use large volumes of water.

2. Avoid walking in front or behind jet engines.

a. When approaching the aircraft, keep at least 30 feet away from the engine intakes. Exhaust hazards on larger aircraft can be up to 200 feet.

b. Attack the fire from a 45-degree angle (relative to the forward direction of the aircraft). Figure 1 illustrates a 30’ – 200’ approach at a 45°

Figure 1



3. Protect the aircraft fuselage from direct flame impingement, since fire can burn through a fuselage within 60 seconds.

    a. Use a handline to keep heat from spreading between the engine and fuselage.

4. When possible, lay a supply line. Use deck guns to provide quick water and large volume to extinguish fires and to protect exposures.

5. Fuel is carried in the wings; do not block vent holes or tubes.

6. If landing gear was deployed, avoid walking under aircraft; approach landing gear at a 45-degree angle. See figure 1.

C. Interior attacks on large frame aircraft.

1. Advance interior attack line(s) inside the aircraft as soon as possible without interfering with the escape of the passengers.

2. Provide ventilation as quickly as possible inside the aircraft. Most victims who die inside survivable aircraft crashes do so because of smoke inhalation.

    a. Use PPV fans or fog streams to ventilate.

    b. Pressurize from the unburned area and provide a ventilation exit in fire area. Ventilation should be started at the same time as the attack lines are put into operation, if possible.

3. Large aircraft have common attic spaces, large open cargo areas (in the belly), and sidewalls that can hide running fires in these confined spaces.

D. Accidents involving small or propeller-driven aircraft.

1. Do not walk within ten feet of propellers due to the possibility of accidental or sudden rotation. Do not manually move or bump propellers.

E. When an emergency landing occurs on a highway or other roadway, and there has been little or no damage, ensure that the battery is disconnected, and verify with the pilot that emergency shutdown procedures have been initiated.

1. If possible, and if safety considerations require it, assist in moving the aircraft from traffic areas and secure the scene.

F. Engine fires

1. Initiate an attack using large volumes of water or foam through the engine air intake. In addition to extinguishing the fire, this will shut down the engine.

2. Always maintain a safe distance from rotors and propellers.

3. Use ladders on the aircraft at the wing or other accessible points. Jumbo aircraft may require aerial ladders to reach access points.

4. Obtain primary and secondary “all clears.”

5. Provide for interior lighting.

6. Request that the Police Department secure the scene and assist in the control of ambulatory passengers. Have the police provide a holding area for them until sectors or groups can be assigned to address those issues.

7. Initiate both fire and medical groups as soon as possible. Establish divisions for both sides of the aircraft to protect the escape routes and to manage the evacuated passengers.

8. Establish groups to address scene lighting, extrication, treatment, transportation, and site safety.

9. Consider establishing a branch level command system to address fire and medical operations separately.

10. Large amounts of flammable liquids on fire will require large amounts of foam extinguishing agents.

a. Keep all flammable liquids covered with a foam blanket.

b. This will prevent ignition.

11. Be aware that large aircraft have enough electrical power running through the aircraft electrical lines to kill a person and/or ignite flammable liquids.

12. Jagged metal parts of the aircraft can cut through protective clothing and hose lines.

13. To cut into the fuselage of an aircraft, the wing area may be used as an area from which to work; however a platform ladder truck may be necessary.

    a. The best place to cut is around windows, doors, and the roof area.

    b. Hurst tools and pry bars do not work well on aircraft metals because there are no solid supports to work against.

    c. If saws are used for extrication or ventilation, arcing and sparking will need to be suppressed with water or foam from handlines. A good blanket of foam must be maintained on the flammable liquids area.

    d. Be aware that aircraft have numerous high pressure hydraulic lines that can cause serious injury if they are cut or broken.

14. Always have a safety back-up crew with charged and staffed hose lines in place to protect all personnel who will be working inside the spilled flammable liquid areas.

    a. All personnel working in these areas shall be fully turned out in protective gear.

    b. SCBA face pieces must be worn.

15. Have police secure a route into, and out of, the incident site to permit easy movement of emergency equipment -- particularly for ambulances going to hospitals.

16. Do not allow any overhaul operations to take place until all investigative agencies are through, unless needed to suppress fire.

17. Be aware that large aircraft have oxygen cylinders on board that can explode, become missiles, and/or accelerate the spread of fire.

18. Never assume that there are no survivors of the aircraft crash. Obtain primary and secondary “all clears.”

19. Consider adopting a defensive mode of operation to protect personnel and exposures.

Tire Fires

Purpose

This purpose of this guideline is to establish the Albuquerque Fire Department's guidelines for tire fires. It identifies accepted operational tactics for safety and efficiency in response to tire fires.

Guideline

Tire fires present the same potential threat to the environment as an incident involving an oil tanker or a railroad tank car carrying hazardous substances and will be considered a Hazardous Materials event. Major tire fires can be considered significant public health hazards. Tire fires can potentially last days, weeks or months.

When exposed to extreme heat, tires reach a state of combustion in which volumes of toxic pyrolytic oil are produced. The average passenger car tire holds 2.5 gallons ofoil. Fire conditions can turn a tire pile into a running oil fire. Exposure hazards associated with the smoke plume, water runoff, and soil include volatile organic chemicals, polynuclear aromatic hydrocarbons, carbon monoxide and heavy metals. These toxins can be absorbed through the skin, mucous membranes or the respiratory system.

Operational Guidance

I. Hazard awareness and incident pre-planning

A. The company officer should familiarize his/her crew with all scrap tire piles located within their area of response.

B. Pre-planning should identify:

1. Site location – type of operation (salvage or recycling, managed or unmanaged)

2. Composition of tire piles (whole tires, burned tires, shredded tires, random stacks)

3. Size of tire piles

4. Available equipment

5. Hazards

6. Exposures

7. Utilities – Overhead wires, underground gas, electrical or communication

8. Geographical and topographical information

9. Emergency contacts

II. Dispatch

A. Major tire fires be handled as hazardous materials incidents

B. The dispatcher will obtain all available information from the caller to determine what exactly is on fire

III. Size-up

A. Upon arrival the company officer must determine the stage of combustion the tire pile is in (incipient, free-burning, smoldering) and consider the appropriate tactics to employ for the situation at hand:

1. Incipient stage

a. The incipient stage of a tire fire begins with a point of ignition. Once a tire has gained an open flame front, the heat of the fire is absorbed by the surrounding tire material.

b. Immediately separating the burning tire from the rest of the pile and/or applying water and foam would eliminate the threat to the remaining tires.

2. Free-burning stage

a. During the free burning stage, fire spreads quickly and there is a dramatic increase in smoke and heat. Use of water in this stage of a tire fire could increase the products of incomplete combustion like carbon monoxide and particulate matter.

b. Smoldering stage

i. Tires may continue to pyrolize, producing large quantities of oil. A crust may form over the pile while internal temperatures reach about 2,000 degrees Fahrenheit. Oil not consumed by the fire will leach into the soil, pool, and begin to flow under the pile. Heat from the fire could ignite the oil, resulting in a three-dimensional fire. Products of incomplete combustion continue to be a health hazard.

B. During initial size-up, the company officer must determine if the fire can be extinguished quickly without endangering personnel. If the fire is in the free burning or smoldering stage the most immediate concern will be the life safety of firefighters and the community. Approach to the incident should be in accordance with tactics common to other potential hazardous materials incidents.

C. Initial size-up must evaluate the emergency in terms of:

1. Personnel safety

2. Public health

3. Environmental impact

4. Threatened exposures

5. Extent of fire

6. Need for additional resources

D. Other Command concerns to be addressed by first-in officer or subsequent ICs:

1. Scrap tire fires can potentially last days, weeks or months.

2. Tire fires are highly toxic and dangerous

3. Activation/utilization of the following may be appropriate:

a. Emergency Operations Center (EOC)

b. Emergency Operations Plan

c. Accountability systems and Rapid Intervention Teams

d. Haz Mat, Safety, Environmental, Evacuation, Public Information, Welfare, Resource, Rehabilitation, Decontamination, Staging Divisions or Groups

e. Public Safety Liaison/Air Operations Liaison

f. Water Department Communications/Liaison

g. Mutual Aid response

IV. Personnel safety

A. Awareness of the hazards involved in a tire fire can be the best personnel protection.

B. Heat exhaustion and working in less than ideal conditions is a reality in a large tire fire.

C. Command will want to prepare for total exposures, health hazards, and personnel injury hazards.

D. PPE at major tire fires:

1. Full turnout gear - required

2. SCBA - required

3. Surgical gloves under the leather gloves will give added protection from contact with the contaminated water, oil, and mud.

E. Extent of toxicity

1. The risk of exposure to toxic chemicals continues after the fire is out. Smoldering tires are as toxic as tires in a free burning state. Flying ash and contaminated soil are also potential hazards.

2. The temptation to dress down for overhaul should be resisted until the hazardous materials team has determined the appropriate level of protective clothing required.

3. The Incident Commander will establish a decontamination zone for all personnel leaving the fire area. All protective clothing, firefighting equipment, and apparatus may need to be decontaminated as well.

F. Other hazards

1. Contact with rodents, mosquitoes, snakes, spiders or scorpions will be reduced with the use of protective clothing.

2. Be aware of the dangers of machinery and heavy equipment operating on the fireground.

3. Collapsing walls of tires can block escape routes or cut off water supplies.

V. Public health

A. Command should determine early whether to evacuate the surrounding areas.

B. No strategy for managing the incident should bypass evacuation considerations, since burning tires are extremely difficult to extinguish.

C. An Evacuation Division or Group should be established early on in the incident to coordinate the evacuation process.

VI. Environmental impact

A. Command should size-up the potential environmental consequences of the fire and notify appropriate agencies immediately. Early notification will facilitate timely placement of relevant agencies into the Command structure and overall management of the event.

B. Areas of concern include:

1. Life safety

2. Proximity of wildlands and bodies of water

3. Potential toxic run-off

4. Smoke plume and wind direction/speed

VII. Tactical considerations

A. Life safety

1. Immediate evacuation of the incident scene is a high priority

2. Fire crew safety will be addressed continuously

3. Rapid Intervention Teams will be established..

B. Protecting exposures - Buildings, equipment, and utilities in the proximity of the fire will need to be protected.

C. Command must determine the amount of fuel actively burning and the total amount of fuel available to estimate the rate of spread to determine what will be allowed to burn and where fire breaks will be cut through the pile to limit fire extension

D. Creating fire breaks in a large tire pile is a long and time-consuming process. It can be accomplished with heavy machinery and front-end loaders.

E. Consideration must be given to the potential hazard of overhead or underground utilities

VIII. Strategic considerations

A. Burn it

1. Letting a tire pile burn has its merits. Soil and water pollution may be drastically reduced when many of the products of combustion go up in smoke. Clean-up costs can be lower when compared to other options

2. Adding water to fires or hazardous materials which react to water can exacerbate the emergency

3. It is a priority to protect exposures and separate unburned tires from the tires already on fire

B. Bury it

1. Burying a tire pile has merits. Sand, cement dust, quick lime and crushed coral rock are all high in calcium content. Calcium scrubs sulfur from the emissions, creating calcium sulfate or gypsum.

2. The bury it strategy is useful in areas with minimal water supply or in areas that are densely populated. Burying a tire fire reduces toxic smoke for the sake of public health.

3. When a tire fire is buried, fires can still pyrolize and push toxic oil into the soil and underground water sources. Burying a tire fire that is on top of clay soils may delay the oil from filtering to underground water supplies. To determine the release of pyrolytic oil, check down gradient from the pile for contamination. Utilize the Environmental Health Department for assistance in making this determination.

C. Drown It

1. Utilize water, foam and additives

2. The drown it strategy is best employed with forethought and careful preplanning which takes into consideration the topography and exposure hazards, in particular, hazards to water sources.

3. Drawbacks to the drown it strategy include:

   a. An increase in the toxic air emissions as the fire is cooled

   b. An inordinate amount of water run-off combined with pyrolytic oil

   c. The effectiveness of water applied to a tire fire is questionable and handlines alone cannot reach the interior spaces of a tire fire.

4. The drown it strategy utilizing a fog stream on chunk and chipped tires can be effective. Separating unburned inventory from the burning area is important to the control and extinguishment of this type of fire.

5. Foam would best be employed on small tire fires or when the fire is in the incipient stage. Pulling a larger tire pile apart with heavy machinery and applying foam can be effective. Foam should only be employed as part of a predetermined strategy.

IX. Clean-up and overhaul

A. Clean-up on tire fires will, in all probability, be turned over to an appropriate environmental protection agency.

B. Hazards to personnel exist long after the fire is out. Toxicity levels of tire fire sites suggest high concentrations of contaminates. Flying ash and contaminated soil blown around the site may increase exposure risks.

Responding to Violent Scenes

Purpose

The purpose of this guideline is to establish the Albuquerque Fire Department's approach to safe and effective methods for dealing with violent and potentially violent incidents of any scale. Ensuring a safe environment for firefighters to work is the first priority at any scene.

Guideline

Violent incidents are defined as shootings, stabbings, assaults, unruly crowds, civil disturbances, riots, or any other type of incident in which AFD personnel may be exposed to harm as a result of a violent or threatening act directed at firefighters, other persons, or property. The potential for violence is present on any call.

Operational Guidance

I. Scene considerations

A. There are essentially three types of incidents to which AFD responds.

1. A known or potentially violent scene that has been secured by APD.

   a. AFD units should respond and proceed with caution.

2. A known or potentially violent scene which has not been secured by APD.

   a. AFD units are required to stage in a safe location.

3. An unclassified scene, in which there is no reason to believe the scene is violent or has little potential to become violent, or where acts of violence have gone unreported.

II. Communications considerations

A. If AFD units respond to an incident of an unknown nature and find themselves in a violent situation, they should immediately retreat to a safe location.

B. Any unit requiring immediate assistance from APD will utilize the following AFD Communication model.

1. Transmit “Emergency Traffic.”

2. AFD Dispatch will immediately advise APD Dispatch of the need for a rapid police response.

3. During violent situations where fire crews are at risk of danger or potential injury, or when they need immediate police assistance for any other urgent need, they may radio APD Dispatch directly.

4. Any radio communication to AFD Dispatch or APD Dispatch including the transmission “Emergency Traffic” and/or “34 is needed ASAP” will not be required to provide any further explanation to have APD or BCSO units dispatched Code 3.

a. If possible, the company in danger will give the reason to the dispatcher.

b. It is the responsibility of the Company Officer to use discretion in removing crewmembers from a scene if the threat of violence against firefighters appears imminent.

III. Scene size-up

A. All crewmembers must be alert to indications of possible violence and must be aware that any scene is a potentially violent scene. Crews must use common sense, awareness, and make good use of information from AFD Dispatch.

B. Use a scene size-up and frequently reassess to avoid the danger of violent scenes.

1. Common sense and awareness.

a. Pay attention to any information provided by AFD Dispatch and if possible, have one portable radio tuned to APD Dispatch.

b. Do not get lulled into a false sense of complacency (“we’ve been here ten times before”)

2. Do not ignore any gut feeling or instinct.

    a. If it doesn't feel right, it probably isn't.

3. Present a confident attitude (commanding presence) on scene, but do not be confrontational or abusive with any individual or group.

4. Do not be an easy target.

    a. Call for backup early and be prepared to leave the area if the need arises.

B. Red flags for violence or potential violence.

1. Shootings, stabbings, fights (domestic or public), man down, attempted suicides, and overdoses all have potential for further violence.

    a. Remember that a significant percentage of public safety personnel that are critically injured or killed, are injured or killed at domestic abuse responses.

2. Considerations for scene safety.

    a. Is APD on scene?

    b. What is the nature of the call?

    c. Type of injuries and reported cause of injuries.

    d. Does the patient display an altered level of consciousness, or are drugs or alcohol a factor?

    e. Is a fight still in progress and if a person caused injuries, are they still on scene?

    f. How many people are involved?

        i. Parties should be a red flag for dispatching APD.

        ii. Make contact with the ranking police officer and describe what security is needed.

C. Maintaining awareness of surroundings and potential danger.

1. Ask APD to search the individual prior to your assessment.

a. Have APD Clear the scene of any potentially dangerous materials or objects.

2. If APD is not on scene, due to MPDS coding or unclassified scene, consider doing an informal pat down to check for potential weapons.

a. As you begin to check the patient, check those areas where a weapon may be hidden.

3. Weapons can be guns or knives designed to kill, or makeshift weapons, such as anything that wasn't designed to be a weapon, but can be used as one.

4. Always look for the informal or designated leader of a potentially violent group and attempt to visually monitor and, if possible, make a personal contact to ease tensions.

5. Do not ignore the potential for violence on any scene, including travel to and from the call and trips back and forth to the apparatus while on-scene.

6. Be aware that uniforms can be threatening to certain people and that public perception of the fire department is not always positive.

a. Some individuals may fear detection of criminal activity.

b. An individual who has caused the patient’s injury in a domestic or gang-related confrontation may not want the patient to receive emergency care and may be antagonistic or uncooperative.

IV. Tactics for maintaining crew safety on all calls

A. Take specific precautions whenever entering any building on a call.

1. Introduce yourself as AFD.

2. Ask that any loose dogs be secured (in a yard or other room).

3. Have the person who answered the door lead you to the patient.

   a. If they ask you to come in, ask them to open the door.

   b. Never stand directly in front of the door. Always stand to either side, particularly the door knob side.

      i. This forces the person at the door to open the door fully to see you, and allows you to fully see them.

      ii. You are also afforded the protection of the exterior wall.

   c. If they insist, ask them why they can't come to the door.

4. There are risks involved when looking into windows at calls where callers or other individuals are delayed in answering the door.

5. Scan the room for weapons, alcohol, drugs, signs of violence, or makeshift weapons.

   a. Look for signs of weapons, including bulges in clothing.

6. Watch for potentially violent temperament of individuals on-scene.

   a. Watch their hands.

   b. Remember to keep the individual at arms length. This allows you the time and space to react if the person turns violent.

7. Keep your crew in sight at all times. Never leave a crew member alone.

8. If a scene involves more than one disputant, make sure that APD separates the individuals and that a police officer remains with each individual to ensure crew safety.

V. Tactics for responses to unclassified scenes

A. Take specific actions on calls where there is very little potential for the scene to become violent or violence has not been reported.

B. AFD response is dictated by the MPDS system.

1. Maintain vigilance when approaching the building.

a. Do not slam the door of the apparatus or vehicle.

b. Keep the volume low on the radio.

c. Gain information before entering the house.

d. Look and listen before entering the house.

2. If the scene becomes violent or has the potential to become violent, immediately retreat to a safe location and call for APD.

VI. Tactics for approaching a violent scene that has been secured by APD

A. Take specific actions when spotting the apparatus at a residence.

1. Turn off siren several blocks away, if possible.

2. Proceed with caution.

3. Consider turning off all lights just prior to arrival on scene.

a. Scan the scene prior to departing the apparatus. Does the scene look secure?

4. Spot the vehicle approximately 100 feet before the residence.

a. This will allow an approach to the scene from a safe position or direction.

C. String fire line tape to provide an established barrier between firefighters and a crowd.

1. Fire line tape provides a control line for APD to enforce. The tape is generally well-received by citizens as needed by emergency personnel to provide control of an incident.

2. Fire line tape can be used to divide large crowds to assist APD in maintaining order.

D. Use APD to secure traffic and crowds.

1. This is the primary responsibility of police at the scene of a fire department emergency.

2. A fire department member should establish liaison with the on-scene ranking police officer.

3. Explain to them what is needed to control the scene. More officers should be called if necessary.

E. Provide scene lighting to assist crew operations or to prevent the potential or further violence**.**

1. More serious violence occurs after daylight hours. Spotlights take away the cover of night.

2. All emergency responders will be able to see more of the scene when good lighting is provided.

VII. Tiered responses

A. Known or potentially violent scenes will be designated as Tier One, Tier Two, or Tier Three Responses. They will be dispatched as such by AFD Dispatch.

B. Tier One response conditions.

1. AFD Dispatch will direct units to “stand by for APD to secure the scene” before entering when known violence (such as, shootings, stabbings, or fights) have been identified by AFD Dispatch as confirmed or suspected violent calls.

2. If the suspected Incident is within one mile of the responding Fire Station, the responding unit should stage inside their respective station and monitor the radio (Level 2 staging).

a. In all instances, stage at least ½ mile from the Incident.

b. Stand-by is defined as locating a safe distance from the event location.

c. The responding unit should stage out of sight of the scene, with at least two means of egress.

i. Backing is not considered a means of egress.

3. Responding to a Tier One event.

a. The first-in unit will stage at a minimum of ½ mile from the incident, at the discretion of the Company Officer, until APD has secured the scene and this is reported by AFD Dispatch.

b. The first-in unit will take Command and advise both AFD Dispatch and other responding units regarding their staging location

i. Example: "Engine 1 has command, Engine 1 is staged at Central and 4th street; standing by for APD to secure scene."

c. All additionally responding units will report to the staging area, and will be under the command of the first-in company officer.

d. AFD Dispatch will collect and provide as much scene information as possible and will rapidly communicate that information to responding companies by radio.

e. In all cases, and without exception, AFD personnel will adhere to defined staging protocols.

4. AFD units will not proceed beyond staging until advised that the scene is confirmed secure, either by AFD Dispatch or by APD.

a. If and when APD advises that scene is secure, that information will be communicated to all on-scene and to AFD Dispatch via radio

5. General staging parameters and considerations.

a. Staging can take many forms, including Level 2 staging in which the company officer of the first-staged unit advises incoming units of a central staging location.

b. Level 1 staging, as defined by AFD (one block away, in the direction of travel), may not provide a sufficiently safe distance when violence is involved.

c. Personnel should consider the hazards at-hand and stage far enough away to avoid becoming a part of the incident.

i. At least ½ mile away, out of line-of-sight and out of the line-of-fire for gunshots. You should have at least two means of egress.

d. Personnel should remember that any crowd can be a hazard and stage units accordingly at a safe distance.

e. Units should turn off warning and interior cab lights off while staged.

f. Emergency lights should be turned on when completing the response to the scene.

g. Turning off warning emergency lights while on-scene may reduce crowd attention or attraction to the incident.

B. Responding to a Tier Two event.

1. A Tier Two response will be initiated when an actual act of violence towards firefighters has occurred at a specific location of the city.

a. Example: A random gunshot fired at a fire apparatus, but resulting in no injuries, and there are no indications that the situation involved any other related acts.

b. A perimeter should be identified that is a minimum of a 1/2 mile in each direction from which the act occurred.

2. Effective initiation of a Tier Two response requires immediate communication between, and coordination of, the companies experiencing acts of violence.

a. AFD Dispatch will notify the appropriate Battalion Commander and the Deputy Chief of Operations in the event of a Tier Two incident.

3. For at least the remainder of that work shift, fire department units will not respond into, or be dispatched into, that area without a police escort**.**

    a. Units will stand by for APD to secure the scene on every call.

4. No Code 3 responses will occur into or through the area.

    a. Responding units should stay clear of the area when returning from other calls.

    b. All surrounding fire department units should return to and remain in their stations, except to respond to and return directly from calls.

5. Any fire stations located inside the established perimeter should have all their resources reassigned to a station outside the perimeter, or to a Level II staging area.

    a. All support apparatus, such as brush trucks, will also be relocated.

6. Fire stations located adjacent to the perimeter area will remain in their stations, but shall go into a “lockdown” mode for security reasons.

    a. All doors will be closed and locked.

    b. Members will remain indoors at all times.

7. Additional operative parameters for Tier Two response.

    a. All fire department personnel will respond to and from all emergencies in full protective clothing (helmet and full turnout gear), and will remain in full gear until returned to staging or to their assigned fire station.

    b. Apparatus placement must be in a manner that will allow for a rapid and unobstructed retreat from the area.

    c. Apparatus must also be parked in a manner that best protects the crew, two means of egress, without backing.

d. All tools and equipment located on the exterior of apparatus must be removed and placed within interior compartments.

C. Responding to a Tier Three event.

1. A Tier Three response will be initiated when civil disturbances occur over a large area, meaning when a series of actual acts of violence have occurred in a specific area of the city (such as, unrelated and intentionally-set fires, a series of assaults, or looting).

2. The effective initiation of a Tier Three response requires immediate communication between and coordination of the companies experiencing acts of violence.

3. AFD Dispatch will notify the appropriate Battalion Commander and the Deputy Chief of Operations in the event of a Tier Three event.

a. Any company experiencing an act of violence against them must immediately report the incident to AFD Dispatch.

4. It is the responsibility of the AFD Dispatch Supervisor, Company Officers, and Battalion Commanders to be alert to potential or actual hazards due to a civil disturbance.

5. There are times when such potential is high and well-known throughout the city; however, at other times, a single act or incident can spontaneously escalate into a significant disturbance.

6. AFD Dispatch accountabilities include specific issues.

a. It is essential that the AFD Dispatch Supervisor remain alert at all times to the potential of a civil disturbance.

b. The AFD Dispatch supervisor should also attempt to identify specific patterns.

i. What may appear to be a few unrelated incidents in a particular part of the City can be the only warning of a significant disturbance in its early stages.

ii. Incidents can also occur in more than one area of the city simultaneously.

iii. A delay in recognizing geographically diverse, but related, incidents of violence may result in significant risk to responding units and may negatively affect the development of the Incident Command System

D. If the severity of the situation dictates that a Tier Three response is in order, AFD Dispatch will take specific actions.

1. Notify all on the following list.

a. AFD Fire Chief.

b. City of Albuquerque Emergency Manager.

c. Police Liaison Officer.

d. AFD PIO.

e. APD Communications.

i. Inform them of the situation and request notification of the Area Command (of the involved area), and the relevant Shift Commander.

f. All AFD stations.

i. After an Incident Action Plan has been developed, AFD Dispatch will notify all AFD stations and brief all personnel on the incident or situation, detailing location or boundaries and expected duration of the event.

2. Any Tier Three situation will be reported to oncoming shifts at roll call and announced to all stations and units over the air by AFD Dispatch.

3. The Deputy Chief of Operations and the Battalion Commander of the affected area will periodically review the Tier Response Plan and initiate communication (to the department) of any changes and the current status of the situation.

E. Tier Three operative parameters.

1. When a Tier Three response has been designated, a perimeter encompassing one or more square miles will be established around the area.

2. A Command Post will be established well outside that perimeter.

   a. Whenever possible, a joint Command Post should be established with APD.

      i. If this is not possible, a ranking Police Officer should be requested to report to the fire department Command Post.

   b. Consider Dispatching the AFD mobile command vehicle for greater coordination.

3. Command shall establish Level II Staging near the Command Post and request appropriate resources from AFD Dispatch (such as the mobile command vehicle).

   a. At all times we shall adhere to the Incident Command Model.

4. Close communications are to be maintained between AFD Dispatch (via a Dispatch Liaison located at the Command Post), and the Police Liaison.

5. The Command Post will direct all responses into the Hazard Zone

   a. AFD Dispatch will provide Command all requests for emergency service in the identified area.

   b. Dispatch will also advise Command of all emergency requests to perimeter areas

   c. Command will determine the appropriate response to the incident, the radio channel, obtain a police escort, and actually direct the companies to respond.

   d. All resources responding into the perimeter will be grouped (no single company responses) and will respond only with police escorts.

i. Responding units will communicate only with Command.

ii. Requests for additional assistance by a company or unit should be directed to Command, using the emergency traffic procedure, if necessary.

e. Upon completion of the call, the companies are to return to the Command Post, be accounted for, and return to Level II Staging.

f. Both Command and AFD Dispatch must monitor all radio traffic.

5. Command should consider rotating units from throughout the City into the Level II Staging area for response.

a. This can help to reduce tension and to maintain alertness among the crews.

6. If disturbances are occurring in more than one area of the City, this system may be duplicated in other locations.

a. When operating in a Tier Three situation, emphasis must be placed on stabilizing the incident as rapidly as possible, if safe to do so, and then pulling out.

7. Companies responding to situations that involve civil disturbances should observe specific precautions.

a. No single company responses will be permitted into Tier Three situations.

b. Police escorts will be required into such situations.

c. All AFD personnel will respond to and from all emergencies in full protective clothing (helmet and full turnout gear), and will remain in full gear until returned to staging or their assigned fire station.

d. The use of sirens and air horns within the perimeter should be avoided, although emergency lights may be used.

e. Apparatus placement must be in a manner that will allow for rapid and unobstructed retreat from the area.

i. Apparatus must also be parked in a manner that best protects the crew.

ii. Remember that you must have two means of egress.

f. All tools and equipment located on the exterior of apparatus must be removed and placed within interior compartments.

g. Crews should be careful about what is said over the radio.

i. Outside speakers on apparatus broadcast all messages to the public.

ii. Cellular phones should be used as much as possible for sensitive communications.

h. AFD members must control their behavior and back off from confrontation in potentially violent situations so as not to incite a significant event.

i. Patients may be more effectively treated, in a potentially violent situation, if the patient is rapidly removed from the scene to an exterior treatment area (scoop and run).

8. On fire scenes, if no lives are at stake, emphasis will be on protecting savable property.

a. Property such as buildings or vehicles that are fully involved, with no exposure problem, may be left to burn.

b. Emphasis will be on fast attack methods, with engine mounted master streams deployed to rapidly control and extinguish any fire, allowing responding crews to evacuate the area.

i. The use of hand lines should be limited.

c. Routine salvage, ventilation, and overhaul practices may be discontinued.

d. All fire units will enter the perimeter as intact groups, travel in groups, operate in groups, and return in groups.

9. Firefighters should be aware that any civil disturbance has the potential to quickly escalate into a major situation and any escalation must trigger the involvement of officers higher up the chain-of-command.

10. Apparatus located at fire stations, such as brush trucks or utility trucks, can be staffed to substantially increase the number of units available to respond to emergencies in groups.

11. The call back of off-duty personnel and staffing of reserve apparatus may be necessary.

12. An appropriately located fire station, other city facility, or school can make an excellent Command Post and staging area, and can be easily secured.

a. Schools, in particular, may offer more space and resources for command functions.

Highrise Building Construction

Purpose

The purpose of this guideline is to establish the Albuquerque Fire Department's operational methods for addressing both minor and major structural collapse incidents, maximizing operational methods, and optimizing patient care, while providing for rescuer safety.

Guideline

This guideline applies to all emergency incidents where a person(s) is trapped or pinned within a building by its structural components or is trapped or pinned by its contents following a structural collapse. While a large structural collapse incident is an uncommon event in most jurisdictions, it does have the potential to occur. Such incidents have proven to be very demanding on local emergency response agencies. Major building collapse incidents require good pre-planning, interaction with other agencies and an organized approach to ensure success. 80% of those who can be saved will be rescued in the first 24 hours of rescue operations.

It is the responsibility of all command and company officers to familiarize themselves with the methods described in this operational guide. The basis of this guideline was obtained from NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents and National Urban Search and Rescue Response System, Field Operation Guide.

Operational Guidance

I. Building construction

A. The specifics of each highrise building's construction need to be determined during pre-fire planning while the building is being built. Knowing 2 features of the building, however, may provide some important information regarding building construction. These features are the occupancy and approximate date of construction.

B. The occupancy of the building is defined as how the building is used. Highrise occupancies usually can be classified into 2 types: residential or commercial. Residential highrises may include apartments, hotels, or hospitals. The floors in these occupancies are often compartmentalized. Walls that extend to the ceiling level divide each living space. The living space empties into an enclosed corridor designed specifically for exit.

C. Commercial highrise occupancies may include businesses, restaurants, government offices, etc. Commercial occupancy floor layout can be quite different. With the exception of corner offices, an open floor plan consisting of partitions and office spaces will be present. The partitions do not extend to the ceiling level, thus creating a non-compartmentalized floor plan that may be thousands of square feet in area.

D. If a tenant occupies more than one floor of the building, access stairs may be present. Access stairs are non-enclosed stairs that allow workers to travel floor-to-floor without using the exit stairwells or the elevator. While convenient for the occupant, the presence of access stairs creates very serious fire and smoke spread potential that firefighters must combat.

II. Compartmentalization

A. This is a key factor in fire stream application.

B. Residential occupancies that are compartmentalized provide walls from floor to ceiling and doors that can prevent the fire from spreading beyond the area or room of origin. Commercial occupancies tend to have very limited compartmentation – a wide floor plan exists. This floor plan promotes rapid fire spread.

C. The presence or lack of compartmentation will have a large impact on fire stream effectiveness. The differences in stream needs can be viewed as residential GPM vs. commercial GPM.

D. In residential occupancies, well positioned and staffed 2 ½" handlines should be capable of providing sufficient GPM to extinguish a "compartmented" fire. Commercial occupancies with the greater potential to create a fire of several thousand square feet may produce more heat then a 2 ½" handline can extinguish.

E. Under "non-compartmented" conditions, master stream quantities of water will likely be required. The lightweight, single 2 ½" inlet portable monitor can deliver 500 GPM when supplied from the standpipe discharge outlet. This device's high flow/low pressure, reach, and penetration are the best tactical choice in uncompartmentalized commercial highrise fires.

III. Evacuation considerations

A. Whether a residential or commercial occupancy, evacuation concerns will be present regardless of time of day. These buildings are occupied 24 hours a day and their occupant loads are rarely consistent. Given this situation, an accurate occupant list becomes a very important tool in addressing occupant evacuation issues.

IV. Additional building types

A. The date of construction can also provide some indication of building construction characteristics. A dividing line in highrise construction techniques exists. Highrise construction can be generally divided into 2 eras: pre-World War II and post-World War II construction.

B. Steel encased in concrete was the method of construction most commonly used prior to WWII. Buildings were physically larger and stronger due to the presence of concrete throughout.

1. Lighting and air movement systems on each floor were independent of floors above and below; there were few utility raceways and windows could be opened because HVAC was non-existent at that time. The ceiling was the bottom of the floor above; no drop ceilings were present.

C. Post-WWII/modern highrise construction techniques are very different. Lightweight steel protected by spray-on fireproofing is prevalent. (Nothing is fireproof – this is an industry term).

1. These structures are often taller and weaker than their predecessors. Utility raceways and HVAC systems have created penetrations between floors that act as avenues for fire and smoke spread to several floors simultaneously.

2. Drop ceilings hide the extensive utilities and ductwork located at the ceiling level, creating dangerous void spaces. (An extensively renovated pre-WWII building could have these modern construction features present also.)

3. Curtain walls make up the exterior of the building. These walls are attached to the outside of the skeletal steel frame and may be made of a variety of different materials.

D. Another modern type of highrise construction exists. Known as core construction, this construction method places all non-regularly occupied spaces in the center (core) of the building.

1. Elevators, stairwells, utility raceways, vertical shafts, etc. are all located in the middle of the building and are surrounded by the exit corridors and occupied spaces. By placing the building systems adjacent to one another, construction costs are lessened.

2. Core construction can significantly impact highrise firefighting operations. Exit stairwells are no longer remote; they are grouped together.

3. All occupants will gather in the center of the floor since that is where all exits will be located. This makes stairwell designations more difficult to adhere to as occupants may enter any of the present stairwells versus being directed to a remote stairwell.

4. Instead of being able to advance handlines and direct fire streams from different locations on the fire floor, crews must advance all attack lines from the center of the building and move into remote positions to attack the fire.

5. The "donut effect" can take place in core construction highrise structures as crews directing firestreams towards a large body of fire may inadvertently push the fire around the building's core, causing the fire to present behind their position.

   a. It is advised to have at least one handline positioned as a protection line for the fire attack team.

Purpose

Highrise firefighting operations are uniquely complex. A working fire in a highrise building may be the most demanding fire incident our department will face. Because they occur so infrequently, fires in these buildings present a high potential for life and property loss. This high risk/low frequency event poses a very challenging threat to firefighters and building occupants. A thorough understanding of Command and Control, tactical objectives, building systems and communications is required for a successful outcome at a highrise fire operation.

Guideline

Recognizing the large number of highrise buildings located throughout the City of Albuquerque, AFD has developed this guideline to inform operations at highrise firefighting incidents and emergencies.

Operational Guidance

I. Basic operational plan

A. Highrise operations need to be carried out in a specific manner in order to gain and maintain control of the occupants, building systems and firefighters. The basic operational plan consists of the following elements:

1. Determine the fire floor.

2. Verify the fire floor.

3. Control building occupants, including firefighters.

4. Control building systems.

5. Confine and extinguish the fire.

B. Operational factors may include fire floor access, search/rescue and evacuation, fire attack, ventilation, reflex time, building systems, equipment staging, apparatus staging and communications. Each of these elements is discussed in further detail within this guideline.

C. Organization.

1. Response to highrise incidents will be based on the information received by the dispatch center.

2. Highrise emergency response will be categorized as one of the following:

   a. Fire alarm activation.

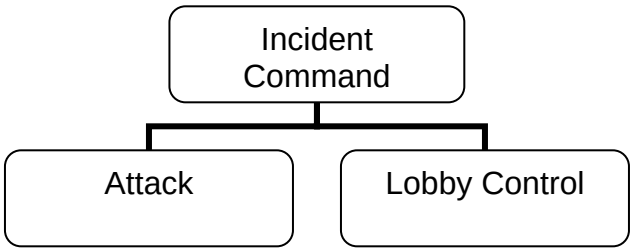
   b. Report of smoke and/or fire.

   c. Determination of a working fire and/or sprinkler system activation by initial responding units.

II. Highrise fire alarm activation

A. The dispatch will consist of an Engine, Ladder and Commander. The basic organizational structure is shown in figure 1.

Figure 1.



B. The engine company should assume initial command and begin the investigation into the fire alarm activation.

C. The ladder company should assume the Lobby Control Division.

D. Once on scene, the Commander should assume Command from inside the structure and assign the engine as the Attack Group.

E. The Attack Group objectives are to determine and verify the alarm floor of origin, investigate, clear stairwells of occupants and begin attack operations.

F. The Lobby Control Division must analyze building systems status and support the Attack Group with building information and equipment as needed.

G. Full personal protective equipment and necessary firefighting equipment must be taken with the Attack Group as it conducts an investigation.

H. Unless cancelled enroute by dispatch, no units should be cancelled until fire department apparatus arrives and the investigation is completed/determines the origin of the alarm.

III. Report of smoke or fire

A. The dispatch will consist of four Engines, three Ladders, three Rescues, two Squads (Squad 1 or 3 and Squad 2), Unit 78, and three Commanders. The basic organizational structure is identified in Appendix A.

B. Immediate responsibilities of the first alarm companies include:

1. Establish Incident Command.

2. Establish Lobby Control Division.

3. Determine and verify fire floor.

4. Make an announcement regarding the situation and our operations via the public address system.

5. Stairwell designations and determination of an “ALL CLEAR” status in stairwells.

6. Initiation of fire attack operations.

7. Water supply.

8. RIT.

C. Once a working fire and/or sprinkler activation is determined, multiple alarms should be dispatched. An incident of this magnitude will require a very large number of resources and a completely expanded Incident Command Structure. The basic organizational structure is illustrated in Appendix A.

D. Each branch, division and group within the organization has specific functions.

1. Table 1 illustrates a highrise response to a report of smoke or fire.

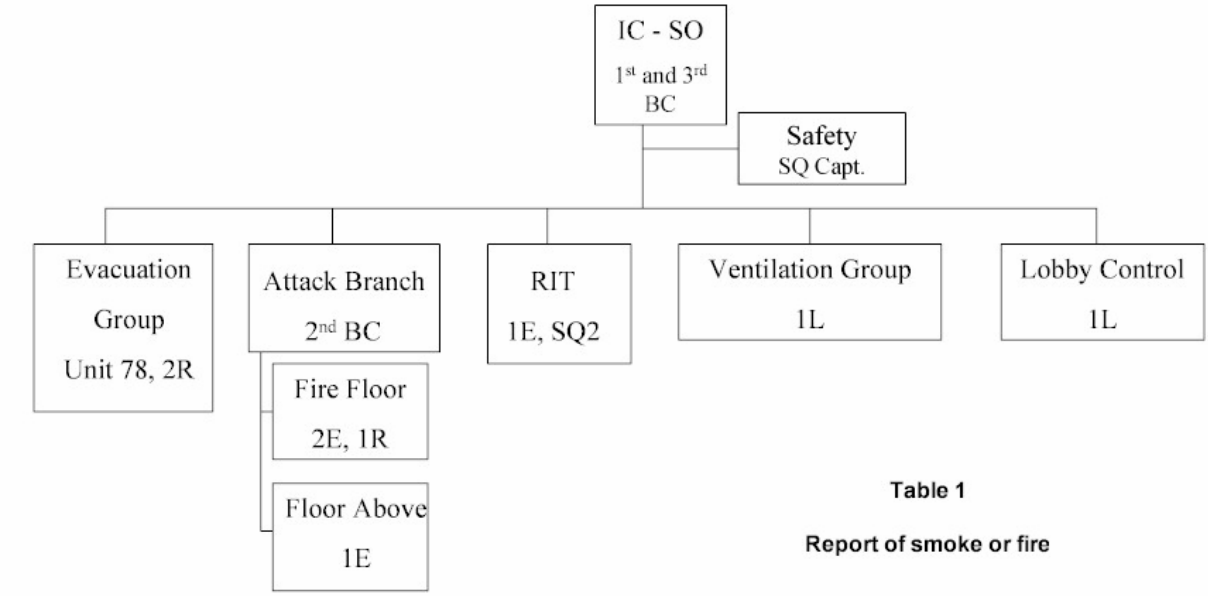


Table 1

Report of smoke or fire

IV. Command and control at a working fire or sprinkler activation

A. The first-arriving Commander should assume and establish command in the lobby.

B. The second-arriving Commander should take a position in the designated attack stairwell and assume the role of Fire Attack Branch Director.

C. The third-arriving Commander should join the first-arriving Commander/Initial IC in the lobby and assume the role of Support Officer. The primary function of the Support Officer will be incident accountability.

D. The fourth-arriving Commander will establish a Command Post outside of the structure and assume command of the incident.

E. The first-arriving Commander should then be reassigned as the Systems Branch Director and the Support Officer will assume the role of Accountability Branch Manager.

F. The placement of first three arriving Commanders in the building is critical to an early and strong organizational structure being established.

1. The decisions regarding control of building systems, stairwell designations, evacuation plans and fire attack operations, along with firefighter accountability are best made at the Command Level.

2. The information needed to make these crucial decisions can be gathered more effectively with Command presence in the building.

3. The early establishment of these positions also creates an effective radio communications structure.

G. Table 2 illustrates a highrise response to a working fire or sprinkler activation.

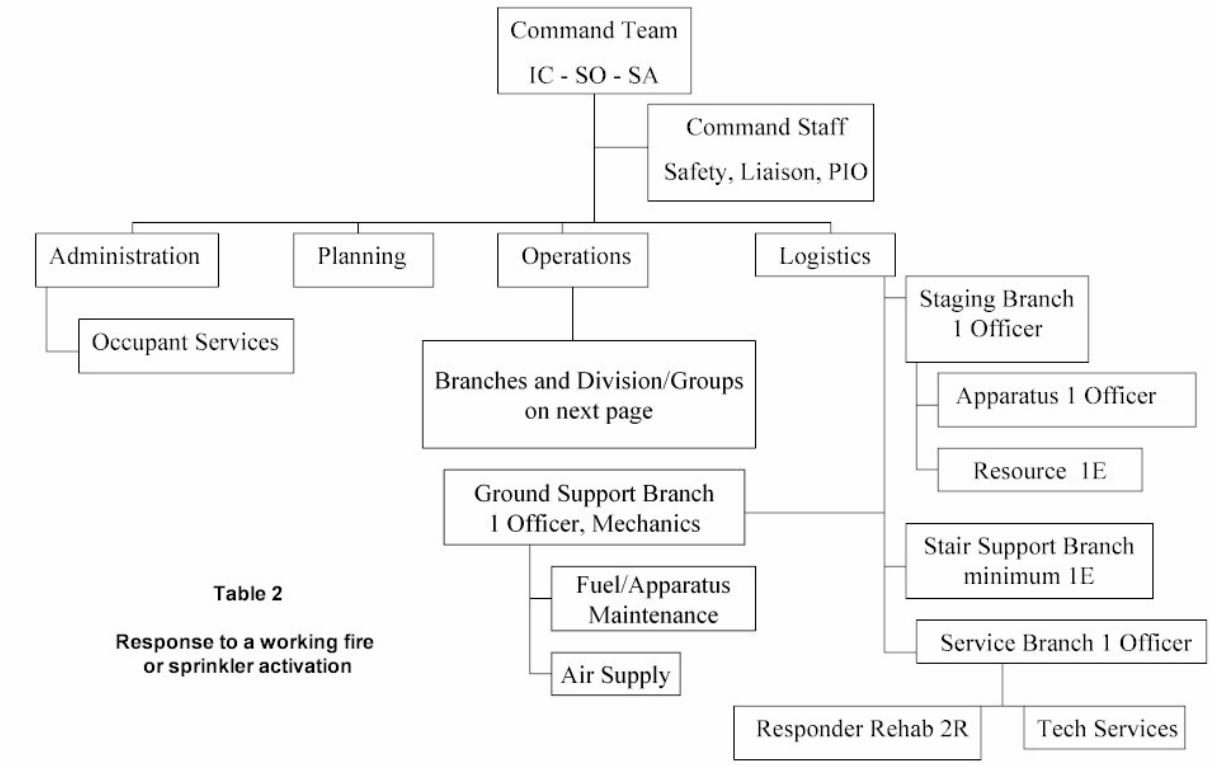


Table 2

Response to a working fire or sprinkler activation

H. Table 3 illustrates the Branches and Sectors within Operations at a working fire or sprinkler activation.

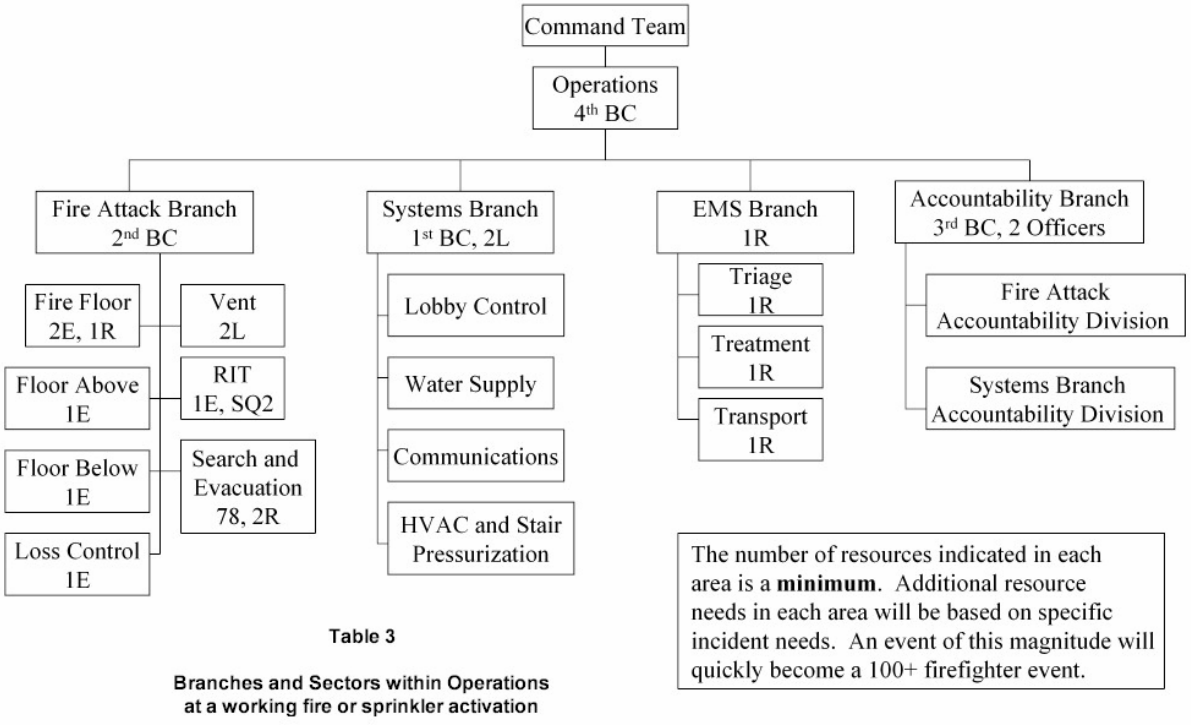


Table 3

Branches and Sectors within Operations at a working fire or sprinkler activation

V. Systems Branch

A. This Branch should be under the direction of a Commander and staffed with one Ladder company minimum.

B. Stairwell designations, control of building systems, and occupant information gathering are major functions of the Systems Branch.

C. Building systems control involves gaining control of and monitoring those building systems that can affect firefighting operations. The following is a list of building systems control and information the Systems Branch must secure.

1. Elevators - If not automatically recalled, elevator control must be accomplished by initiating Phase I operations. If Phase II operations are deemed safe, a firefighter from the Lobby Control Division should be assigned as an elevator operator.

2. Stairwell designations - Stairwell locations, roof access, and the presence of standpipe systems are all stairwell features that need to be known. If three stairwells are present, an attack, ventilation and evacuation stairwell should be designated.

    a. The attack stairwell would ideally have roof access. The ventilation stair should also have roof access. The ability to pressurize any of the designated stairwells should also be considered.

    b. A door that opens at ground level should also be present. If three stairwells are not present, attack and ventilation operations may have to be delayed until the designated stairwells are clear of occupants.

3. Elevator control and stairwell designations must be accomplished rapidly. Occupants in the process of self-evacuation may be in any elevator or stairwell.

    a. Once the elevators return to their designated floor, they must be quickly searched for occupants.

    b. Once units are assigned a stairwell, that stairwell must be ascended rapidly and an “ALL CLEAR” established.

    c. Life safety being the primary tactical objective, the stairwells must rapidly be searched and determined to be clear of occupants prior to the initiation of fire attack operations.

4. HVAC -If the system is having a negative effect on the incident, the HVAC system must be shut down. If determined later in the incident that the HVAC system can assist with ventilation operations, the building engineer should initiate this operation under our direction.

5. Fire pump - A firefighter from the Lobby Control Division should be sent to the fire pump room to determine if the fire pump(s) are operating. The fire pump may be manual, electric or diesel/electric combination.

    a. The pump’s operation is very important to achieving water pressure in the standpipe system, so confirmation of its operational status must be accomplished.

6. Public address system (PA) - Building occupants must be informed of fire department presence and operations. Detailed instructions of the evacuation plan (protect-in-place, floor-by-floor evacuation, etc.) must be announced so that the Search and Evacuation Group can maintain control of the evacuation process.

7. Stairwell pressurization - This system provides a positive pressure to the stairwell in an effort to keep it smoke-free. If not present, the use of electric PPV fans within the lobby may be considered.

8. Other information, equipment, and functions that the Systems Branch is responsible for may include:

   a. Master keys and/or swipe cards for floor access.

   b. Elevator keys.

   c. Fire phones.

   d. Building/floor plans.

   e. Status of alarm annunciator panel (are remote detectors activating?)

   f. Status of building's emergency back-up power.

   g. Occupant list – may identify those in need of evacuation assistance and/or hazardous contents or operations within the building.

VI. Accountability Branch

A. The third-arriving Commander should enter the structure and implement the firefighter accountability system. Once the exterior Command Post is established and the incident organization begins to expand, the Accountability Branch will be managed by this Commander.

1. All units assigned to the interior of the structure will check-in with the Accountability Branch Director before proceeding to their tactical assignment. The Accountability Branch will essentially act as entry control.

B. A Fire Attack Accountability Division will be established in the attack stairwell also. Acting as an aide to the Fire Attack Branch Director, the Fire Attack Accountability Division will account for personnel assigned to the Fire Attack Branch.

1. The Resource Division located two floors below the fire floor will be location where Fire Attack Branch accountability is maintained.

C. Accountability for units that arrive from multiple alarms will be conducted as follows.

1. Units arrive in the Apparatus Staging Division of the Logistics Section.

2. Once given a tactical assignment inside the structure, units will report to the Accountability Branch Director in the lobby.

3 Units will continue to a tactical location.

4. Once arrived, the Accountability Division Supervisor for that location will add this new resource to its Division Accountability list.

VII. Fire Attack Branch

A. The Fire Attack Branch will consist of the following divisions/groups:

1. Fire Floor (Division title based on the floor number).

2. Floor Above (Division title determined similarly).

3. Ventilation Group, Search and Evacuation Group, and RIT.

4. A Floor Below Division may also need to be established.

5. An Accountability Division will also be assigned.

VIII. Fire Floor Division

A. The Fire Floor Division should consist of two Engines and a Rescue.

1. The three Officers, Rescue Driver and 4 firefighters should proceed to the fire floor.

2. The two Engine Drivers should establish 5" water supplies to the standpipe and sprinkler system fire department connections.

B. Equipment that needs to be taken to the fire floor includes:

1. Standpipe kit – contents include 60^{o} elbows, in-line pressure gauge, 1-1/8" solid tip nozzle, 18" pipe wrench, door chocks, latch straps, chalk, spanner wrenches,150' of 2 ½" hose, assembled as three staircase carries.

2. Forcible entry tools to include rabbit tool.

3. Pike pole.

4. Thermal imaging camera.

5. 100' of search rope.

6. Spare SCBA bottles.

C. When elevator use is determined to be unsafe, equipment and manpower must travel via the designated attack stairwell to the fire floor. Based on the travel distance, equipment needs and firefighter physical fitness, the fatigue factor must be considered.

1. With eight firefighters, the workload can be shared. Also, crews may consider leaving bunker coats unsnapped and hoods and helmets off while inside a protected stairwell. The need to keep body temperature as cool as possible is important.

2. The goal is to minimize reflex time – the amount of time from arrival to the first application of water on the fire.

D. Once at the floor below the fire, several things need to be accomplished.

1. The firefighters may begin deploying the hose in the stairwell.

2. The Officers should take a quick tour of the floor below in an effort to get an idea of floor layout.

3. The fire floor conditions should be communicated to the Fire Attack Branch Director.

E. When the fire attack is ready to begin, personnel should be assigned as follows:

1. An Engine Officer and three firefighters advance the attack line for confinement and extinguishment.

2. The Rescue Officer and Driver begin primary search.

3. Another Engine Officer and firefighter remain in stairwell and act as Initial Rapid Intervention Team (IRIT).

4. Officer positions at the standpipe outlet and regulates attack line pressure by reading in-line gauge and opening/closing discharge outlet.

5. A Firefighter must track progress of attack and search personnel and maintain communications with both.

IX. Floor Above Division

A. This division should initially consist of one Engine. The function of this division is an evaluation of conditions on the floor above, the presence of fire extension, and search/rescue needs. If conditions warrant a need for more resources/equipment, the Fire Attack Branch Director must be notified.

X. Ventilation Group

A. This group should initially consist of one Ladder company.

B. Ventilation efforts must be coordinated with the Systems Branch and Fire Attack Branch for stairwell pressurization, HVAC control, roof door opening, etc.

C. Ventilation considerations

1. PPV can pride stairwell pressurization if on-site building fans are not present.The effect of wind and the stack effect must be considered.

2. Horizontal ventilation tactics can be dependent on occupancy type. Residential occupancies may allow window opening; commercial occupancies usually do not.

3. Breaking of windows is not recommended. Before any such action is taken, the IC must be notified so that all branches are made aware that tactical choice.

XI. Search and Evacuation Group

A. This group should be designated if two or more occupied floors exist above the fire floor.

B. This group is responsible for controlling the evacuation process by providing direction to occupants and maintaining stairwell integrity.

C. Human behavior tends to be the weak link in highrise operations.

D. No more than three floors at a time should be evacuated, to keep control of the evacuation process and allow for an occupant accountability to be kept.

E. If a documented list of evacuated occupants and suite/apartment/room numbers cannot be maintained, a door marking system will be utilized. An “X” under the doorknob will indicate that evacuation of the room, etc. is complete.

XII. RIT

A. In addition to the IRIT on the fire floor, a four-person RIT shall be assigned two floors below the fire floor

B. As fire attack operations expand, multiple RIT should be considered.

XIII. EMS Branch

A. This branch should be established three floors below the fire floor.

B. This location can act as both the initial occupant evacuation site and the medical assessment site.

C. By designating this branch three floors below the fire floor, occupant congestion is minimized in the building lobby.

D. Triage and treatment groups may be established at this location.

E. Patient transport may consist of both patient removals from the building and transport to a hospital.

F. The Transport Group may need both interior and exterior components.

XIV. Logistics Section

A. The Logistics Section acts as the support mechanism for the organization. It consists of four branches:

1. Ground Support.

2. Services.

3. Staging.

4. Stairwell Support.

B. The Ground Support Branch is responsible for ground support items such as fuel and mobile air supply/cascade unit and firefighting equipment needs.

C. The Service Branch should consist of a Technical Group and Responder Rehab Group.

1. The Technical Group provides communications assistance (radios and batteries) and any equipment/expertise needed by the IC.

2. The Responder Rehab Group may be located on the same floor as the EMS Branch, three floors below the fire. Food, drink and medical assessment should be provided.

D. The Staging Branch has two Groups.

1. An Apparatus Staging Group should be established no less than 200’ from the structure and be supervised by the first arriving Engine Officer.

a. Once the Incident Command Structure is expanded and Support Personnel have arrived on scene, Staging supervision should be transferred to Support Division Personnel.

b. The Engine Officer and crew should then be given a tactical assignment. The minimum of a first alarm assignment should be in Staging.

2. A Resource Group should be located two floors below the fire floor. At least three engines and a ladder for relief purposes and additional equipment shall be staged here.

   a. If the elevators are deemed unsafe, equipment will need to be carried to the Resource location.

   b. In this case, a Stairwell Support Branch should be established. Under the direction of an Officer, firefighters are located every two floors and act as an equipment shuttle. Obviously, if the fire floor is located several floors above ground, several firefighters may need to be assigned to this operation.

XV. Understanding building systems

A. The correct use of building systems is vital to safe and successful highrise firefighting operations. The following sections list and describe these building systems.

1. Elevators.

2. Standpipe Systems.

3. Smoke Control Systems and Ventilation.

4. Sprinkler Systems.

5. Building Communication Systems.

XVI. Elevators

A. Elevator use under highrise fire conditions is very hazardous. The decision to use elevators during highrise fire operations must be made carefully. Under non-fire conditions, elevators can be a great asset in moving firefighters, equipment, and evacuees.

B. Elevators do, however, have a tendency to malfunction when exposed to heat, smoke, and/or water.

1. Given the fact that elevators can malfunction when exposed to the products of combustion, firefighters will not utilize any elevator that serves the fire floor or floor of fire alarm activation.

2. Only elevators that do not serve the floor(s) involved in the emergency will be used for civilian, firefighter and equipment transport.

C. The decision to use elevators must be made by the Systems Branch Director and only elevators with Phase I and Phase II firefighter controls will be used.

D. If it is deemed safe to use the elevator, several safety considerations must be observed.

1. Do not overload the car. No more than six firefighters and an elevator operator should be in the car at one time. The elevator load limit should be posted inside the car.

2. Equipment to be taken into the elevator should include: PPE/SCBA, forcible entry tools, hose and standpipe kit, flashlights, radio, and fire phone. In case of elevator stoppage/malfunction, firefighters must be capable of forcible exit. An attic ladder should be kept in the elevator.

3. Before entering the elevator car, it is imperative that crews identify the location of the nearest stairwell. If a hasty escape from the elevator car is needed, knowledge of the nearest stairwell location is crucial to quickly reaching a safe area.

4. After entering the elevator car, press the “Call Cancel” button to ensure the car has no memory of a previous floor selection.

5. Once traveling, stop the car every fifth floor. This is performed for two reasons. First, make sure the elevator car functions are still responding correctly. Second, the hoistway should be checked to make sure it is smoke and water-free.

6. The elevator car shall be stopped and all firefighters shall exit a minimum of two floors below the fire floor.

7. If other units will be using the same elevator, place the Phase II control back into the “OFF” position so the car will return to the lobby/designated floor.

E. Firefighter Elevator Service.

1. Elevator systems provide two phases of operation for use under emergency conditions

   a. Phase I operations are required in buildings under 75' tall.

   b. Phase II operations are required in buildings 75' and taller.

2. Phase I operations recall all elevator cars to a designated floor, usually the lobby floor.

   a. Phase I operations can be activated several ways.

      i. Smoke detector activation in the hoistway or elevator lobby may activate Phase I.

      ii. The general building fire alarm may also activate it.

   b. No two buildings are alike; alarm and detector activation cannot consistently be counted on to recall the elevators.

3. If the incident dictates fire department control of the elevators and the alarm/detector system has not initiated Phase I operations, a key can be used.

   a. The key switch should be located in the Fire Control Room or elevator lobby, possibly both.

   b. A three-position switch will be present. The positions are:

      i. "OFF" = normal elevator operation. Key can be removed from this position.

      ii. "ON" = Phase I activation and recall of the elevator car to the designated floor. Key can be removed from this position.

      iii. "BYPASS" = overrides alarm/detector system and allows normal elevator use.

4. Once the elevator car is recalled, the doors will open and remain open.

   a. Firefighters must check all cars for their proper return and the presence of occupants.

   b. Hoistways should be checked for the presence of smoke and water.

5. If deemed safe, firefighters may enter the car and begin Phase II operations from within the elevator car (where there is another three position key switch in the elevator car with the “OFF”, “ON” and “HOLD” positions).

   a. Take the key from the Phase I keyway outside of the car and place the key in the Phase II keyway inside the car and turn to the “ON” position.

   b. The elevator car is now under the complete control of the car occupants.

   c. Press the “Call Cancel” button and then select the desired floor.

   d. Press and hold the “Door Close” button until the door completely closes.

   e. Stop the car every fifth floor to check elevator is responding correctly.

   f. Once the car has reached its destination, press and hold the “Door Open” button until it completely opens.

   g. If conditions are poor upon the doors opening, simply release the “Door Open” button while the doors are still opening and the doors will automatically close.

   h. If crews are going to stay on the selected floor and no other crews will need the car, place the key in the “HOLD” position. The elevator car cannot be moved when in this position.

i. If other crews will need the elevator car, place the key in the "OFF" position and the car will return to the designated floor (it is back in Phase I operations).

6. Elevator use should be driven by necessity, not convenience.

a. A study in the 1990's showed that elevators malfunctioned 30% of the time under emergency conditions.

b. Elevator use assists with occupant evacuation and firefighter access to upper floors, but cannot be used if conditions are suspect.

c. It cannot be overstated that prior to any elevator use, firefighters must know the location of the nearest stairwell. With elevator malfunction, the stairwell will be the best safe haven and means for traveling within the building.

XVII. Standpipe systems

A. The effective delivery of water to upper floors is critical to the success of highrise firefighting operations. Water is supplied to upper floors via standpipe system.

B. Several types of standpipes exist in Albuquerque.

1. Automatic wet systems are most common.

a. These systems have water in them at all times.

b. Water is provided from the municipal water supply and system static pressure is maintained via a jockey pump.

c. The jockey pump will operate when any small drop in water pressure occurs in the system.

d. If a discharge outlet is opened, the fire pump(s) should operate and supply both a volume and pressure of water to the discharge outlet.

2. Either automatic or manual dry standpipes may be present.

a. An automatic dry system has air in the standpipe riser above the deluge valve and water below the deluge valve.

i. An air compressor maintains enough air pressure to keep the valve closed.

ii. Once a discharge outlet is opened, air pressure drops below the incoming water pressure.

iii. The water pressure pushes the deluge valve open and the standpipe system fills with water.

iv. Fire pump(s) will then provide water volume and pressure.

b. A manual dry standpipe system is simply a series of piping. Apparatus must supply all the needed water pressure and volume to these systems.

C. All stations with any standpipe equipped buildings, not just highrises, must familiarize themselves with system type and class prior to an incident occurring. Four classes of standpipes exist:

1. Class I standpipes are designed for firefighter use. Outlets are 2 ½" and the primary standpipe is supplied with a 500 GPM capacity.

a. All other standpipes will provide 250 GPM.

2. Class II standpipes are designed for occupant use. Outlets are 1 ½" and only rated for 100 GPM.

a. Firefighters should not use this class of standpipe due to inadequate flow capacity

3. Class III standpipes provide both 2 ½" and 1 ½" outlets. The system requirements are the same as Class I.

4. Due to addition of sprinkler systems in existing buildings, a fourth class of standpipe has evolved. The riser in this class of standpipe system is used to supply both the standpipe and sprinkler systems. Class IV standpipes are often referred to as combination systems.

D. Fire pumps are usually located on the building's lowest floor. These pumps are designed to provide both volume and pressure to the water in the system.

1. Exactly how much volume and pressure the pumps will provide is based on the NFPA requirements in place at the time of installation.

   a. For systems built prior to 1993, the minimum pressure required at the most remote discharge was 65 psi flow pressure, with a maximum of 100 psi flow pressure.

      i. If the pressure is between 100-175 psi, a flow-restricting device is required.

      ii. Table 1 details the specifics.

Table 1			
NFPA Requirements Prior to 1993			
Outlet Size	Allowable Flow Pressure	Flow Restricting Device Required if:	Pressure Reducing Valve Required if:
2 ½"	65 psi minimum 100 psi maximum	Residual pressure between 100 psi and 175 psi	Static pressure greater than 175 psi

   b. For systems built after 1993, 100 psi flow pressure is the minimum and 175 psi is the maximum.

      i. A maximum static pressure of 175 psi is maintained by pressure reducing valves.

      ii. Flow restricting devices are optional as long as the static pressure is less than 175 psi. If the static pressure exceeds 175 psi, a pressure reducing valve is required. Table 2 details the specifics.

Table 2			
NFPA Requirements 1993 and After			
Outlet size	Allowable Flow Pressure	Flow Restricting Device Required if:	Pressure Reducing Valve Required if:
2 ½"	100 psi minimum 175 psi maximum	Optional as long as static pressure is less than 175 psi	Static pressure greater the 175 psi

F. The differences between pressure restricting devices and pressure reducing valves must be understood.

1. Pressure restricting devices control discharge pressure under flow conditions.

a. The device acts to limit the pressure that can be supplied to attack lines.

b. The types of pressure-restricting devices include a removable disc, a removable reducer, and a removable pin or link on the handwheel.

c. Firefighters should remove these devices when found on the standpipe discharge outlet.

d. Once the pressure-restricting device is removed, outlet discharge pressure is controlled by operating the outlet valve handwheel until the proper discharge pressure is indicated on the in-line gauge.

2. Pressure reducing valves control outlet pressure under both flow and no-flow/static conditions.

a. The purpose of pressure reducing valves is the prevention of excessive and dangerous discharge pressure at lower floor outlets in very tall buildings.

b. These valves are either factory set or set during installation.

c. Firefighters do not have the ability to alter the pressure reducing valve setting.

d. This makes the in-line gauge extra important so as to indicate flow pressure once the outlet is opened.

XVIII. Standpipe operations

A. Once an attack stairwell is designated and determined to be clear of occupants, firefighters must reach the floor below the fire in order to make the standpipe connection.

B. The fire attack team should have with them a complete compliment of equipment.

C. Once at the floor below the fire, the standpipe should be flushed to remove debris and to check for the presence of adequate water.

D. A 60^{o} elbow and in-line gauge should be connected to the discharge outlet.

E. The hose is then connected and placed near the outside wall of the stairwell.

F. Hose should continue up the stairs to the landing above the fire floor so that the charged line can be pulled down the stairs when advancing.

G. While the hose is being stretched in the stairwell, officers should view the layout of the floor below the fire so as to get an idea of the needed amount of hose, floor configuration, etc.

1. Standpipes are required to be separated by no more than 130'. This figure is based on 100' of working hose and a 30' fire stream.

2. If the fire's location is beyond this distance, an alternate standpipe from another stairwell should be considered.

XIX. Charging standpipe systems

A. The Fire Code requires fire hydrants to be located within 40-100 feet of the standpipe fire department connectionThe close proximity of fire hydrants and fire department connections will assist in lessening the water supply friction loss.

B. Drivers should connect their engines to all possible standpipe inlets

C. It is good practice to have multiple engines supply the standpipe so that if a pump/apparatus malfunctions, water supply operations will not cease.

D. With the presence of pressure reducing valves, pump operators will not have the capability to augment pressures needed on the fire floor.

1. The pressure-reducing valve is set to provide a fixed discharge pressure, regardless of pressure provided by either the building fire pump or fire apparatus pump.

2. In this case, the engine should provide maximum volume to the standpipe system.

E. When supplying wet standpipes with removable pressure-restricting devices or manual dry systems, the engine can deliver both pressure and volume to the discharge.

F. In all cases, pump discharge pressure will be determined by adding 100 psi + 5 psi per floor above the first floor.

1. This pump discharge pressure enables the engine to supply adequate volume and pressure to the standpipe system.

2. The actual discharge pressure at the standpipe outlet will be adjusted and monitored by the officer stationed at the outlet.

G. If the exterior fire department connection is damaged, drivers should use the first floor outlet on the standpipe system to supply the riser. To achieve supply via the first floor outlet, a few steps must be taken.

1. First, any pressure-restricting device must be removed.

2. A double-female and 2 ½" x 2 ½" siamese is then connected to the discharge threads.

3. Supply lines can then be pumped into the standpipe.

4. If a pressure reducing valve is present or the pressure restricting device cannot be removed, Command must be notified of the inability to establish a continuous water supply to the standpipe system.

H. Due to elevation loss, friction loss in piping and hoselines, and nozzle pressure, the pressure demands of standpipe operations can be quite high.

1. In order to provide safe operating pressures while maintaining adequate pressures for effective fire streams, the standpipe system possesses pressure control devices.

2. Based on the date of system installation, there may be as little as 65 psi flow pressure available on the fire floor.

3. With only 65 psi available, standpipe operations require hose and appliances that minimize friction loss and nozzle pressure.

a. The hoseline and nozzle combination of 150' of 2 ½" hose with a solid tip size of 1 1/8" at 45 psi nozzle pressure will provide 250 gpm on the fire floor, requires 64 psi and only produces 99 pounds of nozzle reaction.

b. The use of 1 ¾" hose and fog nozzles will create 125 pounds of nozzle reaction and pressure needs in excess of 200 psi, which is impossible to achieve beyond a pressure reducing valve and dangerously high for the standpipe assembly.

c. Standpipe discharges are designed to be high-volume/low-pressure outlets. Based on these facts, 2 ½" hose and 1 1/8" solid tip nozzles are the required hose and nozzle combination to ensure adequate fire streams for fire attack.

XX. Smoke control systems and ventilation

A. Controlling smoke movement in a highrise fire is very important. Smoke control systems can basically be divided into two categories:

1. Shaft protection.

2. Floor protection.

B. Shaft protection is accomplished via stairwell pressurization.

1. Stairwell pressurization systems provide a tenable environment for escaping occupants and a staging area for firefighters.

2. The basic function is to maintain an air pressure in the stairwell that prevents smoke from entering while doors are opened.

3. Stairwell pressurization may be performed by either a single or series of fans.

4. Different buildings will have different systems.

5. If the details of the pressurization operations are not well understood and the building engineer is not present, the system may be shut down and stairwell pressurization should be accomplished with electric PPV fans positioned in the lobby at the stairwell entrance.

C. Floor protection from smoke can be provided with a zoned smoke control system.

1. Zoned smoke control systems are designed to limit smoke spread via cracks in floors and partitions and other shafts not protected by stairwell pressurization.

2. Zoned smoke control systems can be either dedicated or non-dedicated.

a. In a dedicated system all of the air movement equipment is installed for the sole purpose of providing smoke control.

b. Non-dedicated systems share components of the air movement system with some other system, like HVAC (Heating, Ventilation and Cooling).

D. The goals of HVAC smoke management are:

1. To limit fire and smoke spread.

2. To prevent the system from intensifying and spreading fire.

3. To provide fresh air to occupants and firefighters.

E. HVAC, also known as central air conditioning, is designed to provide a fresh air supply to occupants.

1. Rather than attempt to exchange inside and outside air in large structures, this system recirculates air from within the building. This system of air recirculation has 3 main subsystems.

a. Processing system.

b. Supply system.

c. Return system.

2. The processing system is usually located in the mechanical equipment room. Its purpose is to mix air from occupied areas with some outside air, filter the air, cool or heat it, humidify it, and return it to occupied areas. This is accomplished via a network of airshafts, fans, and treatment equipment.

3. The supply system distributes the processed air to the occupied areas while the return air system brings the air back to the processing system.

4. While the supply system delivers air completely through enclosed shafts and ducts, the return air system may use either ducts or the overhead plenum space to return air to the return airshaft.

   a. All three subsystems utilize detectors and dampers to recognize and control smoke movement.

F. HVAC systems in highrise buildings are often divided into horizontal zones. A zone may consist of a single floor or multiple floors.

1. A fifteen-story building might have the following four HVAC zones:

   a. Zone 1 → 1st floor/lobby.

   b. Zone 2 → floors 2-5.

   c. Zone 3 → floors 6-10.

   d. Zone 4 → floors 11-15.

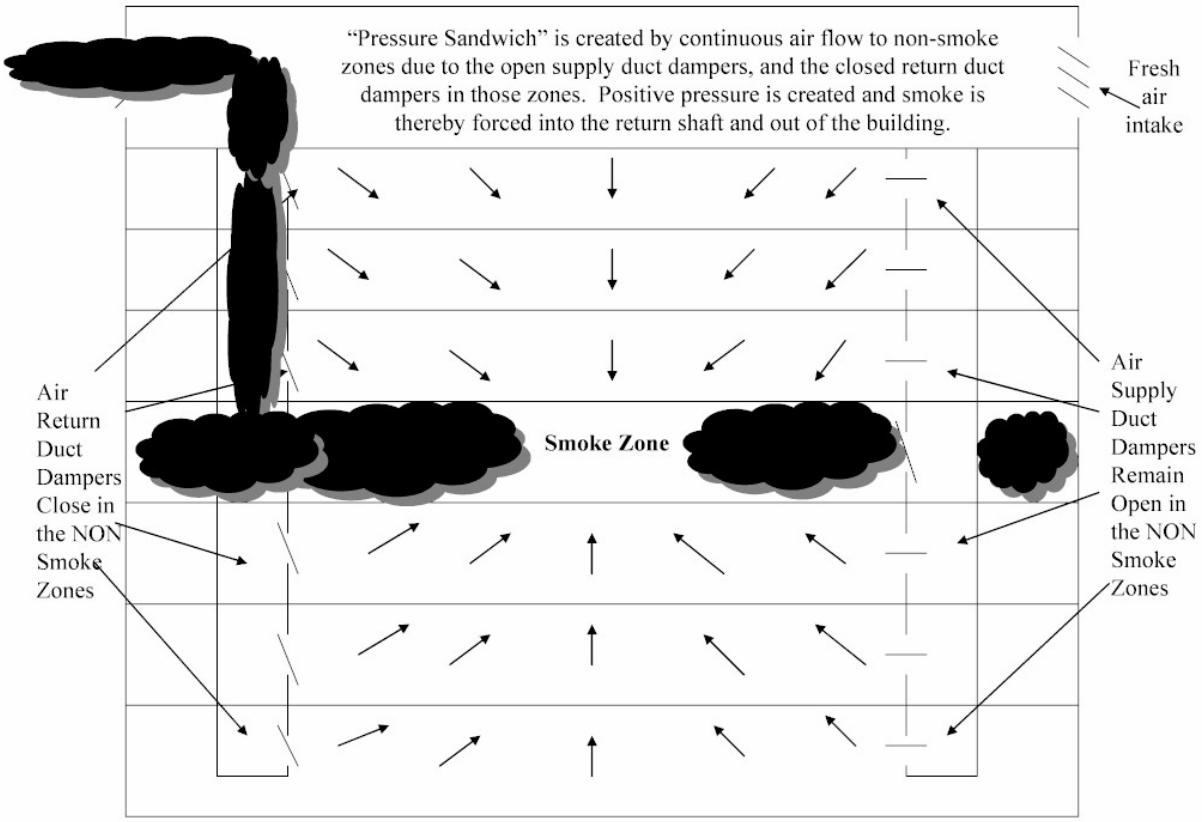
2. When smoke production occurs, the smoke control systems differentiate between the smoke zone/fire floor and the non-smoke zones.

3. The system should close the air supply dampers to the smoke zone and close the return dampers to the non-smoke zones, creating two effects.

   a. The first effect is the continued delivery of fresh air to the occupants that are being protected-in-place/evacuation delayed.

b. The second is the creation of a "pressure sandwich," as illustrated in Table 4.

Table 4



i. In the smoke zone/fire floor, air supply dampers are closed so as not to deliver a fresh air supply to that zone.

ii. The return dampers remain open to vent the products of combustion. In the non-smoke zones, the air supply dampers remain open and deliver fresh air to those designated areas.

iii. The return dampers are closed. Since the air being delivered to the non-smoke zones cannot enter the return air shaft due to the return dampers being closed, a positive pressure is created in the non-smoke zones.

iv. This positive pressure forces the smoke from the smoke-zone through the open return dampers, into the return air shaft and out of the building.

4. It is imperative that the initial attack teams communicate with the Systems Branch as to the current smoke conditions and movement. Zoned smoke control systems are mechanically complex.

a. If HVAC is making conditions worse, the Systems Branch should shut the system down. Both the supply and return air fans should be shut down.

b. Smoke detectors may shut down the supply fans only, so it is important that the HVAC Group confirm that all supply and return fans are shut down.

c. The system will remain shut down until the building engineer can take control of the system and make its use advantageous to firefighting operations.

G. A highrise fire requires a size-up of the HVAC system. Size-up elements include the following:

1. The location of the mechanical equipment room.

2. The number of zones.

3. The presence of any special systems.

4. The location of HVAC operational controls.

5. The number of return shafts, including:

a. Shaft locations and number of floors served.

b. How the dampers are controlled.

H. The HVAC system is appropriate for ventilation under small fire or cold smoke conditions; a large working fire may overwhelm the HVAC system and should, therefore, not be used under those conditions.

I. Ventilation operation possibilities may include:

1. Use of the HVAC system.

2. Stairwell pressurization.

3. Vertical ventilation.

4. Horizontal ventilation.

J. Occupancy type will have an effect on ventilation considerations.

1. Many residential occupancies allow horizontal ventilation through open windows while most commercial occupancies will not provide windows that can be opened

2. Vertical ventilation can be accomplished through a designated stairwell. Factors in selecting a ventilation stairwell include:

a. An opening at the roof level.

b. Doors that open on the ground floor.

c. The presence of an exhaust fan at the top of the stairwell.

K. Ventilation operations must always be coordinated with fire attack operations.

1. Ideally, separate stairwells can be designated:

a. One attack stairwell.

b. One ventilation stairwell.

c. One evacuation stairwell.

2. If separate stairwells cannot be designated, the coordination of these operations becomes even more important.

L. Two factors greatly affect ventilation operations.

1. Wind.

2. Stack effect.

M. Winds at ground level are not a reliable indicator of either wind speed or direction at upper floors. Conditions close to the fire floor must be known.

1. Horizontal ventilation on the windward side of the building must be avoided. Windward side ventilation operations could create a wind-driven, blast furnace effect.

N. Stack effect accounts for most of the natural air movement in buildings under normal everyday conditions.

1. During fire conditions, stack effect can widely distribute smoke and toxic gases.

2. The intensity of the stack effect is based largely on both the building's height and the difference between the inside temperature and outside temperature.

a. Basically, the taller the building and the larger the temperature difference, the greater the stack effect.

3. The stack effect can be viewed in terms of winter and summer effects.

a. During the winter months, the inside air temperature is much higher than the outside air temperature.The inside air being warmer, less dense and more buoyant, will rise.

i. The air in the building moves upward toward the top and out of the building, while outside air is drawn in from the bottom.

b. During the summer months the opposite occurs. At a point about 1/3 – ½ the building's height, a neutral pressure plane will exist.

i. At this point air is neutral and neither rises nor sinks.

4. Understanding stack effect is important to both smoke control system use and ventilation operations.

a. Cold smoke could be drawn down to lower floors by the HVAC system.

b. If during the winter months a fire below the neutral pressure plane occurs, using windows on lower floors for ventilation may actually worsen the conditions as air is drawn into the building on the lower floors during winter stack effect.

XXI. Sprinkler system support and operations

A. With the exception of very few buildings, all human-occupied areas of highrise buildings in Albuquerque are completely protected by a wet sprinkler system.

B. The purpose of sprinkler protection is the rapid application of a sufficient volume of water to a fire while the fire is still in the incipient stage.

1. Most wet sprinkler systems are designed to control fire growth, not to completely extinguish fire (although they might).

C. Sprinkler system design is based on several factors including occupancy type, fire load, and the square footage of the area to be protected.

1. The municipal water supply should be all that is necessary to provide sufficient pressure and volume.

2. On a sprinkler activation response, precautionary actions may be needed to provide supplemental pressure and water volume to the system.

a. An engine should be positioned near the fire department connection.

b. Supply lines should be stretched to the fire department connection, but not charged immediately.

c. If the system is performing as designed, immediate charging of the sprinkler system may create excessive water damage

d. If it is determined by the Fire Attack Branch that the pressure and volume from the municipal water supply are not adequate for fire control, supply lines should be charged and a pump discharge pressure of 150 psi should be established.

i. The discharge pressure should be sufficient to provide maximum volume capacity to the apparatus fire pump, an not overpressurize the sprinkler system.

D. While controlling fire growth, sprinkler water flow will create special tactical considerations.

1. Sprinkler activation will disrupt the thermal balance in the fire area.

2. The steam created will push smoke down toward the floor, reducing visibility and making natural ventilation operations difficult.

3. PPV should be initiated once the fire's location, spread and control are known.

4. The HVAC system may also be considered as an option when ventilating this cold smoke.

E. Sprinkler activations may contribute to the potential for water damage as the flow of water continues following fire knockdown. Two operations will aid in minimizing the damage.

1. A Loss Control Group should be established both on the Fire Floor and Floor Below.

2. A radio-equipped member from the Systems Branch should be sent to the sprinkler system riser.

a. Once the Fire Attack Branch determines the fire is under control and sprinkler flow is no longer necessary, the system can be promptly shut down and drained.

F. It must be understood that premature shutting down of the sprinkler system is not acceptable.

1. The presence and activation of a sprinkler system does not alter the Fire Attack Branch operations.

a. All resources and equipment must proceed to the fire floor regardless of sprinkler system status.

2. Fire attack and search/rescue operations will still be required.

3. Only after a confirmation of fire “Under Control” status from the Fire Attack Branch will the sprinkler system be shut down.

   a. With a combination sprinkler/standpipe riser, a sprinkler zone shut-off may be found on the branch line leading from the riser to the fire floor.

   b. If so equipped, the system may be shut down from this location as well.

G. Additional sprinkler systems, other than automatic wet, may be present.

1. A dry chemical system may protect a kitchen cooking area.

2. A Halon system may protect a computer room.

3. The presence of these systems needs to be identified in pre-fire plans and information of their activation communicated to the Incident Commander.

XXII. Building communication systems

A. On-scene communications will play a very important role in incident outcome at highrise operations.

1. The Incident Command structure not only creates and maintains incident organization and span of control, but establishes a radio communication network.

2. All on-scene personnel must maintain a clear understanding of the command structure

3. Radio communications should be made using the AFD communications model.

4. As a highrise incident escalates, each Branch should be designated a separate tactical channel.

B. Two highrise building features can enhance firefighter ability to communicate within the building.

1. Fire phones.

2. Public address systems.

C. Fire phones are required in all highrise occupancies.

1. Fire phones can be either permanently affixed in the structure or portable.

2. If the building provides portable phone capability, phones need to be distributed by the Systems Branch to each Group/Division Supervisor/Branch Director.

3. Phone jacks/outlets may be located throughout the building and are commonly found in or near manual fire alarm pull stations, exit ways, elevator cars, elevator lobbies, the fire pump room, and the mechanical equipment room.

4. With the potential for radio malfunction in highrise structures, the fire phone system provides a back-up communications system between the fire control room and tactical locations throughout the structure.

D. A public address (PA) system allows the Systems Branch to make announcements to any location in the building.

1. Many systems provide the ability to address the entire building at once or allow communications to selected floors or zones.

2. It is crucial that the Systems Branch make a statement on the PA system to all building occupants upon arrival.

a. Occupants need to be made aware of current fire conditions and fire department operations.

b. Evacuation measures must also be announced in an effort to gain control of the evacuation process.

c. Protection-in-place, stairwell designation, and floor order of evacuation, all must be made known to occupants.

d. Frequent announcements, with accurate and updated information transmitted to building occupants - using the PA system - may reduce occupant confusion and activity that could be detrimental to fire control or evacuation operations.

e. PA system announcements are important in appropriately counteracting the predictable behavior patterns on the part of many highrise building occupants, depending on incident conditions and objective/tactics. Some of these behaviors include:

i. Many individuals have a “false alarm effect” that drives the decision to continue with their current activity and not evacuate.

ii. Many people will wait for a verbal confirmation of the presence of a fire or verbal orders from the fire department before evacuating.

iii. Many people may now begin immediate and uncontrolled evacuation of the building for fear of imminent building collapse.

iv. People will use the means of egress most familiar to them, oftentimes the elevators. With the recall of the elevators, stairwells will be the only means of egress.

v. Without proper instruction as to which stairwell to use for evacuation, occupants may enter the designated fire attack and/or ventilation stairwell.

- Until occupants are removed from the fire attack and ventilation stairwells and redirected toward the evacuation stairwell, fire attack and ventilation operations must be delayed.

vi. Announcements over the PA system gan give instruction to “convergence clusters” which sometimes occur when large groups of people are found gathered together in a place of refuge within the fire building (e.g., elevator lobbies or areas with balcony access).

XXIII. Building construction

A. The specifics of each highrise building’s construction need to be determined during pre-fire planning while the building is being built.

B. Two features of the building, however, may provide some important information regarding building construction.

1. Occupancy.

2. Approximate date of construction.

C. The occupancy of the building is defined as how the building is used. Highrise occupancies usually can be classified into two types.

1. Residential.

2. Commercial.

D. Residential highrises may include:

1. Apartments.

2. Hotels.

3. Hospitals.

E. The floors in residential highrises are often compartmentalized.

1. Walls that extend to the ceiling level divide each living space.

2. The living space empties into an enclosed corridor designed specifically for exit.

F. Commercial highrise occupancies may include:

1. Businesses

2. Restaurants and retail shopping structures.

3. Government offices.

G. Commercial occupancy floor layout can be quite different from residential occupancies.

1. A commercial occupancy may have an open floor plan in which work areas are separated by partitions (with the exception of corner offices).

a. Partitions do not extend to the ceiling level, thus creating a non-compartmentalized floor plan that may be thousands of feet in area.

2. If a particular tenant has offices or work areas occupying more than one floor of the building, access stairs may be present.

a. Access stairs are non-enclosed stairs that allow workers to travel floor-to-floor without using the exit stairwells or the elevator. While convenient for the occupant, the presence of access stairs creates very serious fire and smoke spread potential that firefighters must combat.

XXIV. Occupant services

A. Under the direction of the Administration Section Chief, an Occupant Services Branch may be designated to fulfill several functions.

1. Information from the Transportation Group of the EMS Branch regarding patient destinations must be gathered.

2. As family members request information about occupant/victim locations, this branch will provide the needed information.

3. The Occupant Services Branch will also oversee the relocation of displaced occupants and address their shelter, health and safety needs.

a. This branch will often be required to coordinate their efforts with outside agencies, such as the American Red Cross.

HIGHRISE INCIDENT COMMAND CHECKLIST

OPERATIONS SECTION

Obtain briefing from Interior

- ☐ Determine Incident Strategy/Incident Action Plan.
- ☐ Determine need for and call for additional resources.
- ☐ Establish an exterior Command Post
- ☐ Begin expanding the Incident Command Structure as needed.
  1. Establish Fire Attack Branch.
  2. Establish Systems Branch/Lobby Control Division.
  3. As incident escalates – Command and General Staff assembled.
- ☐ Designate an Apparatus Staging Group and location.

HIGHRISE INCIDENT COMMAND CHECKLIST

OPERATIONS SECTION

- Report directly to IC.
- Manage all fire attack, building systems, and EMS operations.
- Branches include Fire Attack, Systems, EMS.

1. Fire Attack Branch.
   - A. Fire Floor Division.
   - B. Floor Above Division.
   - C. Ventilation Group.
   - D. Search and Evacuation Group.
   - E. RIT.
   - F. Floor Below Division.
   - G. Loss Control Group.
2. Systems Branch.
   - A. Lobby Control.
   - B. Water Supply.
   - C. Building Communications.
   - D. HVAC and Stairwell Pressurization.

3. EMS Branch.

   A. Triage Group.

   B. Treatment Group.

   C. Transport Group.

HIGHRISE INCIDENT COMMAND CHECKLIST

LOGISTICS SECTION

- ☐ Report directly to IC.
- ☐ Manage present and future needs of Operations Section.
- ☐ Branches include Staging, Ground Support, Service, Stairwell Support.

1. Staging Branch.
   - A. Apparatus Staging Group.
   - B. Resource Staging Group.
   - C. Accountability Location.
2. Ground Support Branch.
   - A. Fuel.
   - B. Air Supply.
3. Service Branch.
   - A. Technical Services.
   - B. Responder Rehabilitation.
   - C. Stairwell Support.

HIGHRISE INCIDENT COMMAND CHECKLIST

SAFETY OFFICER

- ☐ Report directly to IC.
- ☐ Risk vs. Benefit Analysis.
- ☐ Confirm Establishment of RIT.
- ☐ Confirm Accountability System in use.
- ☐ Assessment of Building Construction Features and Concerns.
- ☐ Confirm Establishment of Responder Rehab.

HIGHRISE INCIDENT COMMAND CHECKLIST

SYSTEMS BRANCH DIRECTOR

- ☐ Reports directly to Operations Section.
- ☐ Initial Accountability Location.
  - Entry Control once Accountability is relocated to Resource Group.
- ☐ Acquire Occupant List and begin Occupant Accountability.
- ☐ Recall Elevators.
- ☐ Designate Stairwells.
  - Attack, Ventilation, Evacuation.
- ☐ Assess Annunciator Panel.
- ☐ Locate PA system and prepare to make a building-wide statement.
- ☐ Contact Building Engineer.
- ☐ Evaluate status of HVAC.
- ☐ Evaluate status of stairwell pressurization.
- ☐ Evaluate status of fire pumps.
- ☐ Acquire building and floor plans.
- ☐ Acquire keys and access cards.
- ☐ Acquire and distribute fire phones.
- ☐ Determine emergency/back-up power status.

Appendix A - List of Company Functions

I. Alarm activation

A. Engine functions.

1. Determine fire floor.

2. Assume Attack Group and proceed to designated stairwell.

3. Verify fire floor.

4. Determine “All Clear” in attack stairwell.

5. Initiate fire attack operations.

B. Ladder functions.

1. Assume Lobby Control Division.

2. Designate stairwells.

3. If investigation dictates, make announcement over PA system:

a. Attention all building occupants. This is the Albuquerque Fire Department. There is smoke/fire on the ____ floor. AFD is investigating/fighting the fire. All occupants of the _____ floors (fire floor and two floors above) should evacuate in the _____ stairwell. All other occupants should remain in their rooms/offices until advised by fire department personnel to evacuate.

b. Repeat the message.

4. Building systems evaluation.

C. Commander functions.

1. Assume Command in the Lobby/Fire Control Room.

II. Report of fire and/or smoke.

A. First Engine.

1. Determine and verify the fire floor.

2. Assume Fire Floor Division.

3. Determine “All Clear” in attack stairwell.

4. Initiate fire attack operations.

B. First Ladder.

1. Assume Lobby Control Division.

2. Designate stairwells.

3. Make announcement over PA system:

a. Attention all building occupants. This is the Albuquerque Fire Department. There is smoke/fire on the ____ floor. AFD is investigating/fighting the fire. All occupants of the _____ floors (fire floor and 2 floors above) should evacuate in the _____ stairwell. All other occupants should remain in their rooms/offices until advised by fire department personnel to evacuate.

b. Repeat the message.

4. Building systems evaluation.

C. First Commander.

1. Incident Commander in the Lobby/Fire Control Room.

D. Second Engine.

1. Join Fire Floor Division.

E. First Rescue.

1. Join Fire Floor Division.

F. Second Ladder.

1. Ventilation Group.

G. Third Engine.

1. Floor Above Division.

H. Fourth Engine and Squad 2.

1. RIT.

I. Unit 78, second and third Rescue.

1. Evacuation Group.

J. Second Commander.

1. Fire Attack Branch Director.

K. Third Ladder.

1. Join Lobby Control Division.

L. Third Commander.

1. Support Officer and establish Accountability Branch.

M. Squad 1 or 3.

1. Safety Group.

III. Working fire or sprinkler activation

A. First Commander.

1. Transfers Command to fourth-arriving Commander and assumes Systems Branch Director.

2. Two Ladders assigned.

B. Second Commander.

1. Fire Attack Branch Director.

2. Continues supervising division/group operations in attack, ventilation and evacuation stairwells.

a. Minimum 6 Engines, 2 Ladders, 3 Rescues, 1 Squad, Unit 78 assigned.

3. Has Fire Attack Accountability Division Officer as an aide.

C. Third Commander.

1. Accountability Branch Director in lobby.

2. Fire Attack Accountability and Systems Branch Accountability Divisions assigned.

3. EMS Branch established.

4. Reports to Operations Section.

5. Four Rescues minimum.

D. Fourth Commander.

1. Assumes Command of the incident and begins ICS expansion.

Wildland Operations

Purpose

The purpose of this guideline is to define the Albuquerque Fire Department's Wildland Firefighting program, and to ensure that all uniformed members meet the minimum qualification and standards required to safely and effectively participate in wildland urban interface firefighting.

Guideline

This guideline describes how the Albuquerque Fire Department deploys manpower and resources to wildland fires within the city limits, as well when assisting County, State, and Federal agencies in accordance with mutual aid agreements.

Operational Guidance

I. AFD wildland program/resources

A. Qualified personnel must meet specific criteria.

1. All AFD operational personnel will hold Red Card certification.

2. Many personnel possess additional certifications.

3. One Wildland coordinator is assigned to the AFD Fire Academy.

B. Designated Wildland Specialty Stations in each AFD District are strategically and geographically located to provide rapid response, size-up and initial attack on wildlands events.

1. Table 1 shows the location of AFD Wildland stations.

Table 1

District One	District Three	District Four
Station 1	Station 8	Station 7
Station 10	Station 12	Station 17
	Station 16	Station 18
		Station 21
		Station 27

2. Equipment has been issued to engines at all specialty stations, and includes McLeod tools, Pulaski tools, combitools, shovels, rakes, backpack pumps, light-weight forestry hose, adaptors, and nozzles.

3. Wildlands Stations 1, 8, 10, 17, and 27 each have one operable brush truck, as well as a chain saw, mop-up kit, drip torches and portable pumps.

   a. Station 27 houses a 2500-gallon water tender.

D. All AFD apparatus have been equipped with fire shelters, web gear, and a radio pocket for each riding position.

II. Training and certification

A. All AFD personnel shall receive the following training:

1. I-100 Introduction to Incident Command.

2. S-130 Basic Wildland Fire Suppression.

3. S-190 Basic Fire Behavior.

4. L-180 Human Factors on the Fire Line.

B. For personnel who wish to be assigned to Wildland Task Force stations (through the bid process), the following additional training is required:

1. S-131 Advanced Fire fighter certification (and completed task book).

2. S-211 Portable pumps and water use.

3. S-212 Wildland Fire Chain saws (“Level A Faller” minimum).

4. S-201 (S-281) Supervisory concepts and techniques.

C. Only personnel who have completed S-212 Wildfire Power Saws and maintain a current level “A” faller - or greater - certification (and have required PPE on hand) may operate power saws at wildland fires.

1. PPE is in addition to standard wildland gear and includes the following:

   a.. Wildland gloves.

   b. Eye protection.

   c. Chain saw chaps.

   d. Hearing protection.

D. All personnel are to complete an annual refresher/recertification process early each year, prior to start of the fire season, to receive their Red Card. This process includes the following:

   1. RT-130 Wildland Refresher class.

   2. Pack test (further definition in Appendix A).

      a. A three-mile walk, carrying a 45 pound pack, completed in less than 45 minutes and 45 seconds.

      b. Firefighters with a serious medical condition, which would be exacerbated by performing the pack test, may qualify at the light or moderate level.

         i. Once the medical condition is cleared, the firefighter must complete the pack test at the arduous level.

E. AFD Fire Academy training.

   1. The Wildland Special Operations Officer will conduct and/or coordinate all wildland training for AFD personnel, including any advanced wildland training.

      a. The Wildland Special Operations Officer will be assisted in providing training by a working group consisting of certified wildlands engine bosses

      b. Advanced wildland training for certification as squad boss, engine operator or engine boss primarily occurs in the fall and spring

c. Advanced training is described in the National Interagency Incident Management System Wildland and Prescribed Fire Qualification System

2. The Fire Academy is responsible for tracking and maintaining all training records and will produce a Red Card for all AFD personnel

III. AFD wildland personnel response

A. Personnel must be fully prepared to respond to wildland incidents (with complete PPE and equipment on their respective apparatus) at the following times.

1. At any time during AFD's wildland season (April 15-September 15).

2. Whenever “red flag” conditions are reported via NOAA and AFD's Dispatch announces these conditions by radio to all personnel during morning announcements

3. Personnel wishing to access NOAA may do so via the internet at http://www.srh.noaa.gov/abq/firewx/fw-3.php, (click on Zone 106).

IV. Personal protective equipment for wildland firefighting

A. Personal wildland equipment is the responsibility of each individual. It is the firefighter's responsibility to ensure gear is complete and in working order (e.g., helmet straps have been affixed and adjusted).

B. Wildland gear is issued by the AFD Logistics Office to individual firefighters.

1. Each firefighter is responsible for equipment issued to them.

2. It is the responsibility of any firefighter missing equipment to contact Supply for replacement.

3. Personnel who arrive at a fire without required PPE will be removed from the hazardous area and may face disciplinary action.

C. Required PPE includes the following:

1. Wildland helmet with shroud and chin strap.

2. Headlamp with extra set of fresh batteries.

3. Wildland goggles.

4. Long-sleeve Nomex fire resistant shirt.

5. Fire resistant pants.

6. Leather gloves (can be structural firefighting gloves).

7. Leather boots that are approved for wildland firefighting.

8. Current Red Card.

D. Wildland fires involve operations that may become very physically demanding in hot, fast-moving, and dangerous environments. They may additionally be of extended duration. Since heat and dehydration can be a major safety hazard, suggested personal items may include the following:

1. Water bottles.

2. Food and/or power bars.

3. Extra gloves and socks.

4. Pocket knife or Leatherman.

V. Wildland firefighting equipment assigned to units

A. All AFD units have been issued the following equipment for each riding position.

1. Web gear with a radio pocket.

2. A fire shelter.

B. Some units have been assigned wildland tools which must be on the apparatus during the wildland fire season. Once the fire season is over, the company officer may remove the wildland gear from the truck and secure them until next fire season.

VI. Firefighter safety is the priority on all wildlands incidents

A. All firefighters are accountable for their own safety and that of their crew.

1. All firefighters must be familiar with wildland firefighting's accepted safety parameters (listed in the Wildland Appendix).

a. 10 standard firefighting orders.

b. 18 watch-out situations.

c. Urban-interface "Watch–outs**"** (listed in the Wildland Appendix).

2. It is important for AFD personnel to acknowledge that the hazards on a wildland incident can vary from the typical hazards of a structural fire scenario.

3. Any member of any crew should speak up should they notice a significant change in fire behavior, wind direction, or weather conditions.

B. Company Officers are responsible for the safety of their crews.

1. Wildland fires demand that Company Officers maintain a high level of awareness of crewmembers' whereabouts and condition.

2. Crewmembers can easily become spread out and separated.

3. Company Officers must maintain communications with and control over crewmembers.

4. Wildland firefighters have traditionally utilized the the buddy system to watch out for each other. Company Officers may initiate this for their crews for improved personnel accountability.

C. Heat can be a major safety problem on wildlands events and crews are often required to work for a prolonged duration in this environment.

1. Personnel should be kept hydrated. All personnel should carry personal canteens or bottled water and have access to drinking water.

2. All members should be physically fit and mentally prepared for a potentially very hot, fast-moving, and dangerous environment.

VII. Levels of response to reported brush or wildland fires

A. Most brush fire or wildland incidents within AFD's jurisdiction can be handled by a single engine company.

B. All fires will be coded by AFD Dispatch in accordance with the Emergency Fire Dispatch System for wildland responses. Table 2 details the coding and appropriate response.

Table 2

Call Coding	Description	Units Dispatched
67 Bravo	small outside fire	Closest engine
67 Delta 2	brush/grass fire	Closest engine and closest brush truck
67 Delta 3	large outside fire	Closest engine, closest brush truck, on duty Engine Boss and Battalion 4
67 Delta 1	wildland fire	Closest engine, closest rescue, 2 wildland engines, 2 brush trucks, on duty Engine Boss, 2 Commanders (including Battalion 4), 1 squad, Fire Logistics to bring wildland trailer

VIII. Wildlands strategies and tactics

A. The operational priorities for wildland fires are the same as for structural firefighting.

1. Life safety.

2. Property conservation.

3. Incident mitigation.

B. Wildland fires often present a large area of rapidly spreading fire. The critical decision is often where to attack the fire to the best advantage.

1. The basic wildland fire philosophy is to aggressively stop the forward progress of fire whenever possible. This is typically done by cutting fireline to stop a low-running fire (removing fuel).

2. Evacuation of individuals and protection of exposures in the path of the fire is the priority when immediate fire control is not possible. Protecting exposures typically involves removing flammable material from the immediate area around structures and wetting the structures down.

C. Properly scout and size-up a wildland fire before committing resources and potentially endangering personnel.

1. Small fires can be scouted and sized up quickly, often from the truck upon arrival.

2. Larger and fast-moving fires require accurate assessment of fire conditions, ensuring appropriate mobilization of resources as well as a safe and effective fire attack.

3. A well-constructed and well-communicated plan given to all personnel on the scene will help ensure firefighter safety.

D. Staging.

1. If the first-arriving unit finds a small fire one unit can handle, the Company Officer will cancel all other units, scout and size up the fire and initiate fire control activities.

2. If the first-arriving unit finds a large or rapidly growing fire and identifies a need for additional resources, the following steps should be taken:

a. The Company Officer will assume command.

b. The Company Officer will request AFD Dispatch upgrade the event and dispatch more units.

3. The second-in unit on a major fire will determine a Level 2 staging location and announce that location over the radio upon arrival.

4. All other resources will report to the staging area and wait for an assignment. While standing by, all personnel will don the appropriate wildland gear including web gear with a fire shelter.

E. Size-up and deployment of units.

1. The Company Officer will scout and give an inital size-up of the fire according to the following parameters.

a. Exact location.

b. Size (in feet or acres).

c. Fuel type (grass, brush, trees).

d. Fire behavior.

i. Flame length and speed.

ii. Is it creeping, running, torching, or crowning?

e. Exposures.

f. Hazards (such as, propane tanks or power lines).

g. Any additional resources needed.

h. The location of escape routes and safe zones.

i. Identify a minimum of two each.

2. After scouting the fire and providing a size-up, the first-in Company Officer returns to the Staging Area.

a. The first-in Company Officer should brief the crews, communicate a plan of attack, and deploy units on tactical assignments.

b. This may include designating sectors.

c. Specific radio channels may be assigned, as needed, in coordination with AFD Dispatch

i.. If outside resources have been called to the incident, the Incident Commander or AFD Dispatch must confirm effective communications with those units (using Bendix King radios if necessary).

ii. In the case that both AFD and BCFD are on a wildland incident, providing or receiving mutual aid, the agency first on-scene will determine the tactical channel to be used. This must be communicated through AFD Dispatch.

d. Fire conditions, tactical effectiveness, and condition of crew must be continually reevaluated throughout the event.

F. Mop-up.

1. After primary line work is completed and the fire is declared “Under Control,” many things remain to be done to make the fire line safe and put the fire out completely.

2. The objective of mop-up is to put out all fire embers or sparks to prevent them from crossing the fire line

G. Triaging structures.

1. Some wildland fires threaten structures. Company officers will need to quickly determine whether a structure is defensible and what resources and strategies are needed to protect those structures deemed to be salvageable.

2. Each structure that is triaged will be placed in one of the following categories:

a. Needing little or no attention for now.

b. Needing protection but savable.

c. Hopeless. No resources will be committed to these structures.

i. The fire is making significant runs (especially if the distance between the structure and adjacent fuels is less than two times the flame length of approaching fire).

ii. Spot fires are igniting faster than crews can extinguish them.

iii. Water supply is running out or is already depleted.

iv. Firefighter safety is jeopardized in any way (e.g., escape route has been cut off or it is threatened by fire)

v. The structure's roof is 25% or more involved in fire**.**

vi. Interior rooms are involved, windows are broken in windy conditions, or adjacent structures are threatened or involved.

3. Other factors to consider when making decisions about the viability of efforts to save particular structures.

a. Construction material (combustible, non-combustible), decks, gables that might trap embers, building size, arrangement, proximity to other structures, time needed to create a defensible space.

b. Fire behavior and intensity, including flame lengths, rate of spread, spot fires, time to flame front arrival.

c. Firefighter safety including ingress/egress, identification of and access to safety zones and escape routes, hazards such as power lines or propane tanks.

d. Availability and location of resources.

4. If resources are limited, protect a group of structures rather than a single structure.

5. Firefighter safety is the number one factor to consider when deciding whether or not to commit resources to protect a structure.

6. When evaluating structures to protect (as well as other operational objectives), consider the following:

a. What is the worse case scenario?

b. What will probably occur?

c. What will the timing be?

d. What can be done with available resources?

IX. AFD Dispatch accountabilities during a major wildland incident (67 Delta 1)

A. Because a major wildland incident may involve a large geographical area, may spread quickly, and involve many resources in fighting the fire, coordination is essential.

B. Upon determination (by AFD Dispatch or field units) that a 67 Delta 1 Wildland Fire is in progress or is imminent, AFD Dispatch will take appropriate action.

1. Dispatch only Wildland stations to the incident.

2. Dispatch an on-duty AFD engine boss.

3. Advise AFD's Deputy Chief of Operations of the incident size and its location.

4. Notify the Wildland Special Operations Officer.

5. Notify Bernalillo County Fire Department of the incident size and location, and request a mutual aid wildland response (including a Battalion Commander to join AFD's Incident Command), if so requested by AFD's Incident Commander on-scene.

6. Notify New Mexico State Forestry at 505-867-2334 or 505-350-3456.

7. Establish an intra-agency radio frequency.

8. Assign a dispatcher monitor the incident at all times.

9. Notify Red Cross of the need for rehab units.

10. Notify the AFD Field Operations Center of the possible need to call in off-duty “Red Carded‘ firefighters.

11. Notify Albuquerque Open Space, Albuquerque Police Department and Bernalillo County Sheriffs Department.

12. Obtain current weather conditions.

13. Dispatch the AFD Public Information Officer.

14. Dispatch AFD Logistics Office personnel with the wildland trailer.

X. Initial Incident Command priorities on a major wildland fire

A. Establishing a Command Post as soon as possible.

1. It should be in a safe location and should not have to be moved if the fire changes direction or expands.

2. It should be in an area with sufficient space for a helicopter landing site and room for other vehicles, including AFD's Mobile Command Unit, if the Incident Commander requires it.

3. It should have all relevant resources on hand, including a set of maps to plot the progress of the fire(s), status of fire mitigation efforts, location of exposures, access points and limitations, known hazards and any other information reported by units in the field.

B. Establishing ICS with Geographic Divisions as soon as possible

1. Commanders with Urban/interface areas within their jurisdiction should have a complete set of aerial photos of their areas.

2. Effective communications with field units, in particular Commanders in charge of Geographic Divisions, must be confirmed because continually updated and accurate field reports are essential for Command decisions on these types of incidents.

XI. Mobilizing additional resources for large-scale or escalating wildland incidents

A. An expanding wildland fire can quickly outgrow AFD's available resources.

B. When this occurs mutual aid and additional resources can be requested (e.g., BCFD, Los Ranchos Fire Department, Corrales Fire Department, NM State Forestry).

C. As other agencies become involved, it will be critical to coordinate resources utilizing and possibly expanding the Incident Command System.

D. Helicopters can be requested by Command for reconnaissance purposes.

1. The Albuquerque Police Department helicopter may be available for reconnaissance and may be requested directly by AFD Dispatch.

2. Any other helicopters or aviation resources will only be ordered by NM State Forestry. The process for requesting these resources is detailed below:

   a. The Incident Commander should request the resource (only Command has this authority).

   b. AFD Dispatch will contact the Bernalillo District of the New Mexico State Forestry Division Fire Management Officer (Dave Bervin 867-2334).

   c. AFD Dispatch will advise NM State Forestry of the incident location, the fire name, and Incident Commander (along with the IC's phone number and radio frequency).

   d. AFD Dispatch will advise Command of the helicopter radio designation, radio frequency, and ETA to the scene.

   e. Command will assign one person on the ground to be in communication with the helicopter - using a Bendix King radio - while the aircraft is assigned to the incident.

E. Heavy equipment (including bulldozers) can be ordered only by the New Mexico State Forestry Division.

Appendix A.

I. 10 Standard Fire Orders

1. Fight fire aggressively but provide for safety first.
2. Initiate all actions based on current and expected fire behavior.
3. Recognize current weather conditions and obtain forecasts.
4. Ensure instructions are given and understood.
5. Obtain current information on fire status.
6. Remain in communication with crewmembers, your supervisor and adjoining forces.
7. Determine safety zones and escape routes.
8. Establish lookouts in potentially hazardous situations.
9. Retain control at all times.
10. Stay alert, keep calm, think clearly, and act decisively.

II. 18 Watch Out Situations

1. Fire not scouted and sized up.
2. In country not scene in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics, and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members/supervisors.
8. Constructing line without safe anchor point.

9. Building fire line downhill with fire below.

10. Attempting frontal assault on fire.

11. Unburned fuel between you and the fire.

12. Cannot see main fire, not in contact with anyone who can.

13. On a hillside, where rolling material can ignite fuel below.

14. Weather is getting hotter and dryer.

15. Wind increases and/or changes direction.

16. Getting frequent spot fires across line.

17. Terrain and fuel make escape to safety zones difficult.

18. Taking nap near the fire line.

III. Urban Interface Watch Out Situations

1. Wooden construction, wood shake roofs.

2. Poor access, one-way roads.

3. Inadequate water supply.

4. Natural fuels 30 feet or closer to structures.

5. Extreme fire behavior.

6. Strong winds of 25 mph or greater.

7. Evacuation of public (panic).

8. Structures located in chimneys, box or narrow canyons, on slopes of 30% or more or in continuous flashy fuel types.

9. Bridge load limits.

Appendix B.

I. Tool maintenance and reconditioning (Required safety practices)

All members using wildland tools and chain saws shall be required to recondition them immediately after use. Wildland tools and saws are to be maintained in optimum condition to prevent premature tool failure and reduce firefighter fatigue due to working with dull tools. AFD Supply will provide any needed maintenance equipment or replacement tools.

A. Hand tools.

1. Re-sharpen cutting edges with a hand file-do not use bench grinder.

2. Heads should be spray painted to protect against rust.

3. Cover cutting edges with duct tape to preserve sharpness.

4. Check handles for cracks and tightness.

5. Any nicks or roughness on the handle should be sanded smooth if possible; if the handle is deeply nicked or cracked and presents a potential hazard to the user, the handle should be replaced.

6. The handles should be given a coat of linseed oil.

B. Chain saws.

1. Clean chain saws thoroughly after use.

2. Sharpen chain (if properly trained).

3. Add fuel and bar oil.

4. Replenish saw kit with the following:

a. Scrench (combo screwdriver/wrench).

b. Two-cycle engine oil.

c. Bar/chain oil and chain files.

d. 6” mill bastard file.

e. Chain sharpening guide.

f. Spare spark plug.

g. Spare air filter.

h. Spare chain.

i. Five-gallon fuel can.

j. Falling wedges.

k. Falling axe.

l. Chaps.

m. Ear plugs.

n. Grease gun for bar tip.

Appendix C.

I. Fitness testing (Pack Test)

A. An important part of being a qualified firefighter is maintaining an adequate level of physical fitness to be productive and to maintain an adequate energy reserve to meet unforeseen emergencies.

B. Fitness must be demonstrated annually prior to receiving a Red Card. The current standard for fitness testing is popularly referred to as the "Pack Test." More accurately, it is a system of three tests, each intended to be equivalent to a particular level of work demand associate with various job duties.

C. The three levels are Arduous, Moderate, and Light. Table 3 details the three levels.

Table 3

Work Category	Test	Distance	Pack	Maximum Time
Arduous	Pack Test	3 miles	45 lbs.	45 minutes
Moderate	Field Test	2 miles	25 lbs.	30 minutes
Light	Walk test	1 mile	None	16 minutes

D. Recommended training for the Pack Test.

1. For maximum safety and benefit, firefighters should be encouraged to start training for fitness testing 4-6 weeks prior to the test.

2. It is best to start training with little or no weight, and establish a pace that will meet the time requirement.

3. Gradually increase weight and/or distance until the test requirement can be consistently met.

E. The pack test course.

1. The course should be relatively flat and have a firm walking surface. Out-and-back courses have the advantage of canceling out the effects of wind and grade. The distance must be accurately measured with a measuring wheel or similar device.

F. Pack test equipment.

a. A scale to weigh packs (a hanging scale recommended).

b. Two stopwatches (a primary and a back-up).

c. Radios for monitoring safety.

d. Forms for documenting the test and for informed consent for testing.

e. Signs, safety vests, and other safety equipment.

G. Testing at altitude.

a. Candidates performing the work capacity tests at an altitude of 4000 feet or greater should be acclimated to the environment.

b. The maximum time allowed to perform the test should be adjusted according to Table 3:

Table 3

Altitude Above Sea Level	Pack Test	Field Test	Walk Test
8,000-9,000 feet	90 Seconds	60 Seconds	30 Seconds
7,000-8,000 feet	75 Seconds	50 Seconds	25 Seconds
6,000-7,000 feet	60 Seconds	40 Seconds	20 Seconds
5,000-6,000 feet	45 Seconds	30 Seconds	15 Seconds
4,000-5,000 feet	30 Seconds	20 Seconds	10 Seconds

H. Health and safety of personnel during Pack Test.

a. Paramedics should be on hand at the test site to monitor and/or treat any personnel who may become ill or injured.

NMRMP AFD Deployment Guidelines

Purpose

This purpose of this guideline is to define the manner in which "red-carded" Albuquerque Fire Department personnel will be selected and deployed to wildland firefighting assignments, under the New Mexico Resource Management Plan (NMRMP).

Guideline

Through an inter-governmental agreement (IGA) with the State of New Mexico, the Albuquerque Fire Department has committed the deployment of resources to support State efforts in wildland fire suppression activities. AFD will support the IGA with the resources identified in this guideline.

Operational Guidance

I. Staffing considerations

A. AFD has committed to send a maximum of 12 personnel for NMRMP fires.

1. One Type-1 engine with four personnel.

   a. One engine boss.

   b. One engine operator.

   c. Two firefighters.

2. Two Type-6 engines (brush trucks) with three personnel.

   a. One engine boss.

   b. One engine operator.

   c. One firefighter.

3. One rescue unit with two personnel.

   a. One EMT-Paramedic and one EMT-Basic.

   b. This unit can be double-staffed to work 24-hours-a-day on two 12-hour shifts.

B. When a request for resources is received, the AFD Field Operations Center (FOC) will begin calling overtimes for each position required to fill the full complement of the assignment.

C. Personnel must fulfill all required criteria to accept an assignment.

1. They must be immediately available.

2. They must be available for five days.

3. They must be present at Station 17 and ready to leave within one hour of notification.

4. They must arrive at Station 17 with all required personal gear, PPE, and limited personal items.

5. They must be qualified for the position they are accepting.

D. Personnel must fulfill all required criteria to be considered for assignment.

1. They must be currently “red carded”.

2. They must have appropriate certification and must have completed a task book for the position they are accepting.

a. Firefighter II.

b. Advanced firefighter (FFI).

c. Sawyer.

d. Engine operator.

e, Engine boss.

f. Current New Mexico State License for EMT Basic or Paramedic will be recognized.

3. They must complete the AFD FOC Wildland notification form by marking, “Willing to be Deployed.”

4. For each position, the member with the most qualifications will be ranked ahead of other firefighters with less training (i.e. FFI, sawyer, Bendix King radio operator, GPS).

E. Deployments are for a period of five days, and will include a combination of work off-site (WOS) status, along with the regular four days off. To maximize overtime opportunity for the responding member, the notifications will be made according to the following schedule:

1. If the assignment starts on a shift's first day off, members from that shift will be called for the assignment. Those members would work their four days off, and on the fifth day - when they are regularly scheduled to work at AFD – they would be placed in WOS for their first 24-hour shift while they are returning from the fire. Their return to work would be the next day at 0800, their regularly scheduled workday.

2. If the assignment starts on a shift's second day of the 48-hour shift, members from that shift will be called for the assignment. Those members would be placed in WOS for the remainder of that shift and would leave for the fire. They would work their four days off. Their return to work would be the next day at 0800, on their regularly scheduled workday.

II. Operational considerations

A. Units will be deployed out of Station 17.

B. Members will be required to inventory the truck before and after each assignment.

C. All equipment must be cleaned and refurbished prior to leaving Station 17.

D. Deployment equipment will be cleaned and readied for storage. The truck should be left in a ready state.

E. Engine bosses will turn in all necessary paperwork (crew time reports, emergency shift tickets, unit logs, and other forms) upon arrival to Battalion Commander 4.

F. Engine bosses should report any problems with apparatus, equipment, or personnel to Battalion Commander 4.

G. Brush 1 and/or Brush 10 will be used for out-of-town deployments. A designated pumper and rescue, which will have a Bendix King truck-mounted radio, will be set aside for wildland purposes.

H. Wildland deployment overtime hours will not be added in your regular overtime opportunities.

III. Personal gear

A. All personnel deployed on NMRMP assignments will ensure that they are equipped and deployed with all appropriate personal equipment.

1. Wildland gear (and bunker gear if going on a Type 1 engine).
2. Current red card.
3. Task book.
4. Sleeping bag and pillow.
5. Extra change of clothes, underwear, and socks.
6. Extra wildland PPE.
7. Bandana.
8. Small amount of food, water, snacks, or energy bars.
9. Toiletries, required medicines, towel.
10. Minimal electronic devices.
11. Flashlight.

Incident Command

Purpose

This purpose of the guideline is to define Albuquerque Fire Department's definition of Incident Command. This guideline identifies the responsibilities of Command at all emergency incidents for which AFD maintains management responsibility.

It defines the functions of Command, the Incident Command System (ICS), and other Command considerations in order to provide for the safety of personnel operating at emergency incidents; to improve the use of resources and tactical effectiveness; to meet OSHA and EPA regulations requiring the use of an Incident Command System for Hazardous Materials Incidents; and to meet NFPA Standard 1500 requirements for the use of an Incident Command System for operations at all emergency incidents.

Guideline

The Albuquerque Fire Department responds to a wide range of emergency incidents. In order to effectively manage personnel and resources, and to provide for the safety and welfare of personnel, all personnel will work within the Incident Command System (ICS) at an incident scene. Within ICS, the Incident Commander is responsible for building a command structure that matches the organizational needs of the incident to achieve the systematic completion of the tactical priorities for the incident.

Operational Guidance

I. Responsibilities of Command

A. The Incident Commander is responsible to provide for the safety, accountability and welfare of personnel. This is to be ongoing through the duration of the incident.

B. The Incident Commander is responsible for the completion of the tactical objectives.

1. Tactical objectives, listed in order of priority, include the following:

a. Remove endangered occupants and treat the injured.

i. The benchmark for completing this is "All Clear."

b. Stabilize the incident and provide for life safety.

i. The benchmark for completing this is “Fire Under Control.”

c. Conserve property.

i. The benchmark for achieving this is “Loss Stopped.”

II. The functions of command

A. These define standard activities that are performed by the Incident Commander to achieve the tactical objectives.

B. The functions of command include the following:

1. Assume and announce Command, and establish an effective operating position (or Command Post).

2. Rapidly evaluate the situation (perform a size-up).

3. Initiate, maintain, and control the communications process.

4. Identify the overall strategy, develop an incident action plan (IAP), and assign companies and personnel consistent with pre-fire plans and Standard Operating Guidelines.

5. Develop an effective Incident Management Organization.

6. Provide tactical objectives.

7. Review, evaluate, and revise the IAP as needed.

8. Command goals and objectives.

a. Establish a strong, direct, and visible Command from the onset of the incident.

b. Establish an effective incident organization defining the activities and responsibilities of all individuals operating within the Incident Command System.

c. Provide a system to process information to support incident management, planning, and decision-making.

d. Provide a system for the orderly transfer of Command to subsequent arriving officers.

III. Incident Command System (ICS) operations

A. Command is the responsibility of the Incident Commander.

B. The Incident Command System should be considered the basic management system to be used on any size or type of incident.

C. It is the responsibility of the Incident Commander to develop an organizational structure.

1. The scope of the emergency determines the size and complexity of the organizational structure.

2. The full establishment of the ICS should be viewed as an extension of the existing incident organization.

D. The determination to expand the organization will be that of Command.

IV. Establishing command

A. The first fire department member or unit to arrive at the scene will assume command of the incident.

1. This initial Incident Commander shall remain in command until command is transferred or the incident is stabilized and terminated.

B. The first unit or member on the scene must initiate whatever parts of the Incident Command System that are needed to effectively manage the incident scene.

C. A single company incident (such as a trash fire or single patient EMS incident) may only require that the responding company or unit announce their arrival on-scene.

D. For incidents requiring the commitment of multiple companies or units, the first unit, or member, on-scene must establish and announce “Command” and develop an ICS appropriate to the incident.

E. The radio designation "Command" will be used along with the geographical location of the incident (such as, "7th Street Command," "Convention Center Command").

1. This designation will remain throughout the duration of the incident. The designation of "Command" will remain with the officer currently in Command of the incident throughout the event.

V. Radio reports

A. In addition to assuming and announcing Command, the first arriving fire department unit will give an initial radio report (size up).

B. The radio report will include the following information:

1. The arriving unit's designation.

2. A brief description of the incident situation (such as building size, occupancy, HazMat release, or multi-vehicle accident).

3. Obvious conditions (such as working fire, HazMat spill, or multiple patients).

4. A brief description of actions taken.

5. Declaration of strategy (as they apply to structure fires).

6. Any obvious safety concerns.

7. Identification and location of Command.

8. Announcement of Accountability location.

VI. Command options

A. It is the responsibility of the first arriving unit or member to assume command of the incident.

1. This presents several options, depending on the situation. If a chief officer, member, or unit without tactical capabilities (such as a staff vehicle or equipment) initiates command, the establishment of a Command Post should be a top priority.

2. At most incidents, the initial Incident Commander will be a company officer.

B. Command options define the Company Officer's direct involvement in tactical activities and the mode of command that may be used.

1. Investigative mode (Nothing Showing).

a. These situations generally require investigation by the initial arriving company while other units remain in a staged mode.

b. The officer should go with the company to investigate while using a portable radio to command the incident.

2. Mobile Command mode (Offensive attack strategy).

a. These are situations that require immediate action to stabilize the incident, and require the company officer's assistance and direct involvement in the attack.

b. In these situations, the Company Officer goes with the crew to provide the appropriate level of supervision.

c. Examples of these situations may include the following:

i. Offensive fire attacks (especially in marginal situations).

ii. Critical life safety situations (such as, rescue) which must be achieved in a compressed time.

iii. Any incident where the safety and welfare of firefighters is a major concern.

iv. Obvious working incidents that require further investigation by the company officer.

c. Where fast intervention is critical, utilization of the portable radio will permit the company officer's involvement in the attack without neglecting Command responsibilities.

d. The Mobile Command mode should not last more than a few minutes and will end with one of the following:

i. The situation is stabilized.

ii. The situation is not stabilized and the Company Officer must withdraw to the exterior and establish a command post. At some time, the company officer must decide whether or not to withdraw the remainder of the crew, based on the crew's capabilities and experience, safety issues, and the ability to communicate with the crew. No crew should remain in a hazardous area without radio communications capabilities.

iii. Command is transferred to another higher-ranking officer. When a command officer is assuming command, the battalion commander may opt to return the company officer to his/her crew, or assign him/her to a subordinate position.

3. Stationary Command mode incidents, by virtue of their size, complexity, or potential for rapid expansion, require immediate strong, direct, overall command.

a. In such cases, the Company Officer will initially assume an exterior, safe, and effective Command position and maintain that position until relieved by a higher-ranking officer.

b. A tactical worksheet should be initiated and used to assist in managing this type of incident.

4. If the company officer selects the Stationary Command mode, the following options are available regarding the assignment of the remaining crew members.

a. The officer may "upgrade" within the company and place the company into action with two or more members.

i. One of the crew members will serve as the acting company officer and must be provided with a portable radio.

ii. The collective and individual capabilities and experience of the crew will regulate this action.

b. The officer may assign the crew members to work under the supervision of another company officer.

i. In such cases, the officer assuming Command must communicate with the officer of the other company and indicate the assignment of those personnel.

c. The officer may elect to assign the crew members to perform staff functions to assist Command.

i. A company officer assuming Command has a choice of modes and degrees of personal involvement in the tactical activities, but continues to be fully responsible for the Command functions.

ii. The initiative and judgment of the officer are of great importance. The modes identified are guidelines to assist the officer in planning appropriate actions.

iii. The actions initiated should conform to one of the above-mentioned modes of operation.

VII. Passing command

A. In certain situations, it may be advantageous for a first-arriving Company Officer to pass Command to the next company on the scene.

1. This is indicated when the initial commitment of the first-arriving company requires a full crew (such as at a high-rise fire or an immediate rescue situation) and another company is on the scene.

B. "Passing Command" to a unit that is not on the scene creates a gap in the Command process and compromises incident management.

1. To prevent this "gap," Command will not be passed to an officer who is not on-scene.

2. It is preferable to have the initial arriving Company Officer continue to operate in the Mobile Command mode until Command can be passed to an on-scene unit.

VIII. Transfer of command

A. Command is transferred to improve the quality of the Command organization. The following guidelines outline the transfer of Command process.

1. The officer assuming Command will communicate with the person being relieved by radio or face-to-face.

a. Face-to-face communication is the preferred method to transfer Command.

2. The person being relieved will brief the officer assuming Command indicating at least the following information:

a. Incident conditions (such as, the fire location, extent of Haz-Mat spill or release, or number of patients).

b. Incident action plan (IAP).

c. Progress made toward completion of the tactical objectives.

d. Any safety considerations.

e. The deployment and assignment of operating companies and personnel.

f. Appraisal of need for additional resources.

B. The first-arriving Command Officer may assume Command of the incident following transfer of Command.

C. The second-arriving Command Officer should report to the command post for assignment.

D. Later arriving, senior Command Officers may choose to assume Command, or assume adviser positions.

E. Assumption of Command is discretionary for Deputy Chiefs and the Fire Chief.

1. Within the chain of Command, the actual transfer of Command will be regulated by the following guideline:

a. The person being relieved of Command should review the tactical worksheet with the Officer assuming Command.

i. This tool provides the most effective framework for Command transfer as they outline the location and status of personnel and resources in a standard format.

ii. The person being relieved of Command will be assigned to best advantage by the officer assuming Command.

IX. General considerations

A. The response and arrival of additional ranking officers on the incident scene should strengthen the overall Command function.

1. As the incident escalates, the Incident Commander should use these officers as needed.

B. The arrival of a ranking officer on the incident scene does not mean that Command has been transferred to that officer.

1. Command is transferred only when the outlined transfer of Command process has been completed.

2. Chief officers and staff personnel should report directly to the Command Post for assignment by the Incident Commander.

X. Command Staff

A. As the incident grows into and past the requirements of a first-alarm assignment, the Incident Commander can become overloaded and overwhelmed with information management, assigning companies, filling out and updating the tactical worksheet, planning, forecasting, calling for additional resources, talking on the radio, and fulfilling all the other functions of command.

B. The immediate need of command at this point in the incident is support.

1. The Incident Commander should utilize the next-arriving Battalion Commander as a support officer.

2. If the Incident Commander is still playing “catch up” with the functions of Command, the only reason to assign the second Battalion Commander to a sector is if safety is an extreme concern in that sector.

C. Roles and responsibilities of the Support Officer.

1. Define, evaluate, and recommend changes to the IAP.

2. Provide direction relating to tactical priorities, specific critical fireground factors, and safety.

3. Evaluate the need for additional resources.

4. Assign Logistics responsibilities.

5. Assist with the tactical worksheet for control and accountability.

6. Evaluate the fireground organization and span-of-control.

C. Roles and responsibilities of the Senior Advisor.

1. The Senior Advisor will normally be the senior Battalion Commander, the Operations Deputy Chief, or the highest-ranking officer in the command post.

2. The officer serving as "Command" and the support officer would focus on the completion of the tactical priorities, the strategic and tactical plan and the other components of the incident.

   a. The Senior Advisor's focus is looking at the entire incident and its impact from a broader perspective and providing direction, guidance and advice to the "Command" and/or support officer.

   b. In this role the Senior Advisor is essentially acting as the overall Incident Commander.

3. Specific roles and responsibilities of the Senior Advisor Include the following:

   a. Review and evaluate the IAP, and initiate any needed changes.

   b. Provide on-going review of the overall "Big Picture" incident.

   c. Review the organizational structure, initiate change or expansion to meet incident needs.

   d. Initiate section and branch function as required.

   e. Provide a liaison with other city agencies and officials, outside agencies, property owners and/or tenants.

D. In order to maintain continuity and overall effectiveness, the Senior Advisor and the Support Officer must be in the Command Post with the Incident Commander.

1. When a Support Officer and Senior Advisor are supporting "Command" in the command post, there are three people performing the functions of Command, as shown in Table 1.

2. They are working as a team to enhance the command process and make the functions of command more effective.

Table 1.

Command Team		
Senior Advisor	Support Officer	Incident Commander

E. The officer assigned to communicate directly to companies, sectors, or branches will use the radio designation “Command” and should be the only member of the command team talking on the tactical radio channel.

Expanding the Organization

Purpose

This guideline defines the approved methods by which Albuquerque Fire Department implements Command during large-scale events that require an expansion of the basic Incident Command System (ICS). It identifies the required positions that should be implemented, and the most effective management structure.

Guideline

As a small incident escalates into a major incident, maintaining an effective span-of-control may become difficult as more sectors are implemented. The Incident Commander additionally may become overwhelmed and overloaded with the many facets of information management. The Incident Commander is responsible for assigning companies, updating the tactical worksheet, planning, forecasting, requesting additional resources, radio communications, and fulfilling all the other functions of Command. At times like these, the Incident Commander's most immediate need is functional support. As additional ranking officers arrive on-scene, the Command organization may be expanded through implementation of branches and sectors. It will additionally require the involvement of company officers and other staff personnel to fill the required Command and General Staff positions. Sector level positions will be implemented as they are needed, based on the needs of the incident.

Operational Guidance

I. Expanding the organization

A. One of the first sections typically implemented is the operations section chief. The operations section is responsible for the direct management of all incident tactical activities, the tactical priorities, and the overall safety and welfare of all personnel working in the operations section.

1. An Incident Commander should choose to implement and staff an operations section as a span-of-control mechanism. When the number of branches or sectors exceeds the capability of the Incident Commander to manage effectively, the Incident Commander may staff the operations section to reduce their span-of-control, thereby transferring the direct management of all tactical activities to the operations section chief.

2. The operations section chief will use appropriate radio channels to communicate strategic and specific objectives to the branches or sectors.

II. Development of branches

A. Sectors identify tactical level assignments in the command structure. As the span-of-control begins to be excessive, or the incident becomes more complex, or when there are two or more distinctly different operations concurrently ongoing (i.e., fire suppression, EMS, evacuation, etc.), the organization should be further sub-divided into branches. Branches may be established during an incident to serve several purposes; however, they are not always essential to the organization of the operations section.

B. In general, branches may be established for a number of reasons.

1. To ensure an effective span-of-control.

2. When there are multiple, different and distinct functional sectors operating at the same time and event.

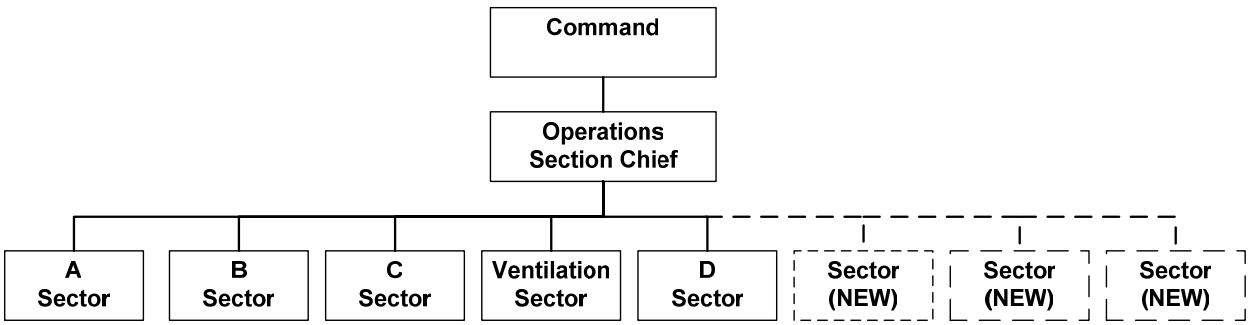
3. When the event involves multiple jurisdictions.

4. When the numbers of sectors exceeds the recommended span-of-control.

C. The Incident Commander or operations section chief should designate a multi-branch structure, and allocate sectors within those branches. In the following example, the operations section chief has five sectors reporting to him, with three additional sectors being added. At this point, a two-branch organization was formed.

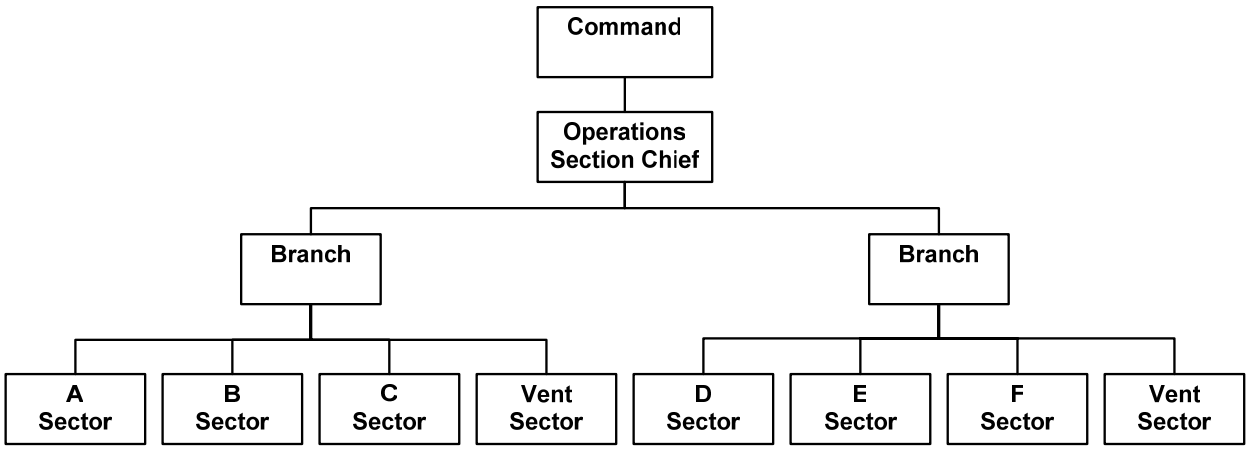
1. Figure 1 shows the organization before expansion to a multi-branch structure.

Figure 1



2. Figure 2 shows the organization with a two-branch organization.

Figure 2



D. Operations section branches should operate in their area of responsibility on their own (separate) radio channels and communicate to operations on a different channel if possible.

1. The radio designation of branches should reflect the objective of the branch when designating functional branches, (such as, HazMat branch or Multi-casualty branch). Tactical branches may be designated numerically (such as, branch I, branch II, or branch III).

2. When the Incident Commander implements branch directors, the sector officers should be notified of their new supervisor. This information should include the following:

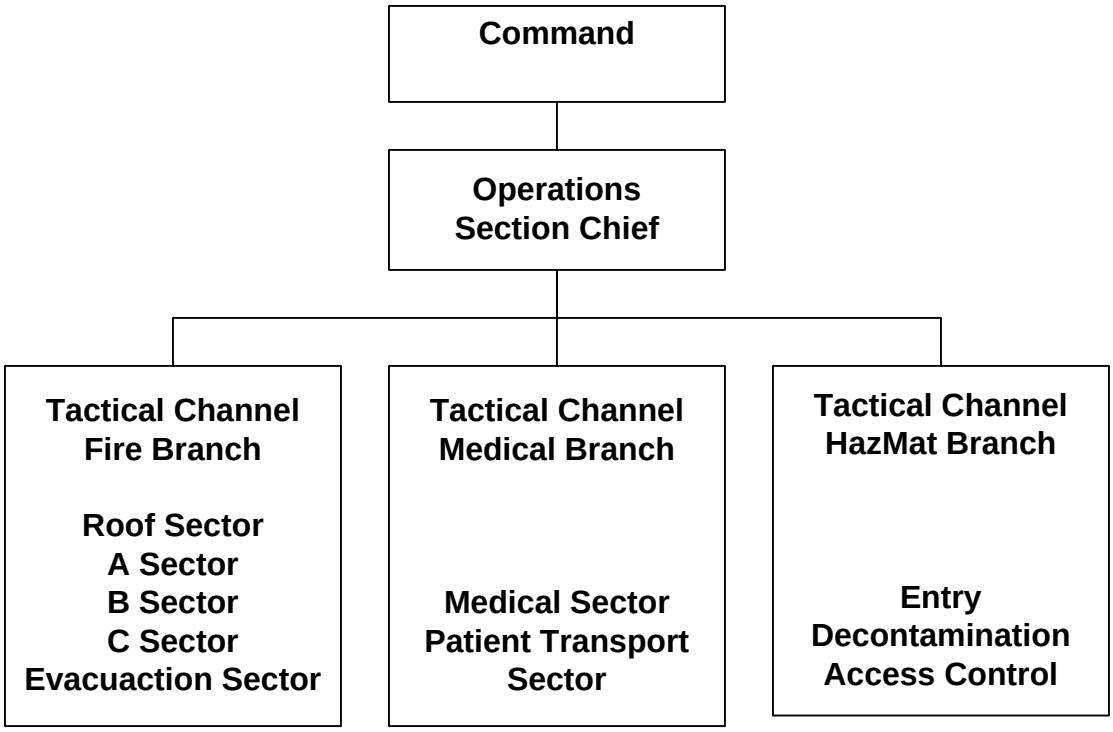
   a. To which branch the sector has been re-assigned.

   b. The radio channel on which the branch is operating.

3. Radio communications should be directed from the sector officer to the branches - instead of to the Incident Commander or operations. Branch directors will receive direction from the Incident Commander or operations. They will then relay that information to sectors within their respective branches.

4. Figure 3 illustrates an expanded organizational structure that includes functional branches and subordinate sectors.

Figure 3



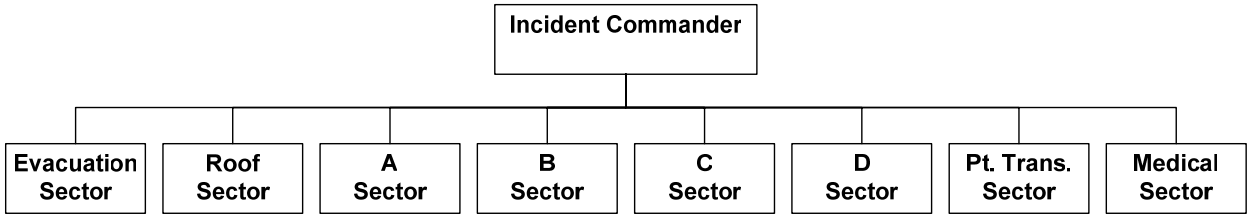
E. Depending on the situation, branches may be located at the command post or at operational locations. When located at the command post, branches can communicate on a face-to-face basis with the operations section chief and/or Incident Commander.

1. When an incident encompasses a large geographic area, it may be more effective to have branches in tactical locations. When branches are sent to tactical positions, they should immediately implement command-and-control within their respective branches. In these situations, operations must assign someone to monitor a "Command Channel."

2. Branches are not limited to operations. Any of the section chiefs may recommend the implementation of branches within their sections -- with approval of the Incident Commander.

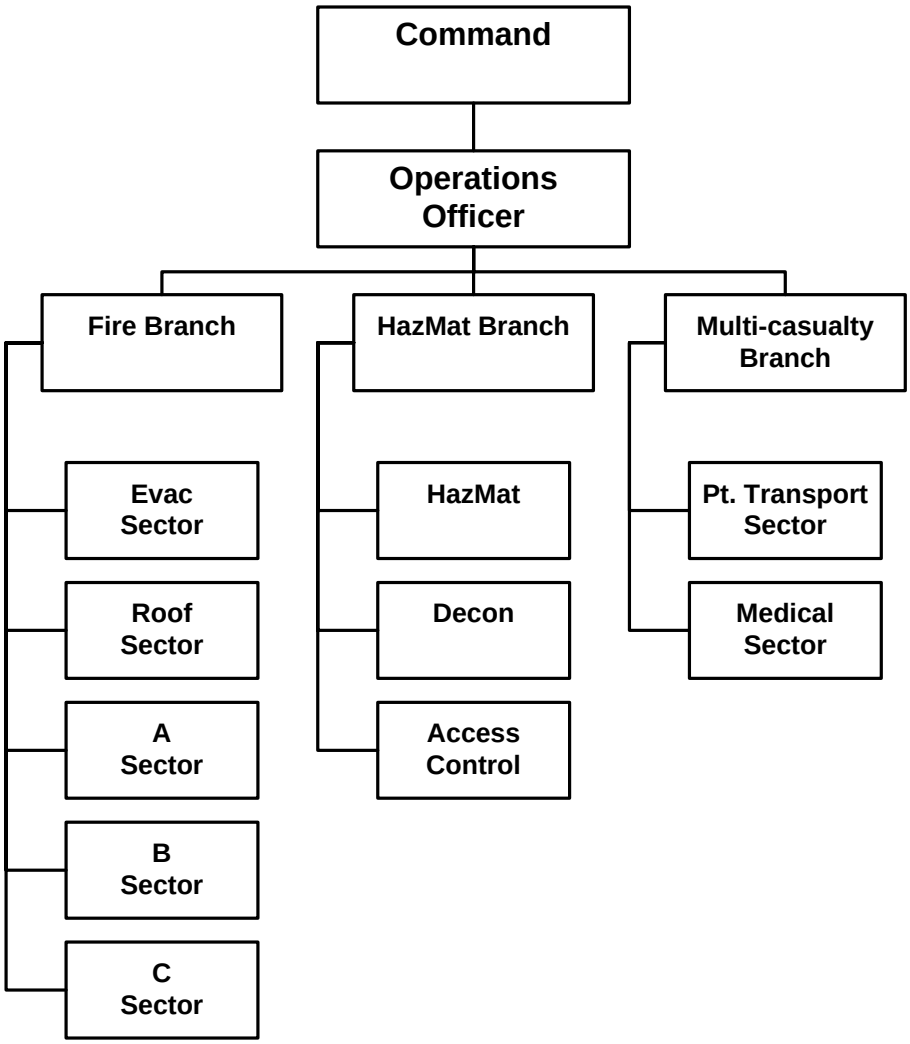
3. The organization expands from an over-tasked one with multiple sectors, as shown in Figure 4:

Figure 4



4. To a more efficient one, with the incorporation of branches, as shown in Figure 5:

Figure 5



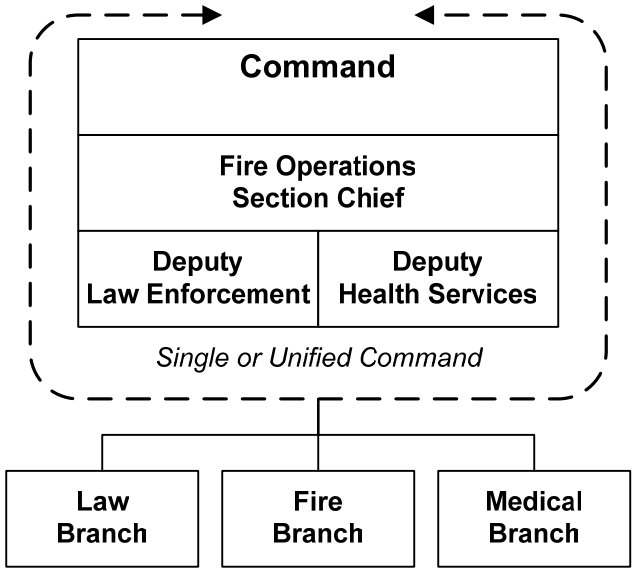
III. Functional branches

A. When the nature of an incident calls for a functional branch structure, (such as a major aircraft crash within a jurisdiction, involving three separate departments within that jurisdiction: police, fire, and health service), each department would maintain its own functional branch, and all would operate under the direction of a single operations section chief.

B. As illustrated in Figure 6, the operations section chief is from the fire department and is working with deputies from police and health services departments. Other alignments could be made depending upon the jurisdiction plan and type of emergency.

1. Note that Incident Command in this situation could be either *Single or Unified Command,* depending upon the jurisdiction.

Figure 6

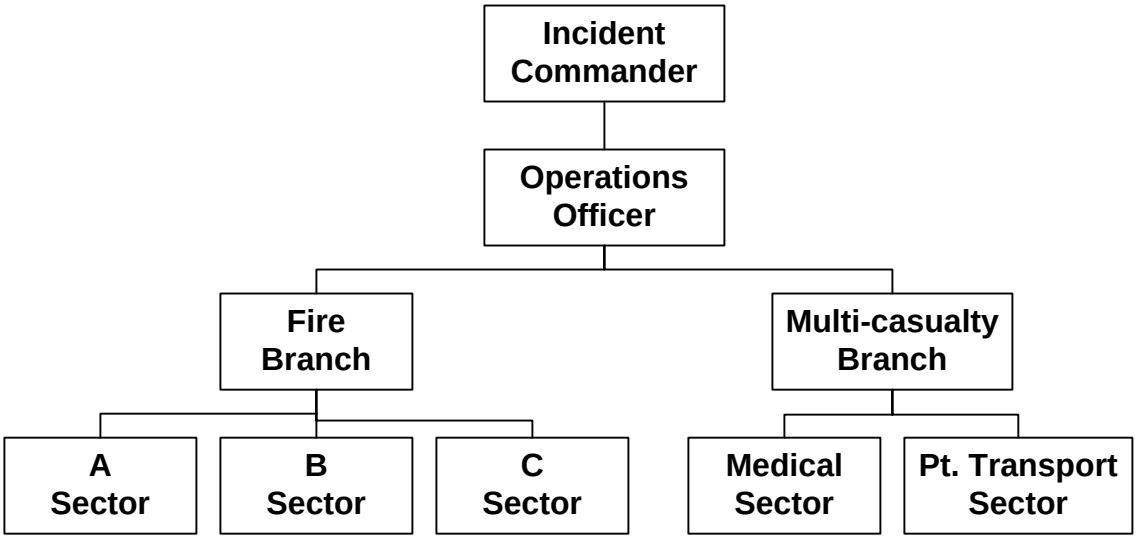


IV. Multi-jurisdictional incidents

A. When an incident is multi-jurisdictional, resources are best managed by the agencies that have routine control over those resources. Branches should be utilized at incidents where the span-of-control with sectors is maximized.

B. Incidents involving two or more distinctly different major management components (such as a large fire with a major evacuation or a large fire with a large number of patients). The Incident Commander may elect to assign branches to forward positions to manage and coordinate activities, as illustrated in Figure 7.

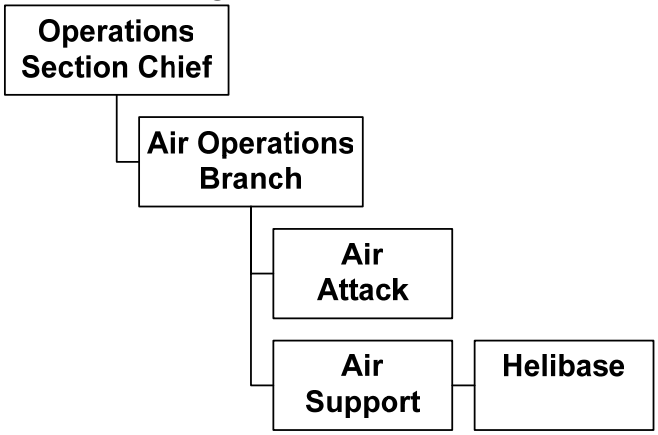
Figure 7



V. Aircraft

A. When the incident requires the use of aircraft, such as for the transportation of victims from a multi-casualty incident, high-rise roof top rescue, swift water rescue, or wildland fire, the operations section chief should establish the Air Operations branch. Its size, organization, and use, will depend primarily upon the nature of the incident and the availability of aircraft. See Figure 8.

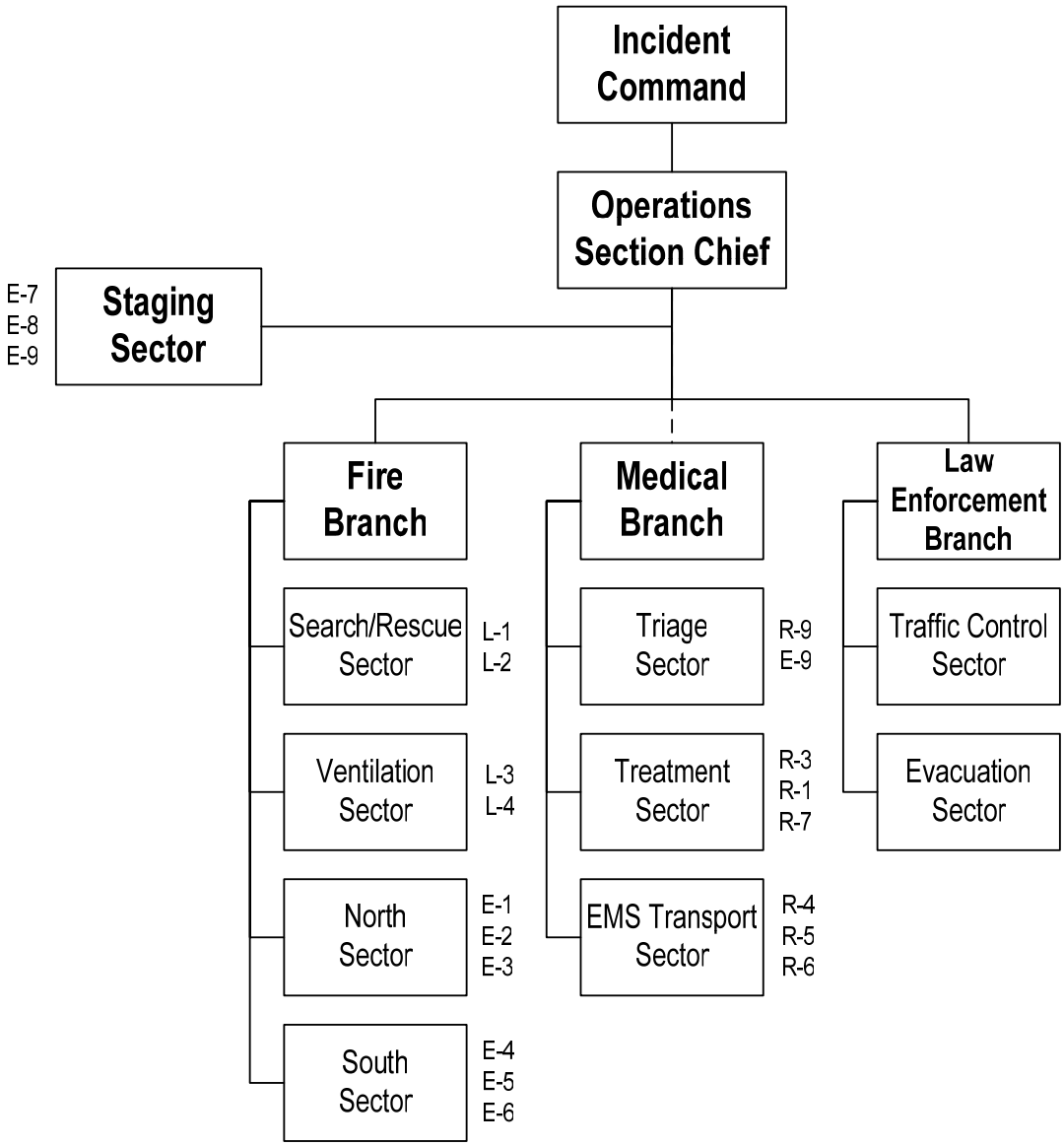
Figure 8



VI. Expanding the Incident

A. As the organization expands to deal with a major incident, the Incident Commander will need additional command post support. The operations section chief is one of the first to be implemented. Figure 9 is an example of how the Incident Management System can expand to fit the size and complexity of various types of incidents.

Figure 9



VII. Organizational hierarchy

A. The Incident Management System organizational structure develops in a modular fashion, based on the type and scope of an incident. The organization's staff builds from the top down; responsibility and performance is initially placed with the Incident Commander.

B. As the need exists, four separate sections can be developed, each with several sub-units that may be established. The specific organizational structure established for any given incident will be based on the management needs of the incident. If one individual can simultaneously manage all major functional areas, no further organization is required. If one or more of the areas requires independent management, an additional officer should be assigned responsibility for that area.

C. For ease of reference and understanding, personnel assigned to manage at each level of the organization will carry a distinctive organizational title.

1. Command refers to the Incident Commander.

2. Officer refers to a member of the command staff (Information Officer, Safety Officer, Liaison Officer).

3. Section chief refers to a member of the general staff (planning section chief, operations section chief, finance and administration section chief, logistics section chief).

4. Director refers to the positions of branch director, which is in the operations section, or logistics section between the sectors and the operations section chiefs (branch directors: air operations branch director or service branch director).

5. Supervisor refers to the positions of sector officer, which is in the operations section and lies between the branch director and strike team/task force leader.

6. Unit leader refers to a position with supervision and management responsibility of either a sector of resources or a unit such as ground support, medical, or supply.

7. Manager refers to the lowest level of supervision within the logistics section, such as the equipment manager, base manager, or camp manager. The only exception to this is the staging area manager, who reports directly to the operations section chief.

8. Single resources are engine companies, ladder truck companies, HazMat units, Heavy rescue units, or light rescue units with a company officer and crew.

VIII. Single resources

A. As a small incident escalates into a major one, additional organizational support will be required. As additional ranking officers arrive on the scene, the command organization may be expanded through the involvement of officers and staff personnel to fill command and general staff positions.

B. Section and unit level positions within the Incident Management System are to be activated only when the corresponding functions are required by the incident. Until such time that a section or unit is activated, all functions associated with that section or unit will remain the responsibility of the Incident Commander or the appropriate section chief.

C. It is recommended that two or more units not be combined into a single unit; however, an individual may be assigned responsibility for managing more than one unit. This method of organization allows for easy expansion and demobilization of the system.

D. The command structure defines the lines of authority, but it is not intended that the transfer of information within the Incident Management System be restricted to the chain-of-command. An individual will receive orders from a superior officer, but may give information to any position in a different part of the organization.

E. The majority of positions within the Incident Management System will not be activated until the initial response is determined to be insufficient to handle the situation. When this occurs, qualified personnel should be requested through normal communications with dispatch to fill the positions deemed to be required for the event. If it is later determined that a specific position is not needed, the request can be canceled.

F. The transition from the initial response to a major incident organization will be evolutionary, and positions will be filled as the corresponding tasks are required. During the initial phases of an incident, the Incident Commander normally carries out four section functions that comprise the general staff within a fully expanded incident organizational structure.

1. Operations.

2. Planning.

3. Logistics.

4. Finance and administration.

IX. Sections

A. Section level positions can be implemented at any time, based on the needs of the incident. One of the first sections typically implemented is the operations section chief.

B. Operations section

1. The operations section is responsible for the direct management of all incident tactical activities, the tactical priorities, and the safety and welfare of personnel working in the operations section. It is most often implemented and staffed as a span-of-control mechanism.

2. The operations section chief is responsible for the direct management of all incident tactical activities and should have direct involvement in the preparation of the action plan for the period of responsibility. The roles and responsibilities of the section chief include the following:

a. Managing incident tactical activities.

b. Coordinating activities with the Incident Commander.

c. Implementing the Incident Action Plan (IAP).

d. Using tactical objectives and priorities to assign resources.

e. Using the ICS to build an effective organizational structure.

f. Providing tactical objectives for sectors.

g. Controlling staging and air operations.

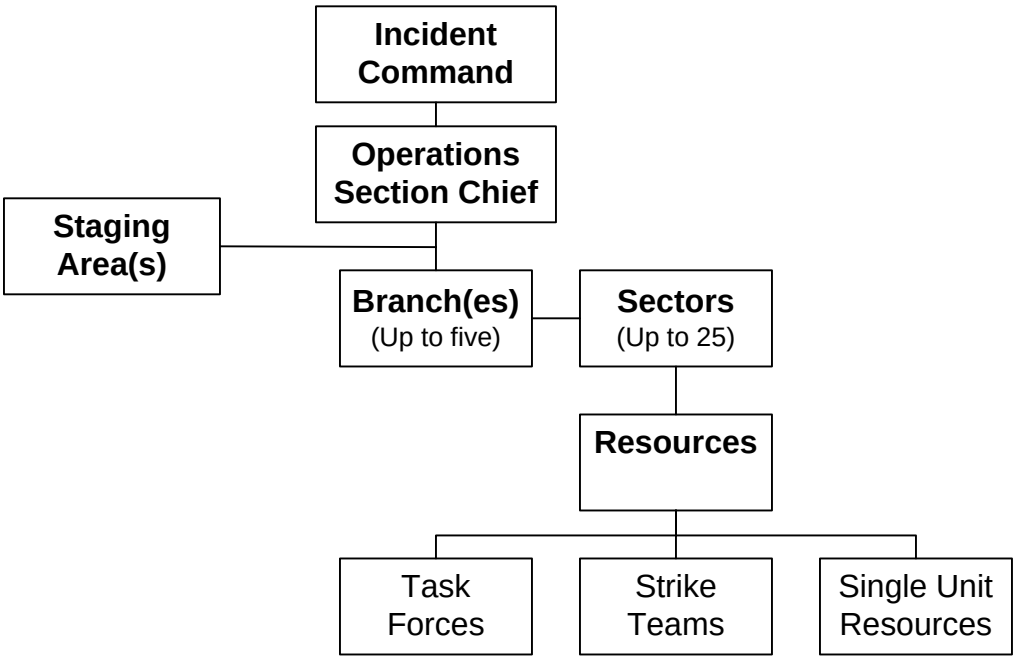
h. Providing for life safety.

i. Determining needs and requesting additional resources.

j. Consulting with, and informing, other sections and command staff.

3. Figure 10 illustrates the subordinate tactical activities under the control of the operations section chief.

Figure 10



X. Staging areas

A. Staging Areas are locations designated within the incident area, and are used to temporarily locate resources that are available for assignment. If arriving apparatus is not managed effectively, the incident scene can quickly become congested. At major or complex operations, the Incident Commander should establish a central staging area early, and place an officer in charge of staging. The radio designation of “Staging” should be used.

B. In the expanded organizational structure, staging reports to the operations section chief. The operations section chief may establish, move, or discontinue the use of staging areas. All resources within the designated staging areas are under the direct control of the operations section chief, and should be immediately available.

C. Staging will request logistical support (such as food, fuel, or sanitation) from the logistics section.

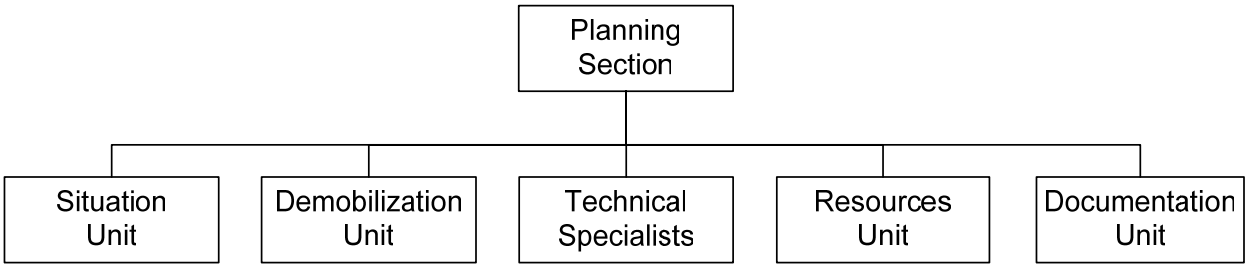
XI. Planning section

A. The planning section is responsible for gathering, assimilating, analyzing, and processing information needed for effective decision making. Information management is a full-time task at large and complex incidents.

1. The planning section serves as the Incident Commander's “clearing house” for information. This allows the Incident Commander's staff to provide information instead of having to deal with dozens of information sources. Critical information should be immediately forwarded to the Incident Commander (or whoever needs it). Information should also be used to make long range plans.

2. The planning section chief's goal is to plan ahead of current events and to identify the need for resources *before* they are needed. Figure 11 is an example of the subordinate resources for which the planning section may be responsible.

Figure 11



3. The roles and responsibilities of the planning section chief include:

   a. Evaluating strategies and plans with the Incident Commander.

   b. Maintaining resource status and personnel accountability.

   c. Refining and recommending any needed changes (with input from the Incident Commander).

   d. Evaluating the incident organization and span-of-control.

   e. Forecasting possible outcomes.

   f. Evaluating future resource requirements.

   g. Using technical assistance as needed.

   h. Evaluating tactical priorities, critical factors, and safety issues.

   i. Using a standard systematic approach to gather, update, and manage situation status.

   j. Coordinating planning needs with outside agencies.

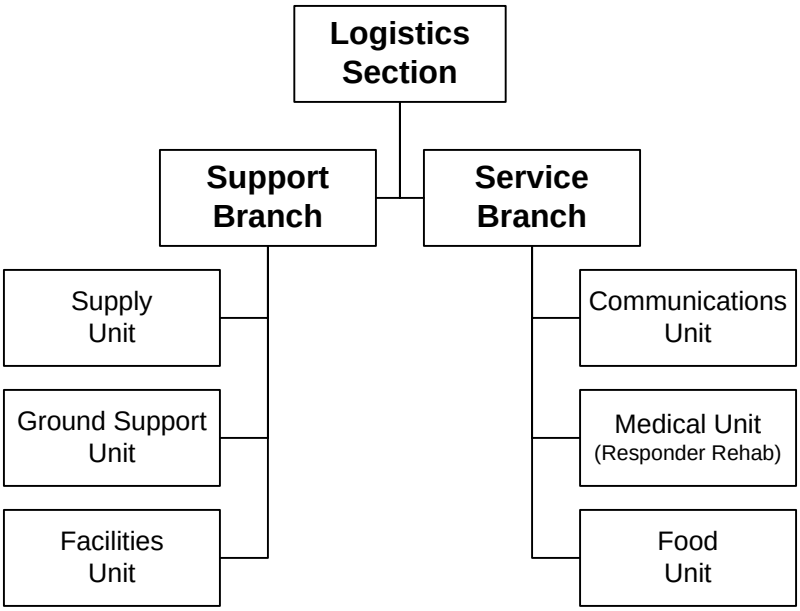
   k. Planning for incident demobilization.

l. Maintaining incident records.

XII. Logistics section

A. The logistics section is the support mechanism for the Incident Command organization. Logistics provides services and support systems to all organizational components involved in the incident, including facilities, transportation, supplies, equipment maintenance, fuels, food, communications, and medical services. Logistics is also responsible for responder rehabilitation. Figure 12 illustrates the subordinate services for which the logistics section is responsible.

Figure 12



B. The roles and responsibilities of the logistics section include the following:

1. Provision of medical aid for incident personnel.

2. Management of responder rehabilitation.

3. Coordination of immediate critical incident stress de-briefing.

4. Provision and management of supplies or equipment.

5. Forecasting and acquisition of projected resource needs.

6. Provision of communications plans and equipment.

7. Provision of fuels and coordination of equipment repairs.

8. Acquisition of specialized equipment or expertise.

9. Provision of food and associated supplies.

10. Coordination of fixed or portable facilities.

11. Provision of any logistical needs requested by the Incident Commander.

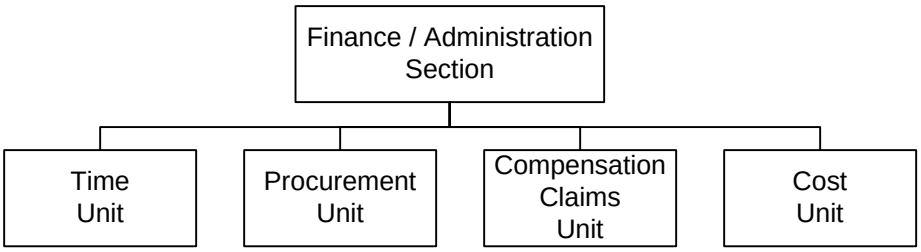
12. Supervision of assigned personnel.

XIII. Finance and administration section

A. The finance and administration section should be established on incidents when the agency(ies) involved have specific needs for financial services.

B. Not all agencies will require the establishment of a separate finance and administration section. In cases where only one specific function is required, such as cost analysis, that position could be established as a technical specialist in the planning section. Figure 13 illustrates the subordinate services for which the finance and administration section may be responsible.

Figure 13



C. The roles and responsibilities of the finance and administration section include the following:

1. Procurement of services and/or supplies from sources within and outside the fire department or City as requested by the Incident Commander.

2. Documentation of all incident financial costs.

3. Documentation of possible cost recovery for services and/or supplies.

4. Analysis and management of legal risk for incidents (such as, hazardous materials clean-up).

5. Documentation of compensation and claims for injury.

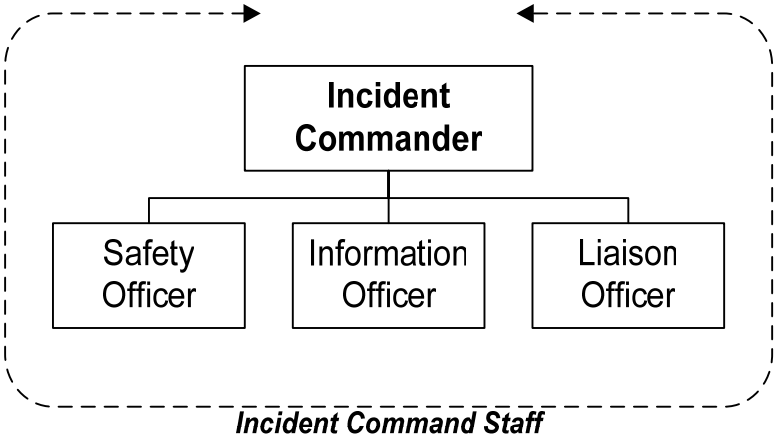
6. The finance and administration section is responsible for obtaining any and all needed incident documentation for potential cost recovery efforts.

XIV. The incident commander

A. Once the operations section is in place and functioning, the Incident Commander's focus should be on the strategic issues, overall strategic planning, and other components of the incident. Their focus should be on "the big picture" and the impact of the incident from a broad perspective.

B. In directing the tactical aspects of the incident, the Incident Commander should provide direction, advice, and guidance to the command and general staffs. Figure 14 shows the relationship dynamic of the command staff.

Figure 14



C. The roles and responsibilities of the Incident Command Staff include:

1. Reviewing and evaluating the plan, and initiating any needed changes.

2. Providing ongoing review of the overall incident (The Big Picture).

3, Selecting priorities.

4. Providing direction to the command and general staff.

5. Reviewing the organizational structure, and initiating change or expansion to meet incident needs.
6. Staging command and general staff functions.

7. Establishing liaison with other internal agencies and officials, outside agencies, property owners, and/or tenants.

D. Command staff positions are established to assume responsibility for key activities that are not a part of the line organization. Responsibilities for the three staff positions identified in the Incident Command staff chart are identified below:

1. The function of the information officer is to develop accurate and complete information regarding an incident cause, size, current situation, resources committed, and other matters of general interest. The Information Officer will normally be the point of contact for the media and other governmental agencies needing information directly from the incident. In either a single or unified Command structure, only one Information officer would be designated, although assistants may be assigned from other agencies or departments involved.

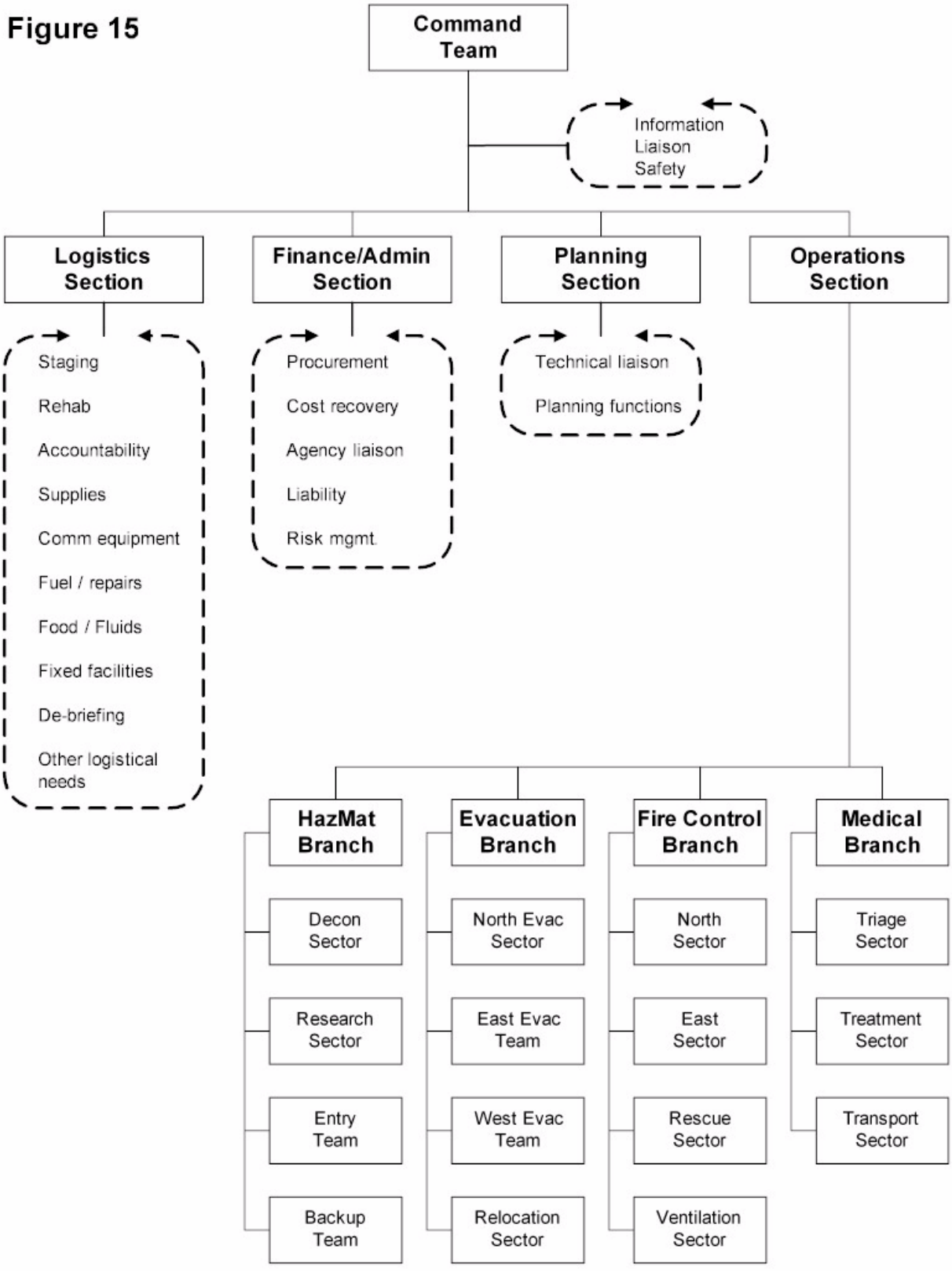
2. The safety officer's function at the incident is to assess hazardous and unsafe situations, and to develop measures for assuring personnel safety. The safety officer has emergency authority to stop and/or prevent all unsafe acts. In a Unified Command structure, a single safety officer should be designated. Assistants may be required and assigned from other agencies or departments making up the Unified Command. This may include the need for a responder rehabilitation assessment.

3. The liaison officer's function is to serves as a point-of-contact for representatives from other agencies. In a single-command structure, the representatives from assisting agencies would coordinate through the liaison officer. Under a unified command structure, the representatives from agencies not involved in the unified command would coordinate through the liaison officer. Agency representatives assigned to an incident should have authority to speak on all matters for their agency.

E. Additional positions may be required, depending upon the nature and location of the incident, or by requirements established by the Incident Commander.

F. An example of incident management, and an expanded organization, at a major HazMat incident, is shown on Figure 15.

Figure 15


Command Team
Information
Liaison
Safety
Logistics Section
Finance/Admin Section
Planning Section
Operations Section
Staging
Rehab
Accountability
Supplies
Comm equipment
Fuel / repairs
Food / Fluids
Fixed facilities
De-briefing
Other logistical needs
Procurement
Cost recovery
Agency liaison
Liability
Risk mgmt.
Technical liaison
Planning functions
HazMat Branch
Decon Sector
Research Sector
Entry Team
Backup Team
Evacuation Branch
North Evac Sector
East Evac Team
West Evac Team
Relocation Sector
Fire Control Branch
North Sector
East Sector
Rescue Sector
Ventilation Sector
Medical Branch
Triage Sector
Treatment Sector
Transport Sector

Unified Command

Purpose

This purpose of this guideline is to establish the Albuquerque Fire Department's approach to using Single Command or Unified Command at major incidents.

Guideline

The Command function for overall management of a given incident may utilize one of two approaches, Single Command or Unified Command, depending on the circumstances of the event. This guideline details both approaches and when they are appropriate.

Operational Guidance

I. Single command - Incident Commander

A. Single Command in the form of one Incident Commander is appropriate for an event which occurs wholly within one agency's jurisdiction

B. When the Single Command structure is utilized:

1. A single Incident Commander is solely responsible, within the confines of their authority, to establish objectives and overall management strategy associated with the incident

2. The Incident Commander is directly responsible for follow-through, to ensure that all functional area actions are directed toward accomplishment of the strategy

3. The Incident Commander will approve the trial action plan, and approve all requests for ordering and releasing of primary resources

4. The Incident Commander may have a deputy

a. The deputy should have the same qualifications as the Incident Commander, and may work directly with the Incident Commander, be a relief, or perform certain specific assigned tasks

b. In an incident within a single jurisdiction, where the nature of the incident is primarily a responsibility of one agency, e.g., fire, the deputy may be from the same agency

c. In a multi-jurisdictional incident or one which threatens to be multi-jurisdictional, the deputy role may be filled by an individual designated by the adjacent agency

d. More than one deputy could be involved

II. Unified command

A. Unified Command structure is called for under the following conditions:

1. The incident is totally contained within a single jurisdiction, but more than one department or agency shares management responsibility due to the nature of the incident (e.g., a passenger airliner crash within a national forest)

2. The incident requires resources not available from only one agency and coordination between agencies is required (e.g. a major hazardous materials release requiring mitigation and evacuation)

3. The incident is multi-jurisdictional in nature (e.g., a major flood)

B. In a Unified Command structure, the individuals designated by their jurisdictions, or by departments within a single jurisdiction, must jointly determine objectives, strategy and priorities

1. As in a Single Command structure, the Operations Chief will have responsibility for implementation of the incident plan

2. The determination of which agency or department the Operations Chief represents must be made by mutual agreement of the Unified Command.

3. The assignment of the Operations Chief may be done on the basis of greatest jurisdictional involvement, number of resources involved, by existing statutory authority, or by mutual knowledge of the individual's qualifications.

ICS Sectors

Purpose

The purpose of this guideline is to define the Albuquerque Fire Department's approach toward developing an effective Command Structure at emergency incidents. This guideline additionally delineates the use of Sectors as part of the Incident Command System.

Guideline

The use of Sectors provides a standard system of dividing the emergency incident into smaller subordinate command units or areas. All Albuquerque Fire Department officers are responsible to comply with and ensure that the personnel under their command are adequately trained in, fully understand, and operate in compliance with this guideline. All Albuquerque Fire Department members have the responsibility to learn and follow this guideline.

Operational Guidance

Complex emergencies can quickly exceed the capability of one officer to effectively manage the entire operation. Sectors reduce the span-of-control of the overall command function to manageable smaller-sized units. Sectors allow Command to communicate principally with sector officers, rather than with individual fire companies, thereby providing an effective command structure and defined fireground organization.

I. Command considerations

A. Sector responsibilities should be assigned early in the incident, typically to the first company assigned to a geographic area or function. This early establishment of sectors provides an effective incident command organization framework on which the operation can be built and expanded.

1. The number of Sectors Command can effectively manage varies. Fast moving, complex operations require a smaller span-of-control (no more than five sectors).
2. In slower moving, less complex operations, Command may effectively control more sectors.

B. In situations where the number of sectors exceed the span-of-control that Command can effectively control, the incident should be divided to branches. Each branch is responsible for several sectors and should have it's own radio channel if possible.

II. Tactical considerations

A. The utilization of sectors provides an array of major functions that may be selectively implemented according to the needs of a particular situation. This places responsibility for the details and execution of each particular function on a sector officer.

B. Once Command establishes effective sectors, he or she can concentrate on the overall strategy and resource allocation, allowing sector officers to manage various tasks.

C. Command determines strategic objectives and assigns available resources to the sectors. Each sector officer is responsible for the tactical deployment of the resources at his or her disposal towards completing Command objectives. They are additionally responsible for communicating their respective needs and progress to Command.

D. Sectors reduce the overall amount of fireground radio communication. Most routine communications should be conducted within the sector in a face-to-face manner between company officers and their sector officers. This process eliminates unnecessary radio traffic.

E. Safety of firefighting personnel represents a major reason for establishing sectors. Each sector officer must maintain communication with assigned companies to control both their position and function. Sector officers must constantly monitor all hazardous situations and risk to firefighters, and take appropriate corrective action to ensure that companies are operating in a safe and effective manner.

III. Criteria for sector assignment

A. Those situations that will eventually involve a number of companies or functions beyond the capability of Command to directly control.

1. Sectors should be assigned to the first-arriving companies based on geographic or functional needs.

B. When Command can no longer effectively cope with the number of companies currently involved in the operation.

C. When companies are involved in complex operations, such as large interior or geographic area, hazardous materials events, or technical rescue.

D. When companies are operating from tactical positions over which Command has little or no direct control.

E. When the situation presents special hazards and close control is required over operating companies, such as unstable structural conditions, hazardous materials, heavy fire loads, or if the event is a marginal offensive situation.

IV. Sectors

A. It is the Incident Commander's ongoing responsibility to assign sectors as required for effective emergency operations. The assignment relates to both geographic and functional sectors.

B. The Incident Commander shall advise each sector officer of specific objectives. The overall strategy and plan will and should be provided where appropriate, as time permits.

C. The number of companies assigned to a sector will depend on conditions within that sector. Five companies represent the maximum span-of-control for a sector.

1. Command will maintain an awareness of the number of companies operating within a sector and the capability of that sector officer to effectively direct operations.

D. Sectors assigned to specific operating areas will be designated by direction (East sector, North sector, West sector, South sector). When incidents involve odd geographic boundaries (e.g. Grand Avenue), and Command chooses geographic designations (such as, North sector), the Incident Commander must provide each sector with specific geographic boundaries to identify that sector's area of responsibility area.

E. An alternate sector designation: A, B, C, or D may also be used. Sector A is always the front of the building; the designation of other sectors is defined by going clockwise (from A) around the building.

F. In multi-story occupancies, sectors will usually be indicated by floor number (Sector 15 indicates 15th floor). In some cases, the floor sector identification may be subdivided into geographic areas (such as Sector 15 East or Sector 15 West) depending on stairwell and floor access.

G. Functional sectors will be identified by the function (e.g. salvage sector, treatment sector, or ventilation sector).

H. Sector officers will use the sector designation in all radio communications (i.e., North Sector to Command).

I. Sectors will be commanded by a sector officer, who can be chief officers, Commanders, company officers, or any other AFD member as designated by the Incident Commander.

J. In the cases, a sector officer may initially be assigned as a reconnaissance officer, into a geographic area or to evaluate tactical needs. In such cases, he or she will will proceed to the sector, evaluate conditions, and assess responsibility for directing resources and operations within the assigned area of responsibility, then will advise the Incident Commander of needed tasks and resources.

V. Sector officer responsibilities

A. Sector officers will be responsible for, and in control of, all assigned functions within their area.

1. Complete objectives assigned by Command.

2. Account for all assigned personnel.

3. Ensure a safe operation.

4. Monitor work progress of those within their sectors.

5. Re-direct activities as necessary.

6. Coordinate with related activities and/or sectors.

7. Monitor welfare of area personnel.

8. Request additional resources as required by the event.

9. Provide Command essential and frequent progress reports.

10. Re-allocate resources within the area.

B. The sector officer must be in a position to directly supervise and monitor operations. This will require the sector officer to be equipped with

appropriate protective clothing and equipment for his or her area of responsibility.

C. The sector officer should be readily identifiable and should maintain a visible position as much as possible.

D. The primary function of Company Officers working within an area is to direct the operations of their individual crews in performing assigned tasks.

1. Company Officers will advise their Sector Officer of work progress, preferably face-to-face.

2. All requests for additional resource or assistance must be directed to the sector officer.

E. Each sector officer will keep Command informed of conditions in their sector through regular progress reports. They must prioritize progress reports to include only essential information.

F. When a company is assigned from Staging to an operating area, the company will be advised to what area they are assigned, and to which sector officer they will be reporting.

1. The sector officers will be informed of which companies or units have been assigned to them by Command.

2. It will be the responsibility of the sector officer to contact the assigned company, and to transmit any instructions relative to the specific action requested.

Staging Sector

Purpose

This purpose of this guideline is to define a standard system of initial placement for responding apparatus, personnel, and equipment prior to assignment at tactical incidents. This guideline also defines the responsibilities of Albuquerque Fire Department staging sector officers.

Guideline

A staging sector is to be implemented by the Incident Commander and should be used for all greater alarm incidents, or any other incident in which Command desires to either centralize resources or position apparatus in a central, unobstructed location.

Effective utilization of staging sectors will prevent excessive apparatus congestion at the incident scene and allow time for the Incident Commander to evaluate conditions prior to assigning companies. It places apparatus in uncommitted locations, close to the immediate scene, in order to facilitate more effective assignments. It also reduces radio traffic during the critical initial stages of an incident, and allows time for the Incident Commander to formulate and implement a plan, without undue confusion and pressure. Staging additionally provides a resource pool from which units and resources may be assigned.

It is the responsibility of all command and company officers to become familiar with Albuquerque Fire Department staging sector guidelines.

Operational Guidance

I. Level I staging – tactical considerations

A. Level I staging is automatically in effect for all incidents involving three or more companies. During any multi-company response, companies should continue responding to the scene until a unit reports their arrival on-scene.

B. In situations where the simultaneous arrival of first-due companies is possible, the affected officers shall use radio communications to coordinate activities and eliminate confusion. It will be the ongoing responsibility of the Alarm Room to confirm the arrival of the first on-scene unit.

C. Following their arrival and assumption of command, the first-in company officer will announce the appropriate strategic mode (either offensive or defensive), and begin the assignment of the remainder of the dispatch.

D. In the event of a fast attack, the first-in officer should assume command and announce that a fast attack is in progress. In a fast attack mode, the second-in or next closest unit assumes an operating position on the fire ground and assumes command.

E. Once a company announces arrival on-scene, Level I staging will be implemented according to this guideline.

1. Fires and HazMat incidents

a. The first-arriving engine, ladder, and battalion commander will respond directly to the scene and initiate appropriate actions upon arrival.

b. All other units will stage in their direction of travel, uncommitted, approximately one block from the scene until assigned by the Incident Commander.

c. A position providing a maximum of possible tactical options with regard to access, direction of travel, and water supply should be selected.

2. Multi-company response to major medical emergencies

a. The first arriving company will go directly to the scene and place their apparatus in a location that will provide maximum access for medical/rescue support.

b. The first arriving rescue will go directly to the scene or where directed and park their vehicle in a manner that will allow quick and unobstructed exit for patient transportation.

c. All other companies will proceed to Level I staging. Staged companies or units will announce their arrival and report their company designation and their staged location and direction (“Engine-1, south”). An acknowledgment is not necessary from either the Alarm Room or the Incident Commander.

d. Staged companies will stay off the air until orders are received from the Incident Commander. If it becomes apparent that the Incident Commander has forgotten the company is in a staged position, the affected company officer shall contact the Incident Commander of their staged status.

e. These staging parameters attempt to reduce unnecessary radio traffic, but in no way should reduce effective communications or the initiative of officers to communicate. If staged companies observe critical tactical needs, they will advise the Incident Commander of such critical conditions and their actions.

3. The on-scene arrival of staff and support officers can enhance the Command organization and incident management. Unless arriving staff officers have predetermined responsibilities (such as safety sector, HazMat sector, Public Information, or Arson), these officers should assume a Level I staging posture and announce their arrival on the tactical channel.

a. If staging sector operations have been assigned a fire ground radio frequency, arrival notification should be on the fire ground frequency.

b. Parking at the site can be limited. Staff officers should leave their vehicles in the staging area, or park well off the road, as not to restrict on-site access by fire apparatus.

II. Level II staging - tactical considerations

A. Level II staging is used when the Incident Commander desires to maintain a reserve of resources on-scene, and when the need to centralize resources is required.

B. The staging area should be outside the incident site perimeter, but close enough for quick response to the scene. The staging area should allow staged companies to access any geographic point of the incident without delay or vehicle congestion.

C. Level II staging places all reserve resources in a pre-defined central location and automatically requires the implementation of a staging sector.

D. Level II staging should be implemented for all greater alarm incidents, first-alarm medical or hazardous materials incidents, or other incidents in which the Incident Commander desires to centralize resources or simply to park apparatus in a central, unobstructed location.

E. First-alarm companies which are already staged (at Level I), or are en-route to Level I staging, will stay in Level I unless otherwise directed by Command. All other responding units will proceed to the designated Level II staging area.

F. When activating Level II staging, the Incident Commander will give an approximate location for the staging area.

G. The staging area should be some distance away from the Incident Command post and the emergency scene to reduce site congestion, but close enough for prompt response to the incident site.

1. The staging area should allow staged companies to access any geographic point of the incident without delay or vehicle congestion.

2. The Incident Commander should consider Level II staging when contacting AFD Dispatch for additional resources. This is more functional than calling for Level II staging while units are en-route.

3. Additional units will be dispatched by AFD Dispatch directly to the staging area.

H. Once Level II staging is implemented, all communications involving staging will be between staging and the Incident Commander or Logistics.

1. The Incident Commander will assign an appropriate radio channel for staging operations when possible.

2. The staging sector radio designation will be “staging sector.” The Incident Commander will determine which radio channel will be used for command post to staging sector communications and advise the staging sector officer accordingly.

III. Staging sector officer responsibilities

A. The Incident Commander or AFD Dispatch may designate a staging area and staging sector officer to be responsible for the activities outlined in this guideline.

B. When a staging officer is not designated, the first company to arrive at the designated staging location will automatically become the staging officer and will notify the Incident Commander upon their arrival. The arrival notification will be made on the assigned tactical channel.

C. Due to the limited number of ladder companies, when the first company to staging is a ladder company, staging sector responsibilities should be transferred to an engine company officer upon his/her arrival on the scene.

1. Staging sector officers will assign their company members, as needed, to assist with staging operations, or assign them to another company.

D. Designated staging officers will be assigned specific responsibilities.

1. Locating an area of adequate size for all apparatus, including apparatus that may respond with additional alarms.

2. Transmitting the staging area location to Command and AFD Dispatch, indicating access and routing as needed.

3. Coordinating with the Police Department to block streets, intersections and other access needs determined by staging area requirements.

4. Ensuring that all apparatus is parked in an appropriate manner for quick exit.

5. Maintaining a log of companies available in the staging area, along with an inventory of any specialized equipment that might be required at the scene.

6. Maintaining crews in a ready state with their apparatus.

7. Providing progress reports to Command indicating number and type of units available.

8. Assuming a position that is visible and accessible to incoming and staged companies.

    a. This can be accomplished by leaving the red lights operating on the staging officer's apparatus.

9. Assigning staged companies to incident duty according to the Incident Commander's direction.

E. During major incidents, that require the implementation of a Logistics section, the staging sector will be working under the direction of the Logistics officer.

1. Command will also determine, and advise the staging sector officer what radio channel is to be used for Command-to-staging communication.

IV. Operational considerations

A. All responding companies will stay off the air and respond directly to the designated staging area.

1. The company officer will report in person to the staging officer.

2. The crew will stand by their unit with crew intact and warning lights turned off until assigned incident site duties, or released from the scene.

B. When directed by Command or Logistics, the staging officer will verbally assign companies to report to specific sectors, telling them where and to whom to report.

C. Staging will then advise Command or Logistics of the specific units assigned. Command will advise each sector officer the companies being assigned to the sector.

1. The receiving Sector Officer may then communicate directly with the company by radio.

2. When assigned to incident site duties, companies will activate their mobile dispatch terminal (MDT) "on-scene" button.

D. The staging sector officer will advise Command periodically with reports of available companies in staging. Command will utilize this information to request additional resource as needed.

E. The Staging Sector Officer should organize staging in a manner that will allow apparatus to effectively move into and out of staging. Adequate space between apparatus is required.

1. Ladders companies should be placed in one area, engines in another, and rescues in yet another area.

F. When only staff or specialized equipment is needed at the scene, staging should arrange a “taxi” service using a single company to deliver multiple crews or specialized equipment to the scene. This will minimize site congestion.

G. When assigned to on-site duties, companies leaving staging will communicate directly with the Incident Commander or their assigned sector officer for instructions.

Safety Division or Group

Purpose

The purpose of this guideline is to define the Albuquerque Fire Department's protocol for the establishment and operation of Safety Division/Groups. It identifies the need and process for expanding the Command organization to incorporate the safety Division/Group into emergency operations.

Guideline

It is the direction of the Albuquerque Fire Department to implement a "safety Division/Group" at any multiple alarm incident, special operations rescue, trench rescue, confined space rescue, or first alarm HazMat incident. A safety Division/Group will be implemented at any incident of a special hazard that presents an unusual risk to firefighters or to the community.

These guidelines do not diminish the responsibility of each AFD member to commit to safe work behaviors and to operate within standard operating guidelines at all times. Company officers carry the additional responsibility of ensuring that all members of their crews are operating in a safe manner. It is the responsibility of all Command officers and Division/Group officers to ensure that safe operations are conducted.

Operational Guidance

I. Command and control

A. Command will be established by the first-arriving member or company.

B. The Incident Command System (ICS) will be implemented at all working incidents involving three or more companies.

C. The Incident Commander will be responsible for the early establishment of a safety Division/Group at any incident that requires it.

D. An AFD Incident Safety Officer will normally respond to multiple alarms, trench rescue, confined space rescue, or other significantly high-risk incidents.

1. The AFD Safety Officer is on-call, and can be dispatched by AFD Dispatch.

2. Command may request the AFD Safety Officer to any incident.

3. Upon arrival on-scene, the Safety Officer will notify command and receive an initial briefing, then assume safety Division/Group responsibilities.

4. In order to maintain control of accountability and scene management, Command must be notified of the assumption of safety Division/Group responsibilities.

E. It will be the responsibility of Command to establish a strategy or action plan that includes a safety plan for the incident.

1. The safety plan must be communicated to the safety Division/Group and other Division/Group officers.

2. Command may request that the safety Division/Group develop and recommend an appropriate safety plan.

3. The safety Division/Group works directly for Command and has full authority to terminate, alter, or suspend any unsafe condition or activity.

II. Safety Division/Group intervention

A. Intervention by the safety Division/Group at scene operations involves three approaches.

1. The first approach involves life-threatening situations.

a. Any life threatening conditions will be corrected immediately and directly. Where time permits, Command must be notified. Corrective action will be immediately initiated by the Incident Commander.

b. In obvious life threatening situations that do not allow time for Command's intervention, the safety Division/Group shall immediately stop any action, or countermand any order, under these circumstances by direct and immediate intervention (such as, ordering crews out of a building, countermanding an order for crews to go to the roof, etc.).

c. Such action may be taken with the understanding that the safety Division/Group works for Command and is accountable to Command for actions taken.

d. Command must be immediately advised of any direct intervention by the safety Division/Group under these circumstances.

e. A change of strategy and/or tactics by Command or Division/Group officers may be required as a result of the Safety Officer's actions. Division/Group officers may have to be notified of hazards, required safety corrections, or updated on the strategic plan, tactics, and objectives.

f. "Emergency Traffic" should be used for any critical emergency notification/alerts required at the incident scene.

g. Command must be kept abreast of any and all corrections that affect overall site operations, or the strategic plan, via frequent and timely progress reports.

2. The second approach is for non-life-threatening situations.

a. This approach involves a "one-on-one" correction of safety problems with individual firefighters, company officers, and/or Division/Group officers (such as, requirement of SCBA or correct ladder position). It often does not affect incident strategy, and is the most frequent type of interaction.

b. Where corrective action does not affect Command's strategy, Command may not need to be notified. Corrected items should, however, be noted for discussion at a future critique of the incident.

3. The third approach occurs in the on-going incident planning process.

a. Upon the implementation of a safety Division/Group, Command must provide the safety Division/Group with an overview of the incident action plan, and with specific details of the safety plan.

b. The safety officer will confirm that a safety plan is in effect, review it, and provide recommendations as needed. In some cases command may request that the safety Division/Group officer propose a safety plan and recommendations for Command.

c. The safety Division/Group or safety officer must remain a part of the on-going planning process with Command and/or the Planning section chief.

B. The safety officer, upon assuming safety Division/Group responsibilities, may utilize any previous safety Division/Group officers to his/her best advantage, coordinating resources and incident assignments as approved by command.

III. Safety Division/Group responsibilities

A. Ensure that all crews and personnel are operating safely and consistently within existing safety standards.

B. Review and ensure that Command has an effective safety plan as part of the incident's strategic plan.

C. Cause the termination, suspension, or alteration of any unsafe operations or actions.

1. Operate as the safety eyes and ears of command.

2. Ensure that safe work measures are practiced.

D. Observe all areas of the incident and identify any structural or hazardous conditions which could create a risk to firefighters or other personnel working at the incident and initiate corrective action.

E. Ensure that all personnel are wearing proper protective clothing and equipment.

F. When assigned by Command, the safety Division/Group will coordinate the use of Fire Protection Engineers, Building Department Officials, and other technical specialists, in the continuous evaluation of an incident's risk, and provide corrective measures as needed.

IV. Planning Section responsibilities in safety

A. The Safety Officer will perform the following functions.

1. Monitor the health and welfare of all personnel and insure that they are not overextended, and are rehabilitated in an effective manner.

a. The Rehabilitation Division/Group should be a component of the safety plan.

2. Provide Command with frequent progress reports on safety-related issues.

3. Maintain a liaison with Command and/or the Planning section chief to update and revise the on-going incident safety plan.

4. Participate in any post-incident critique emphasizing firefighter safety by reinforcing safety behaviors, assessing the level of safety, and identifying areas where safety improvements can be made.

Command Structure
It will be the responsibility of the Incident Commander to develop an organizational structure utilizing standard operating procedures as soon as possible after arrival and implementation of initial tactical control measures. The size and complexity of the organizational structure, obviously, will be determined by the scope of the emergency.

Incident Command System Operations
The Incident Command System should be considered the basic incident management system to be used on any size or kind of incident. The only change in using the Incident Command System on a very large incident rather than a small incident is the method of growth of the basic emergency management organization to meet the increased needs. Thus, the full establishment of the Incident Command System should be viewed as an extension of the existing incident organization. The determination to expand the organization will be that of Command and would be done, when a determination is made that the initial attack or reinforced attack will be insufficient. That determination would be made by the Incident Commander at the scene.

ICS Organizational Development
The following examples are guides in using the basic Incident Command System Organization for various size incidents.

Initial Response	1-5 increments/First Alarm
Reinforced Response	Greater Alarm/Mutual Aid

Initial Response
The first arriving unit or officer will assume Command until arrival of a higher ranking officer.
Upon arrival of a higher ranking officer, they will be briefed by the on-scene Incident Commander. The higher ranking officer may then assume Command. This transfer of Command is to be announced. The officer being relieved of Command responsibilities will be reassigned by the new Incident Commander.

Reinforced Response
A reinforced response will be initiated when the on-scene Incident Commander determines that the initial response resources will be insufficient to deal with the size or complexity of the Incident.

Command Organization

The Command organization must develop at a pace which stays ahead of the tactical deployment of personnel and resources. In order for the incident Commander to manage the incident,they must first be able to direct, control, and track the position and function of all operating companies. Building a Command organization is the best support mechanism the Incident Commander can utilize to achieve the harmonious balance between managing personnel and incident needs. Simply put, this means:

Large scale and complex incidents	Large Command organizations
Small scale and simple incidents	Small Command organizations

Note: The Incident Commander should have more people working than Commanding.

The basic configuration of Command includes three levels:

Strategic level Overall direction of the incident
Tactical level Assigns operational objectives
Task level Specific tasks assigned to companies

Strategic Level:
The Strategic level involves the overall Command of the incident the Incident Commander is responsible for the strategic level of the Command structure. The action plan should cover all strategic responsibilities, all tactical objectives, and all support activities needed during the entire operational period. The Action Plan defines where and when resources will be assigned to the incident to control the situation. This plan is the basis for developing a Command organization, assigning all resources, and establishing tactical objectives.

The strategic level responsibilities include:
• Offensive, Defensive, or Rescue in Progress
• Determining the appropriate strategy
• Establish overall incident objectives.
• Setting priorities.
• Develop an incident action plan.
• Obtaining and assigning resources.
• Predicting outcomes and planning.
• Assigning specific objectives to tactical level units.

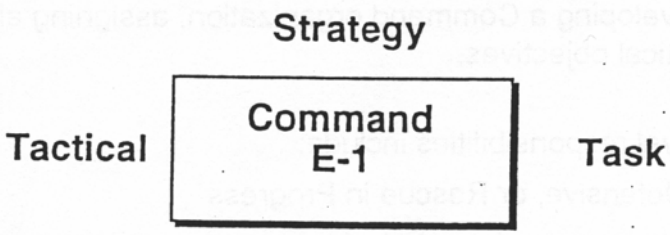
Tactical Level:
The Tactical level directs operational activities toward specific objectives. Tactical level officers include Branch Directors and Sector Officers who are in charge of Sectored resources. Tactical level officers are responsible for specific geographic areas or functions, and supervising assigned personnel. A tactical level assignment comes with the authority to make decisions and assignments, within the boundaries of the overall plan and safety conditions. The accumulated achievements of tactical objectives should accomplish the strategy as outlined in the Incident Action Plan.

Task Level:
The Task Level refers to those activities normally accomplished by individual companies or specific personnel. The task level is where the work is actually done. Task level activities are routinely supervised by Company Officers. The accumulated achievements of task level activities should accomplish tactical objectives.

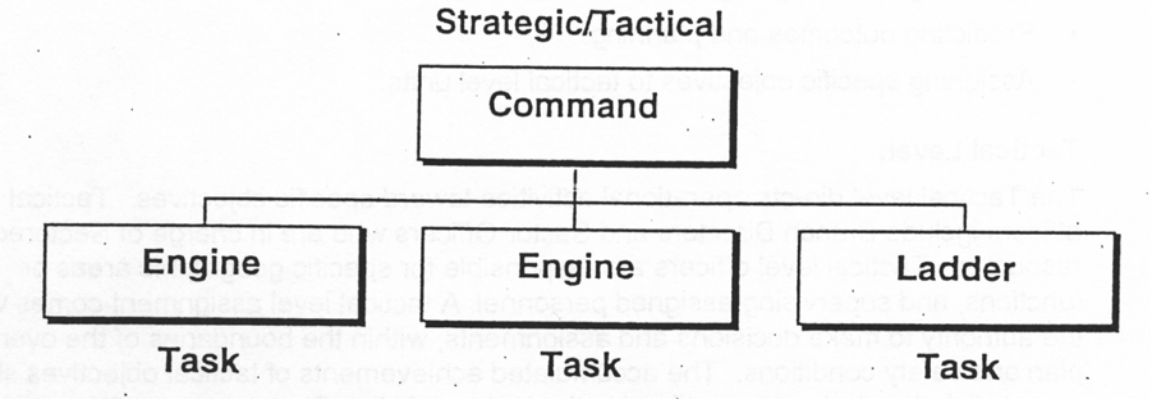
Command Structure - Basic Organization

Examples:

The most basic Command structure combines all three levels of the Command structure. The Company Officer on a single engine response to a dumpster fire determines the strategy and tactics, and supervises the crew doing the task.



The basic structure for a “routine” incident, involving a small number of companies requires only two levels of the Command structure. The role of Command combines the strategic and tactical levels. Companies report directly to Command and operate at the task level.



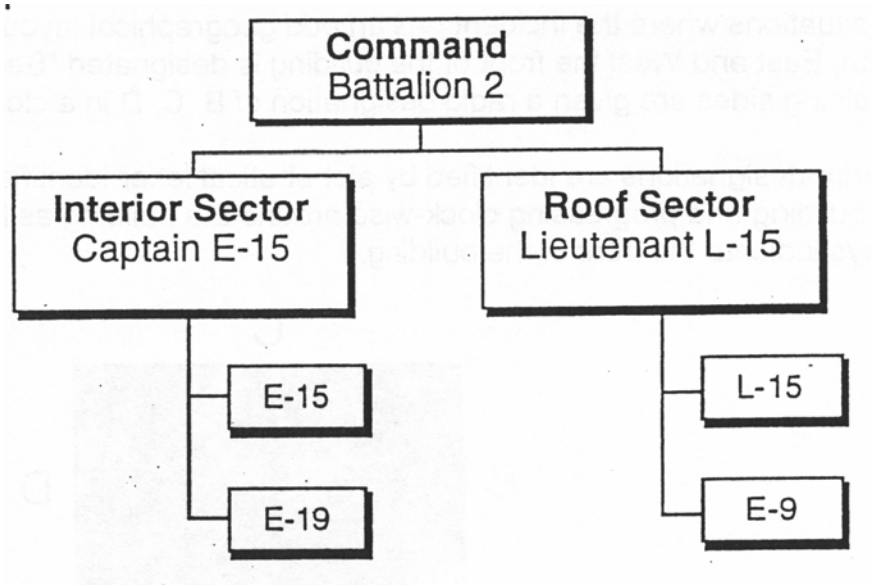
Command Structure: (Sector)

Sectors are tactical level management units that group companies. Sectors represent both geographic and functional operations The following examples illustrate the use of this term.

Tactical Level Officers: (Sector)

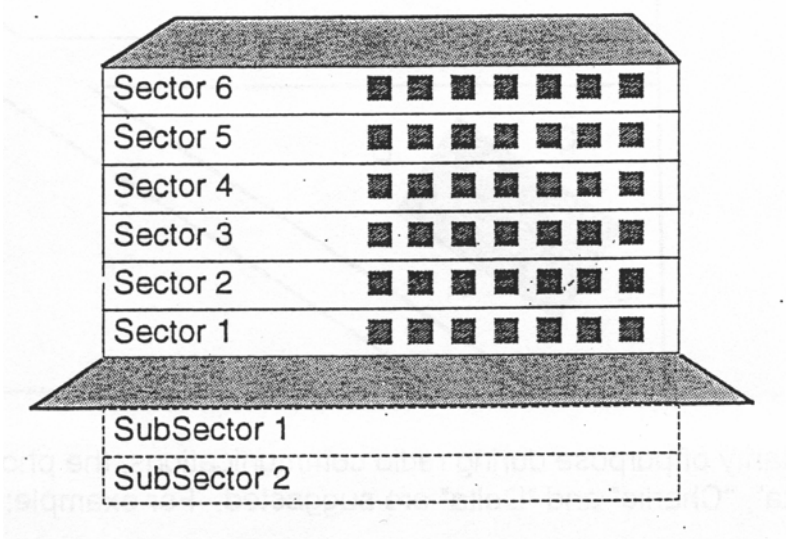
As an incident escalates, the Incident Commander should group companies to work in Sectors. A Sector is the organizational level having responsibility for operations within a defined geographic area or specific function. In order to effectively use the Sector terminology, the Albuquerque Fire Department has adopted the following method for dividing an incident scene.

Sector Designation



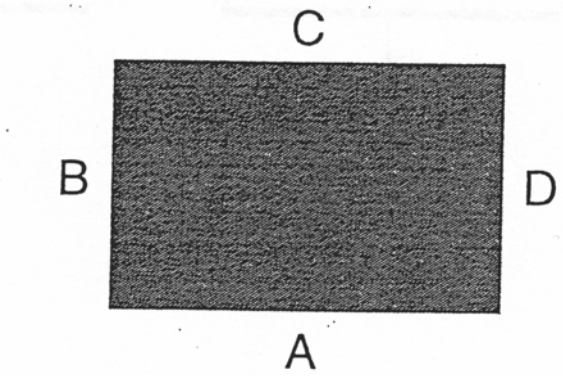
Sector Designation
Tactical Assignments for a Multi-Story Incident

In multi-story occupancies, Sectors will usually be indicated by floor number (Sector 6 indicates 6th floor). When operating in levels below grade, such as basements the use of sub Sectors is appropriate.

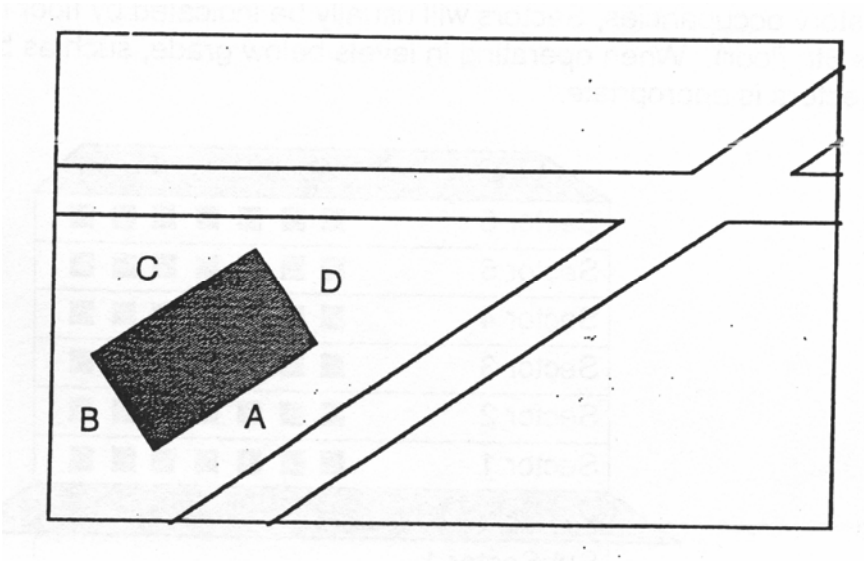


Sector Designation

For situations where the incident has an odd geographical layout - not obvious North, South, East and West the front of the building is designated “Sector A” and the remaining sides are given a radio designation of B, C, D in a clockwise manner. Exterior designations are identified by alphabetical letter identifiers. Starting at the front of a building and progressing clock-wise around the building as illustrated. Sector A will always indicate the front of the building.



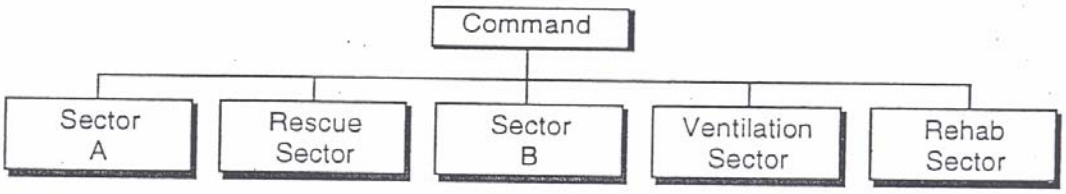
For Example:



Note: For clarity of purpose during radio communications, the phonetic designations of “Alpha”, “Bravo”, “Charlie” and “Delta” are suggested. For example: “Delta Sector to Command.”

Sector Designation
A Sector is that organizational level having responsibility for operations within a defined geographic area or for a specific functional assignment. The Sector level is the organization level that falls between single resources, or a task force, and the Branch level.

Sector Designation:



Command Structure - Sector: Basic Operational Approach
The use of Sectors in the Command organization provides a standard system to divide the incident scene into smaller subordinate management units or areas.

Complex emergency situations often exceed the capability of one officer to effectively manage the entire operation. Sectors reduce the span of control to more manageable smaller-sized units. Sectors allow the Incident Commander to communicate principally with these organizational levels, rather than multiple, individual Company Officers providing an effective Command structure and incident scene organization. Generally, Sector responsibilities should be assigned early in the incident, typically to the first Company assigned to a geographic area or function. This early establishment of Sectors provides an effective Incident Command organization framework on which the operation can be built and expanded.

The number of Sectors that can be effectively managed by the Incident Commander varies. Normal span of control is 3-7. In fast-moving, complex operations, a span of control of no more than 5 Sectors is indicated. In slower moving less complex operations, the Incident Commander may effectively manage more Sectors.

Where the number of Sectors exceeds the span-of-control, that the Incident Commander can effectively manage, the incident organization can be expanded to meet incident needs by assigning an Operations Section Chief. The Operations Section is responsible for the Branches or Sectors. Each Branch is responsible for several Sectors and should be assigned a separate radio channel if available.

Sector procedures provide an array of major functions, which may be selectively implemented according to the needs of a particular situation. This places responsibility

for the details and execution of each particular function on a Sector.

When effective Sectors have been established, the Incident Commander can concentrate on overall strategy and resource assignment, allowing the Sectors to manage their assigned units. The Incident Commander determines strategy and assigns tactical objectives and resources to the Sectors. Each Sector Officer is responsible for the tactical deployment of the resources at their disposal, in order to complete the tactical objectives assigned by the Incident Commander. Sectors are also responsible for communicating needs and progress to Command.

Sectors reduce the overall amount of radio communications. Most routine communications within a Sector should be conducted in a face-to-face manner between Company Officers and their Sector Officer. This process reduces unnecessary radio traffic and increases the ability to transmit critical radio communications.

The safety of firefighting personnel represents the major reason for establishing a Sector. Each Sector must maintain communication with assigned companies to control both their position and function.

The Sector must constantly monitor all hazardous situations and risks to personnel. The Sector must take appropriate action to ensure that companies are operating in a safe and effective manner.

The Incident Commander should begin to assign Sectors based on the following factors:

- Situations which will eventually involve a number of companies or functions, beyond the capability of Command to directly control. Command should initially assign Sector responsibilities to the first companies assigned to a geographic area or function until Battalion Commanders are available.
- When Command can no longer effectively cope with (or manage) the number of companies currently involved in the operation.
- When companies are involved in complex operations (large interior or geographic area, hazardous materials, technical rescues, etc.)
- When companies are operating from tactical positions which Command has little or no direct control over (i.e., out of sight).
- When the situation presents special hazards and close controls is required over operating companies (i.e., unstable structural conditions, hazardous materials, heavy fire load, marginal offensive situations, etc.).

When establishing a Sector, the Incident Commander will assign each Sector:

1. Tactical objectives

2. A radio designation (Roof Sector, Sector A, etc.)
3. The identity of resources assigned to the Sector

Sector Guidelines
Sectors will be regulated by the following guidelines:

- It will be the ongoing responsibility of Command to assign Sectors as required for effective emergency operations; this assignment will relate to both geographic Sectors and functional Sectors.
- Command shall advise each Sector of specific tactical objectives. The overall strategy and plan will and should be provided, (time permitting) so the Sector has some idea of what is going on and how their assignment fits into the overall plan.
- The number of companies assigned to a Sector will depend upon conditions within that Sector. Command will maintain an awareness of the number of companies operating within a Sector and the capability of that Sector to effectively direct Operations. If a Sector cannot control the resources within the Sector, they should notify the Incident Commander so that Sector responsibilities can be split or other corrective action taken. In most cases 3-7 companies represent the maximum span of control for a Sector.
- The incident scene should be subdivided in a manner that makes sense. This should be accomplished by assigning Sectors to geographic locations (i.e., Roof Sector, Sector A, etc.) and assigning functional responsibilities to a Sector (i.e. Ventilation Sector, Salvage Sector, etc.).

Sector Officers will use the Sector designation in radio communications (i.e., “Roof Sector to Command”).

Sectors will be commanded by Battalion Commanders, Company Officers, or any other Fire Department member designated by Command.

The guideline for span-of-control with Sectors is five. This applies to Operational Sectors. Many of the functional responsibilities (P.I.O., Safety, etc.) are preassigned to certain individuals and are driven by standard operating procedures. These types of functional responsibilities should operate automatically and as such should not be included in the Incident Commander’s span of control.

Regular Transfer of Command procedures will be followed in transferring Sector responsibility.

In some cases, a Sector Officer may be assigned to an area/function to evaluate and report conditions and advise Command of needed tasks and resources. The assigned officer will proceed to the Sector, evaluate and report conditions to the Incident Commander, and assume responsibility for directing resources and operations within

his/her assigned area of responsibility.

The Sector Officer must be in a position to directly supervise and monitor operations. This will require the Sector Officer to be equipped with the appropriate protective clothing and equipment for their area of responsibility. Sector Officers assigned to operate within the hazard zone must be accompanied by a partner.

Sector Officers will be responsible for and in control of all assigned functions within their Sector. This requires each Sector Officer to:

A. Complete objectives assigned by Command.
B. Account for all assigned personnel.
C. Ensure that operations are conducted safety.
D. Monitor work progress.
E. Redirect activities as necessary.
F. Coordinate actions with related activities, and adjacent Sectors.
G. Monitor welfare of assigned personnel.
H. Request additional resources as needed.
I. Provide Command with essential and frequent progress reports.
J. Reallocate resources within the Sector.

The Sector Officer should be readily identifiable and maintain a visible position as much as possible.

The primary function of Company Officers working within a Sector is to direct the operations of their individual crews in performing assigned tasks. Company Officers will advise their Sector Officer of work progress, preferably face-to-face. All requests for additional resources or assistance within a Sector must be directed to the Sector Officer. Sector Officers will communicate with “Command.”

Each Sector Officer will keep Command informed of conditions and progress in the Sector through regular progress resorts. The Sector Officer must prioritize progress reports to essential information only. Command must be advised immediately of significant changes, particularly those involving the ability or inability to complete an objective, hazardous conditions, accidents, structural collapse, etc.

When a company is assigned from Staging to an operating Sector, the company will be told to what Sector, and the name of the Supervisor they will be reporting to. The Sector Officer will be informed of which particular companies or units have been assigned by the Incident Commander. It is then the responsibility of the Sector Officer to contact the assigned company to transmit any instructions relative to the specific action requested.

Sector Officers will monitor the condition of the crews operating in their Sector. Relief crews will be requested in a manner to safeguard the safety of personnel and maintain progress toward the Sector objectives.

Sector Officers will ensure an orderly and thorough reassignment of crews to rehabilitation. Crews must report to rehabilitation intact to facilitate accountability

Incident Accountability System

Purpose
This procedure identifies a system of incident site firefighter accountability. The purpose is to account for all firefighters, at any given time, within a small geographic area, within the "hazard zone" of an incident. Use of the system will provide enhanced personal safety for the individual firefighter, and will provide Command an improved means to track and account for all personnel working in the hazard zone.

The hazard zone will be defined as any area that requires an SCBA or in which a firefighter is at risk of becoming lost, trapped, or injured by the environment or structure. This would include entering a structure reported to be on fire, operating in close proximity to the structure during exterior operations, confined space or trench rescue, etc.

Accountability
Accountability involves a personal commitment to work within the safety system at an incident.

- Command will always maintain an accurate tracking and awareness of where resources are committed at an incident.
- Command will always be responsible for including accountability as a major element in strategy and attack planning, and must consider and react to any barriers to effective accountability.
- Sector Officers will always maintain an accurate tracking and awareness of crews assigned to them. This will require the sector officer to be in his/her assigned area and maintaining *close* supervision of crews assigned to them.
- All crews will work for Command or a sector officer *no* free-lancing.
- Crews arriving on the scene should remain intact for all intents and purposes. A minimum crew size will be considered two or more members and a radio will be required.
- All crews entering a hazard zone must be supervised by a designated supervisor or other ranking individual.
- All crews will go in together, stay together, and come out together. Reduced visibility and increased risk will require *very tight togetherness*.
- If a radio fails while in the hazard zones the crew will exit unless there is another working radio with the crew.

Passports
To enhance accountability and to improve tracking of firefighters in the hazard zone, the "PASSPORT" system will be used. PASSPORTS involve a plastic card with the crew members names affixed that is turned in to an accountability officer. The accountability officer may be a pumper driver, a sector officer, or a designated accountability officer, depending on the nature, type and complexity of the incident.

The first arriving company will announce their accountability location as part of the "onscene
report and assumption of command" following the initial "size-up" of the incident.
This report should include the accountability unit identification and their geographic side (i.e. North side, South side or side A).

Example: "Engine Two on scene at a two story residential occupancy with smoke showing, Engine two attacking with an 1 3/4" line going in for search and rescue. Engine two will be Sycamore Command."
(Alarm repeats)
"Command to Alarm, Engine Two will be East side accountability"
Alarm copy - "Engine Two is East side accountability"

As staged units are assigned, command will give their respective accountability unit and the geographic locations along with any other instructions.

Alarm will repeat initial assignment of accountability locations.

PASSPORT Equipment
The PASSPORT system equipment involves two 2" x 4" plastic cards with the company's ID etched on it. Both of the PASSPORTS should contain the names of all personnel *presently* assigned to that company. The *primary* passport will have the small unit designators attached to the individual name tags

The PASSPORTS will always be located on the dash of the apparatus at the company officer position or passenger side. A velcro strip will allow the PASSPORTS to be affixed on the dash and easily removed.

Each firefighter will be issued three individual name tags. These will be affixed to velcro strips on the under side of their helmet.

All engines, ladders, rescues, and specialized units will be equipped with an 8" X 11" sector/status board. This will be used to affix PASSPORTS on and will always be located on the inside door of the driver's position. The sector/status board will be attached with velcro to permit easy removal.

The company officer will be responsible for ensuring that the PASSPORT always reflects only currently assigned personnel. When entering a hazard zone with a partial crew (i.e., engineer remains at the engine to pump lines), the company officer must remove the name tags of those members entering the hazard zone and attach them to the sector/status board under the appropriate sector. The name tags of members not entering the hazard zone will remain on the PASSPORT which will then be attached to the sector/status board.

All PASSPORTS will be considered as safety equipment and will be inspected quarterly as other safety equipment and will be repaired or replaced as soon as possible on a priority request.

Tactical Benchmarks
Several accountability benchmarks are included in tactical operations. The Personnel Accountability Report or "PAR" involves a roll call of personnel assigned. For the company officer, a "PAR" is a confirmation that members assigned to his/her crew are visually accounted for. For the sector officer, a "PAR" is an accounting for all crew members of all companies assigned to his/her sector. Reports of PARs should be conducted face-to-face within the company or within the sector whenever possible.

Example:

"Engine 17 to Roof Sector, I have a PAR" (all members accounted for).

A personnel accountability report will be required for the following situations:
- Any report of a missing or trapped firefighter (Command initiates a PAR of all crews on the scene).
- Any change from offensive to defensive (Command initiates a PAR of all crews on the scene).
- Any sudden hazardous event at the incident - flashover, backdraft, collapse, etc. (a PAR is initiated by Command).
- By all crew(s) reporting an "All Clear" (Company Officers of crews responsible for search and rescue will ensure they have a PAR for their crews at the time they report an all clear).
- At 10 minute elapsed time.
- At a report of fire under control.

Accountability Officers
Accountability officers may be drivers, sector officers, or personnel specifically assigned to a sector to serve as accountability officers for the sector officer.

The first engine to each geographic side of the incident will serve as the *initial* accountability location. The driver will serve as the initial accountability officer. All crews entering the incident will deliver their PASSPORTS to the accountability location closest to their "point of entry" prior to entering the hazard zone. As sectors are implemented, sector officers, will manage PASSPORTS only if he/she *is not entering* the hazard zone (i.e., defensive operation). PASSPORTS will remain on the first engine (accountability location). As staff officers arrive on the scene and stage, they will be assigned accountability responsibilities for a given sector. These officers will report to their assigned sector officers to manage accountability for that sector (i.e., ventilation sector).

As the incident escalates and staff officers fill accountability positions for each sector, these accountability officers will be assigned to a radio channel designated by Command. Depending on the situation, accountability officers will report to either Command or Logistics.

At incidents with a critical need for accountability officers to assist sector officers, Command may chose to split up a company and distribute the crew members to different sectors to act as accountability officers.

Accountability Sector
As the incident escalates to the level that accountability officers are assigned, Command should implement an accountability sector to coordinate accountability officers.

The accountability sector officer will be assigned to logistics and will operate on the assigned logistics radio channel. The accountability sector officer should be located in the Command Post.

The Accountability Sector Officer's responsibilities include:
1. Develop and implement a plan designed to track and account for all personnel working in the hazard zone.
2. Ensure that accountability officers are implemented in each sector as necessary.
3. Request and manage sector resources as needed.
4. Provide progress reports to Command.
5. Initiate PARs upon benchmarks or as needed.

Trade of Shift, Overtime Shift, Transfer
Arriving crew members will be responsible for *immediately* updating the company PASSPORTS as they arrive to duty - including any member working a trade of shift, partial overtime shift or following transfer from another station.

Arriving crew members will remove the name tag from the PASSPORTS of the crew member they are replacing.

For those crew members not permanently assigned, the name tag should be placed on velcro strip of their helmet on the underside of the rear brim.

Company Officers are responsible for ensuring that the PASSPORTS *always* remain current. PASSPORTS must reflect only those members presently assigned to the company and only those crew members about to enter the hazard zone.

Rules of Thumb
PASSPORT implementation should consider the following basic rules of thumb:

• PASSPORTS never enter the hazard zone
• PASSPORTS must be maintained at the point of entry to the hazard zone.
• PASSPORTS must reflect only those personnel *presently* in the hazard zone.
• Crews must turn in their PASSPORTS upon entering and must *retrieve* their PASSPORTS upon exit from the hazard zone.

PASSPORT Implementation - The Incident
Implementation of the PASSPORT system will occur at any incident that requires the use of SCBA.

The objective of the PASSPORT system is always to have the crew members PASSPORTS near the point of entry and that they be accurate, reflecting only those members entering the hazard zone. For those situations where it is not clear-cut as to when and where to turn in PASSPORTS, crews should consider the above-cited objective for their decision.

For single company incidents, the PASSPORT remains on the apparatus dashboard. The Engineer will assume accountability sector responsibilities.

Command must maintain an awareness of which engine companies are serving as accountability locations, and provide this information to companies being assigned to each geographic side of the incident (sector).

For First Alarm assignments and greater, the PASSPORT system will function as follows:

The first engine to each geographic side of the incident becomes the initial accountability location for all later arriving companies to that side of the incident.

- The driver becomes the initial accountability officer until PASSPORTS are collected later in the incident by the sector officer or accountability officer who assumes accountability responsibilities.
- Crews of the initial assignment that have apparatus parked in *very* close proximity (i.e., 50 feet or less) of the initial engine (accountability location) may leave their PASSPORTS on the dash of their apparatus or take them to the first engine (accountability location).
- The driver of the first engine (accountability location) will collect the PASSPORTS from these additional companies, time permitting, and mount them on the sector/status board at the accountability location.
- Any crew whose apparatus is more than 50 feet away must deliver their PASSPORTS to the accountability engine and place the PASSPORTS on the sector/status board. The sector/status board will always be located on the inside panel of the driver's door.
- Ladder companies on the initial assignment (first alarm) may leave their PASSPORTS on the dash of the apparatus if they are parked at a position that would not permit easy delivery of the PASSPORTS to the accountability engine.
- Any ladder company assigned to a sector will deliver the PASSPORT to the sector officer, or a designated accountability officer (designated by the sector officer or Command).
- As the incident escalates, and sector officers and/or accountability officers are assigned, all PASSPORTS will be delivered to these officers prior to entry into the hazard zone.
- Where the sector officer is operating within the hazard zone. PASSPORTS must remain *outside* the zone with a designated accountability officer (i.e., initial driver or staff officer) serving as an accountability officer. A sector officer operating within the hazard zone will not have PASSPORT accountability responsibilities.

Point of Entry Control

PASSPORTS will remain with the designated accountability officer near the "point of entry" to the hazard zone. Upon entry, crews will turn in their PASSPORT. Upon exit, the crew *must* retrieve their PASSPORTS. The sector/status board will contain only the PASSPORTS of those crews in the hazard zone.

Crews exiting at a different location than the original point of entry, must immediately notify their original sector officer and/or accountability officer of their changed status. The PASSPORT must be retrieved.

Where physical distance/barriers prevent easy retrieval of the PASSPORT, and where the crew in being reassigned to another sector, a “make-up” PASSPORT must be assembled. Crew members will provide the new sector officer another name tag. Where another “make-up” PASSPORT is not available, the individual name tags will be placed on the sector/status board.

The original sector officer and/or accountability officer must be made aware of the change.

Multi-Story/High-rise
Multi-story or highrise incidents present modifications in the standard approach to PASSPORT accountability.

PASSPORTS for those companies assigned to the interior of the highrise structure are to be placed on the accountability board located in the Lobby Control Sector.

Companies in Staging will deliver their PASSPORTS to the Lobby Control Sector only when assigned a function within the highrise structure.

The Lobby Control Sector will be responsible for collecting the PASSPORTS of the initial companies as soon as possible.

Once the Resource Sector is established, the Resource Sector Officer will collect the PASSPORTS of all crews *assigned to fire control* positions. The Resource Sector will assign accountability officers at each point of entry to stairwells, etc.

PASSPORTS for crews assigned to the Lobby Control Sector or any *support sectors* within the building (non-hazard zone crews) will be maintained by the sector officer.

Terminating The PASSPORT System
PASSPORT accountability will be maintained through a report of “fire under control,” at which time a PAR for all crews must be obtained. Command will determine at that time, based an the situation and risk, as to whether to continue with the PASSPORT system. If visibility is still impaired or a significant hazardous condition still exists, Command may choose to extend the PASSPORT system further.

Upon termination and release from the incident, Company officers and crew members will ensure that the PASSPORT is returned to the dash of their apparatus and that the PASSPORT is up-to-date.

Rapid Intervention Teams (RIT)
As the incident escalates, and/or crews are operating at a special hazard (i.e., confined space rescue). Command will assign "Rapid Intervention Teams" (RITs) to each side of the incident or point of entry. These crews will serve as stand-by rescue teams during all hazardous operations.

Lost/Missing Firefighter
An absent member of any crew will *automatically be assumed to be lost or trapped* in the hazard zone until otherwise determined safe. Company Officers must *immediately* report any absent members to sector officers or Command. For any reports of missing firefighters, Command must request the next greater assignment or alarm (i.e., a first alarm goes to a second alarm) and consider requesting a Heavy Technical Rescue (HTR) task force. Command must next initiate an immediate roll call (PAR) of all companies assigned to duty in the hazard zone. Command must also send the Rapid Intervention Team (RIT) to the last reported working area of the lost firefighter to begin a search. Simultaneously with these actions, Command must adjust on-scene strategies to a priority search and rescue effort.

Summary of Accountability Responsibilities

Accountability will work only with a strong personal commitment to the safety system. This commitment involves the following responsibilities:

Firefighter - Responsible for staying with his/her crew at all times and ensuring that his/her name tag is on the PASSPORT at all times.

Driver - The Driver of the first engine to each geographic side of the incident becomes the initial Accountability Officer. The Driver must collect PASSPORTS from crews and apparatus assigned to his/her side of the incident (sector) and manage accountability until relieved by a sector officer or accountability officer.

Company Officer - Responsible for keeping his/her crew intact at all times and that the PASSPORT is current and accurate. The PASSPORT *must* reflect only those personnel entering the hazard zone. The PASSPORT must be turned in at the point of entry and retrieved upon exit.

Sector Officer - Responsible for accounting for all crews in his/her assigned sector, maintaining an awareness of their exact location, and maintaining accurate PASSPORTS of those crews in the hazard zone. In those situations where the sector officer must enter the hazard zone, PASSPORTS will continue to be managed by the driver of the first engine to each side of the incident or a designated accountability officer for his/her sector.

Accountability Officer - Responsible for teaming up with the assigned sector officer and to manage all accountability for that sector. The accountability officer must collect all PASSPORTS from drivers, apparatus, or the sector officer. The accountability officer must maintain close coordination with other accountability officers.

Accountability Sector Officer - Responsible for managing accountability officers and system. Causes PARs to be initiated at tactical benchmarks or as needed.

Command - Responsible for tracking the location of all crews. Must advise later assigned crews of which engine is serving as the accountability location for PASSPORTS or that the sector officer or accountability officer will be accepting PASSPORTS at the point of entry. Assigns “make-up” PASSPORTS as necessary

Lost-Trapped FF's Command Responsibilities

Scope/Purpose

This procedure identifies individual, company and Command level activities for the search and rescue of a lost or trapped firefighters.

The rescue of trapped or lost firefighters in a burning building is especially time sensitive. There is a very narrow "window of survivability" for a firefighter who is out of SCBA air supply or trapped by approaching fire. Individual firefighters must not delay reporting to Command if they become lost, trapped or in need of assistance. Company officers must also not delay the reporting of lost firefighters or inability to complete accountability reports. Command and Sector officers must always assume that the missing firefighter is lost in the building until the firefighter can be accounted for. Command must also restructure the strategy and action plan to include a priority rescue effort.

Lost or Trapped Firefighters

Rescue needs generally fall into two categories. Either the firefighter (or firefighters) is trapped by a collapse or lost in a smoke filled and burning building. The most significant problem and difference between the two categories is that the search area can be substantially larger for a lost firefighter than that encountered in a collapse situation. On the other hand, a collapse presents a major extrication situation. In some cases, lost or trapped firefighters may be able to radio to Command that they are lost and in need of rescue, prior to being incapacitated when the SCBA goes empty. Other problems may include: a possible secondary collapse, separated and scattered crews and confusion of the last known location of the crew (or member).

"May-Day" Radio Message

The radio message: "May-Day" will be used by lost or trapped firefighters to report their status as being in trouble and needing rescue. Any member may use "May-Day" to report a lost firefighter. Any report of "May-Day" will receive priority radio traffic. The term "May-Day" will be reserved *only* to report lost or trapped firefighters. The term "Emergency Traffic" will be used to report other emergencies.

Command Response to a Missing Firefighter

The Incident Commander *must always* assume that the missing firefighter is lost or trapped in the building until the firefighter is accounted for. Rapid, concise decisions and actions must be taken to increase survivability. The following is a list of actions to be taken by Command for a reported missing or trapped firefighter. These are guidelines and do not necessarily need to be accomplished in the order listed. The first five (5) must be accomplished very rapidly.

Emergency Traffic
Immediately upon a report of a missing or trapped firefighter "Emergency Traffic" will be sounded to alert all personnel working on the fireground of the situation.

Change the Plan to a High Priority Rescue Effort
The incident Commander must restructure the plan to include a high priority firefighter rescue effort. A rapid, well thought out, rescue plan must be developed and the command organization expanded. The plan and objectives must be communicated to other Command staff and Sector Officers for implementation.

Immediately Request Additional Alarms
At least one additional alarm should be immediately requested including a medical component. Additional multiple alarms may be requested based on circumstances and potential. Level two staging should be implemented. Early consideration should be given to heavy equipment resources and Heavy Technical Rescue (HTR) assistance in structural collapses.

Fireground Accountability
A Personnel Accountability Report (PAR) must be immediately requested from all companies operating on the fireground. This is especially important in situations of structural collapse. Command cannot develop an effective rescue plan until accurate information is available on the number of missing firefighters, their identify, their last reported work area, and which companies are affected.

Commit the Rapid Intervention Team
Command will immediately send the rapid intervention team(s) (RIT) to the most appropriate location to initiate search and rescue efforts (typically the last reported work area). The RIT will be designated as "Rescue Sector" and coordinate activities at that location. Additional available resources in staging may also be committed to rescue efforts.

Withdraw Companies from the Affected Area
In some situations, such as collapse, crew members can get separated. The only practical method to obtain an accurate roll call for a PAR may be to withdraw crews to the exterior. Withdrawal is a judgment call based on circumstances at the time, information available, and resources. It may not be practical or possible to do. However, the absolute need for an accurate roll call (PAR) and information on missing firefighters remains a critical priority.

Do not Abandon Fire Fighting Positions, Provide Reinforcement
Abandoning firefighting positions during the rescue effort should be avoided. Command and crews should take aggressive measures to protect trapped or missing firefighters from the effects of the fire. Efforts should be concentrated on reinforcing existing positions and keeping the fire out of the rescue area and providing appropriate ventilation and lighting. In some situations it may be appropriate to write off some areas of the building in order to relocate companies and crews to better protect the rescue effort.

Assign Command Officer to the Rescue Sector
A Command Officer should be assigned to direct the Rescue Sector and rescue operations. Depending on the size of the rescue area and the complexity of operations, more than one Command Officer may be needed to fill additional support positions or sectors. The Sector Officer will assign specific areas or grids of the building to each rescue team (company) to conduct searches before entering the building. Search efforts must be closely coordinated between Sectors and Command must be kept informed.

Assign a Safety Sector
Rescue operations are high risk. The rescue operation may be taking place in a postcollapse environment or a flashover may have occurred. Emotions may be high and firefighters will tend to want to free-lance and take chances. A Safety Sector in the affected area will help control the risk taking. A Safety Sector must be implemented. An available Command Officer should assume this Sector as soon as possible. Other Safety Sector responsibilities will be to conduct an assessment of the hazards, thus, allowing time for the Rescue Sector Officer to concentrate on the critical rescue effort. These Sector Officers must work hand in hand to insure that a safe and effective rescue operation is conducted.

Expand the Command Organization
With additional resources enroute, along with the critical rescue needs, the Command organization must expand ahead of the demand. The incident may eventually escalate to a Branch level operation. The Incident Commander must be proactive and aggressive in developing and expanding the Command organization.

Special Call Chief/Command Officers
Additional Chief/Command Officers will be needed to fill key Sectors and Command team positions. Command should special call additional Command Officers, and initiate a call back of off-duty Command Officers, as needed.

Early Establishment of Treatment and Transport Sectors
The Incident Commander must have treatment personnel in a position to immediately treat any rescued firefighters. A Transportation Sector must also be in place and coordinating activities with the Treatment Sector Officer.

Open/Unlock all doors if Appropriate
All doors in the immediate area should be unlocked or forced open, and at least the immediate interior area quickly searched. In most cases the doors should be left open to provide an emergency escape route, unless doing so will have negative effects on the fire fight. In all cases, the doors must remain unlocked.

Ventilate Maintain Tenability/Lighting
Reducing smoke conditions, through effective ventilation, improves the air quality for any victims, and will enhance search and rescue capabilities through increased visibility of the interior. Both vertical and positive pressure ventilation should be aggressively employed. Early fighting of the operation (both interior and exterior) needs to be included.

Coordinate and Control the Search Effort
The Incident Commander must insure that a complete, coordinated and controlled search is conducted. Close coordination of all search efforts is a must in order to eliminate duplicate searches that waste time. All areas must be thoroughly searched.

RIT - SCBA Rescue
Each rescue team should enter the building with an additional SCBA for each reported lost/trapped firefighter. Missing firefighters may have exhausted their SCBA air supply or may be trapped and cannot be quickly extricated. In each case the firefighter must be provided "clean" air to increase survivability.

Heavy Technical Rescue Teams
Heavy Technical Rescue Teams (HTR) and other specialized equipment should be requested at all structural collapses that have trapped firefighters.

Watch for Structural Stability of the Building
All personnel must watch the structural stability of the building throughout the rescue effort. Where a structural collapse has occurred, or the fire or other event has compromised the structural integrity of the building, a structural engineer affiliated with the New Mexico, Urban Search and Rescue Taskforce-1 should be called in to evaluate the structure. A Heavy Technical Rescue taskforce (HTR) may be called upon to assist with shoring the rescue area, or for the use of other specialized equipment.

Strong Supervision Required
Strong supervision and control will be required by all officers. Emotions will be very high. Firefighters in this situation will tend to want to free lance or take higher risk. Treatment personnel will need to be restricted to only those needed. Crowd control of our own non-essential personnel may be required.

Media Control
Command will need to control the media early and throughout the incident. Information on the identities and conditions of lost firefighters must be restricted until after next of kin are notified. Media film crews should be restricted to areas that are safe and at a distance that will prevent visual/facial identification of any victims.

Welfare Sector/Branch
A Welfare Sector or Branch will need to be established early. This will aid in notification of next of kin and allow Command to stay ahead of the media identification. Chief officers should be assigned to direct this Sector/Branch. Additional Chief or Staff Officers will be needed to fill subordinate positions within the Sector or Branch.

Ensure that Alarm Monitors All Radio Channels
Command must ensure that Alarm monitors all radio channels. Should a lost firefighter declare emergency on a channel other than the fireground tactical channel, Command must be immediately directed to the lost firefighters channel for direct communications.

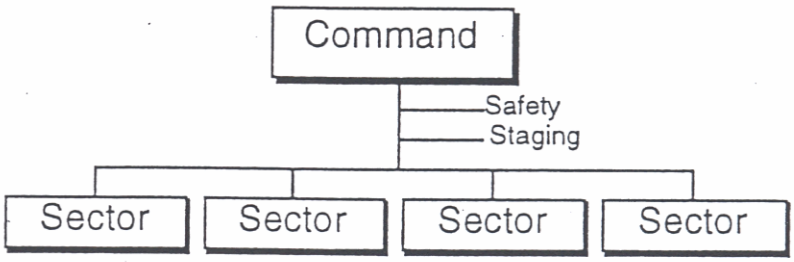
Rapid Intervention Stand-by Teams
Due to the high risk nature of rescue operations, Command must establish another RIT to protect rescue crews. The RIT should stand-by at a location near the rescue operation. More than one RIT may be needed. (See Rapid Intervention Team procedures SOG 112)

General Considerations

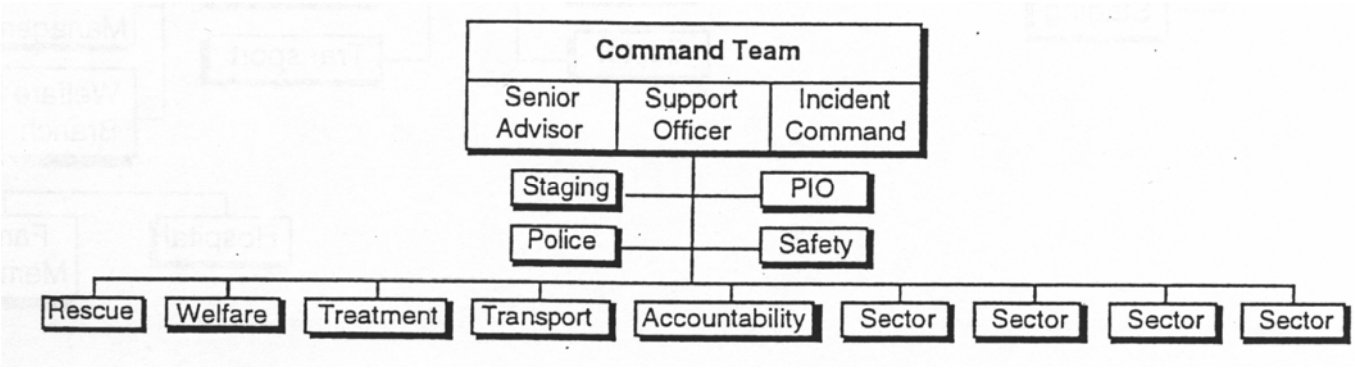
When searching for a lost member, rescue crews should consider the following:

- Visible sighting of trapped firefighters such as arms or legs.
- Knowledge of their last known location.
- The sound of the PASS device's audible tones.
- Shouts for help from the collapsed area.
- Tapping noise, etc.
- Sounds of portable radio broadcast in the collapse area.
- Breathing, moaning sounds.
- The sound of the SCBA bell sounding.
- Radio request for help from portable radios from within the collapse area.
- Tracing attack hoselines into the collapse area.
- Tracing of life lines into the area.
- Evidence of building structures or locations that were described by lost firefighters.
- Flashlight beams.
- Location of ladders, fans, lights, or other equipment being used by missing firefighters.
- Open or unlock all doors.
- Search the immediate area of doorway first.
- Search hallways before interior rooms.
- Search exterior walls (interior sides) before searching interior spaces.
- Search large interior spaces in a detailed grid pattern.
- Ensure all areas are searched.
- Take one SCBA for each lost firefighter in the search area.
- Use life lines when searching "off hoseline" to ensure safety of rescuers

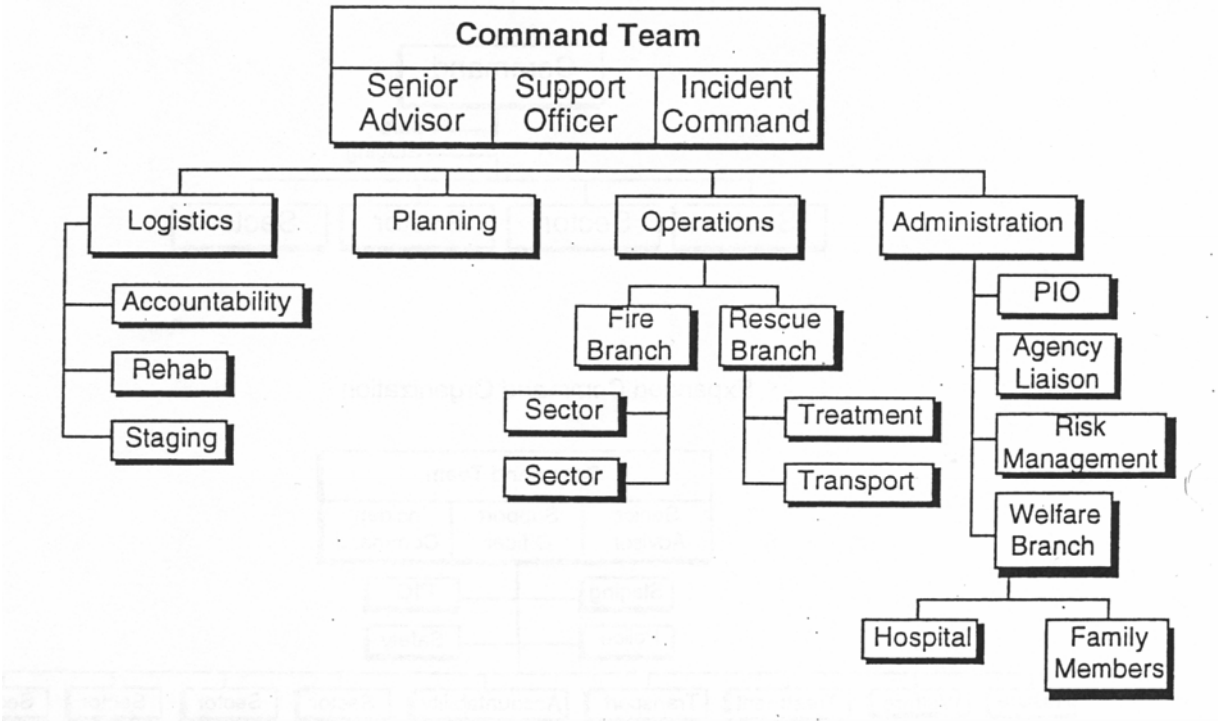
Lost Firefighter Command Organization (initial Command organization)



Expanded Command Organization



Lost Firefighter Expanded Command - Section Organization
Logistics Planning Operations Administration



Safety Checklist: "May-Day" - Lost or Trapped Firefighter

- o Emergency Traffic
- o Change the plan to high priority rescue effort
- o Request additional alarms
- o Conduct a PAR - withdraw crews if needed
- o Assign RIT - assign Rescue Sector
- o Don't abandon firefighting positions
- o Provide reinforcement to firefighting efforts
- o Assign Command Officer to Rescue Sector
- o Assign Safety Sector
- o Expand Command organization
- o Special call Chief/Command Officers
- o Establish Treatment and Transport Sectors
- o Open/unlock all doors
- o Ventilate maintain tenability
- o Provide lighting
- o Coordinate and control search and rescue efforts
- o Assess need for Heavy Technical Rescue Teams
- o Monitor structural stability of building, call for structural engineer
- o Media control - PIO
- o Welfare Sector/Branch
- o Alarm Room to monitor all radio frequencies

Machinery Extrication

Purpose

This guideline applies to all emergency incidents where a person is trapped, pinned or caught in a device with moving parts. It defines size-up, response modes, and the command structures that may be appropriate for machinery extrication operations. It also describes hazards that may be encountered on such operations, and the protective measures that should be employed to ensure AFD responder safety. It is the responsibility of all Command and Company Officers to be familiar with the employment of this operational guide.

Guideline

It is the direction of the Albuquerque Fire Department to establish the operational methods for maximizing effective victim extrication from machinery or other devices with moving parts, while ensuring rescuer safety. The basis of this guideline is NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents.

Operational Guidance

I. Definitions

A. Incidents requiring the need for extrication operations are varied, but may include the following:

1. Agricultural implements.

2. Industrial machinery.

3. Construction equipment.

4. Elevators and/or escalators.

5. Vehicles with Power Take Offs (PTOs)

6. Drive shafts, gears, and drive belts.

II. Scene size-up

A. Upon arrival, the first-arriving company officer will assume command, provide an appropriate size-up, acquire a tactical channel through Dispatch, and initiate specific measures that include the following.

1. Determine the scope and magnitude of the incident.

2. Request a Heavy Technical Rescue (Squad Two) response as needed.

3. Conduct a risk/benefit analysis.

4. Evaluate the integrity and stability of the affected machinery.

5. Determine the number of victims.

6. Determine the best access to the area where the patient is located.

7. Determine the patient's condition, and begin appropriate treatment - if conditions allow.

8. Determine the need for additional resources.

   a. May require expertise beyond our own capabilities.

   b. Consider the recall of off-duty equipment technicians and/or equipment dealers.

   c. If extrication attempts have failed, and as a last resort, a surgeon may be needed to perform a surgical amputation.

III. Hazard Identification

A. The Incident Commander should identify as many potential hazards as may be found within the incident, and ensure that responders take preventive measures to guard against injury. Common hazards that may be encountered during an extrication operation include the following:

1. Determine the presence of utilities and evaluate if utilities are disrupted or exposed.

   a. Affected utilities may include electrical, petroleum fuel products, water, sanitary, communications, or industrial gases, among others.

2. Determine the potential for product release and victim engulfment potential.

3. Evaluate the presence of specific hazards.

   a. Mechanical hazards, such as moving parts.

b. Hazardous materials.

c. Energized electrical equipment.

d. Physical hazards, such as trip hazards, fall hazards, or sharp edges.

e. High pressure steam, hydraulic, or gas lines.

4. Identify primary and secondary access points.

5. Determine how the patient is trapped, pinned, or caught.

IV. Rescue operations

A. Establish hazard zones and entry control. Restrict entry to only those who have a need to be within the general area.

1. Prevent unexpected machine movement. Remember that "for every action there is an equal and opposite reaction

2. Develop and communicate the Incident Action Plan (IAP).

3. Make the area safe for rescue operations.

4. Isolate (lockout/tagout) the machine or device to prevent machine operation.

a. Ensure that all energy sources are brought to a zero mechanical state.

b. All electrical and mechanical equipment shall be secured using appropriate lockout/tag out procedures per OSHA 29 CFR 1910.147.

5. Stabilize the machinery – using cribbing, chocks, or wedges - to eliminate the potential movement of machinery components.

6. Protect the patient from further harm using canvas covers or blankets.

7. Stabilize patient's medical condition while performing the extrication, if appropriate.

8. Consider the need for fire protection.

9. Support utilities, if necessary.

V. Extrication options and conventions

A. Disassemble and/or remove machine components.

B. If cutting off machine components:

1. Consider the risk of heat conduction to the patient.

2. Take appropriate precautions.

C. Displace machine components.

D. Manually reverse the machine's moving parts.

VI. Tools of the trade

A. Suggested hand tools may include the following:

1. Hammers, pry bars, saws, or punches.

2. Cable cutters, come-a-longs, chains, wrenches, or socket sets.

B. Simple machines include inclined planes (wedges) or levers (pry bars).

C. Pneumatic devices include airbags, pneumatic chisels or airguns.

D. Power tools include drills or hydraulic tools.

E. Cutting tools include saws, torches, or grinders.

VII. Termination of operations

A. Upon determining the termination of operations, the Incident Commander should obtain a personal accountability report (PAR) from all sectors.

1. Provide a tailboard critique and consider a formal debriefing at a later date and time.

Swift Water Rescue Systems

Purpose

The purpose of this guideline is to define the measures that should be considered when responding to flood channel or other swift water rescue incidents. They are intended to maximize responder safety, department resources, and victim rescue potential.

Guideline

Swift water rescue usually involves flood channels but may also involve both irrigation ditches and the Rio Grande. Flood control channels were designed to quickly remove rainwater from the city to prevent flooding. Swift water rescue is considered to be the most dangerous type of water rescue. Furthermore, flood channel rescue is considered to be the most dangerous type of swift water rescue.

Shore-based rescues are the preferred method of rescue from flood channels. It is the direction of the Albuquerque Fire Department that flood channel rescue operations be limited to shore-based rescues.

It is the responsibility of all companies assigned near flood channels to become familiar with their assigned rescue sites during flood conditions. It is also advised that companies drill on these rescue techniques on a regular basis, especially during the monsoon season.

Operational Guidance

I. Operational considerations

A. The “Albuquerque Metropolitan Arroyo Flood Control Authority” (AMAFCA) estimates that water in the arroyo systems can travel at speeds up to 35 MPH, depending on the size of the channel and volume of water. In contrast, the velocity of natural rivers, even in flood stage, rarely exceeds 11 MPH. The velocities seen in the Albuquerque flood channel system are unique, and are rarely seen elsewhere in the world. These “arroyos” have historically been the location of numerous fatalities and injuries following heavy rain fall.

B. Flood channel facts

1. The water pressure is nearly the same at the sides of the channel as in the middle, however, the helical flow tends to push the victim to the middle of the channel.

2. The slick, sloping nature of the channel walls makes it easy for rescuers to fall into the water and become victims themselves.

3. Arroyo hazards include high velocities, sloping channel walls, smooth bottom and debris in the channel.

4. When the speed of the current is doubled, the force of the water against an object in the current is quadrupled.

5. On average, three firefighters drown each year attempting swift water rescues. These rescues are low incidence and are considered high-risk operations.

II. Rescuer safety

A. "Self-sacrifice in rescue operations is traditional and commendable... and usually a useless waste" (Rescue 3 International). The desire to save a life that is already lost, especially a child's, can be fatal to a rescuer who ignores safety. Don't allow compassion for that which is already lost to overrule your better judgment.

B. Observe a five-foot rule. During flood conditions, anyone within five feet of any arroyo must wear a personal flotation device (PFD).

C. Anyone on the steep slope of an arroyo must be belayed with a lifeline.

D. Never purposely enter the water while being tied off with a lifeline. In the event that a rescuer falls in the water and he or she is attached to a lifeline, an attempt will be made to pull him or her out of the water by pulling on the lifeline.

1. If the endangered rescuer cannot be pulled out immediately, he or she must be cut free of the lifeline to prevent drowning.

2. All PFD's must have a knife attached. Rescuers should be prepared to cut themselves or other rescuers free of the lifeline if needed.

III. Personal protective equipment (PPE)

A. The following PPE will be worn for all flood channel rescue operations:

1. Swift water rescue helmet

2. Knife or safety cutter

3. Whistle

4. Personal flotation device (PFD)

5. Tennis shoes or laced-up boots with good traction soles

6. Work Gloves when handling ropes

B. Rain gear is suggested, but optional.

C. The following items *will not* be worn during flood channel rescue operations:

1. Bunker gear

2. Fire service helmets

3. Cowboy-style boots or other slick-soled footwear

IV. Self-rescue

A. The ability to perform self-rescue is a vital and primary skill for anyone involved in flood channel rescue.

B. The first action in self-rescue is in prevention. Take the necessary precautions to prevent falling in the water.

1. Tie-off with a lifeline

2. Wearing the proper PPE

3. Ensure that you are belayed by another rescuer.

C. If you do find yourself in the water, take specific actions.

1. If you are still tied-off with a lifeline, the belayer will attempt to pull you out of the water.

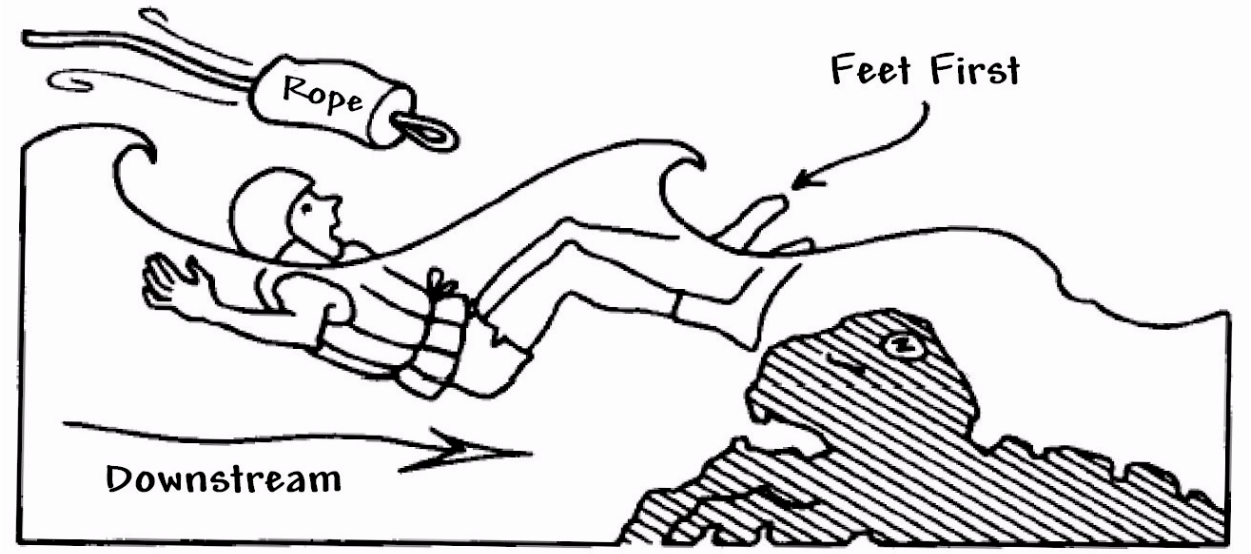
2. If this cannot be accomplished immediately, the endangered rescuer must be cut free of the lifeline to prevent drowning.

3. Once free, the rescuer in the water should remove any remaining rope that may snag on a stationary object.

4. As illustrated in Figure 1, assume a safe swimming position. Face downstream, on your back, keeping feet near the surface of the water. This position minimizes the danger of entrapment, as well as allowing you to see downstream and to fend off obstacles with your feet

.

Figure 1



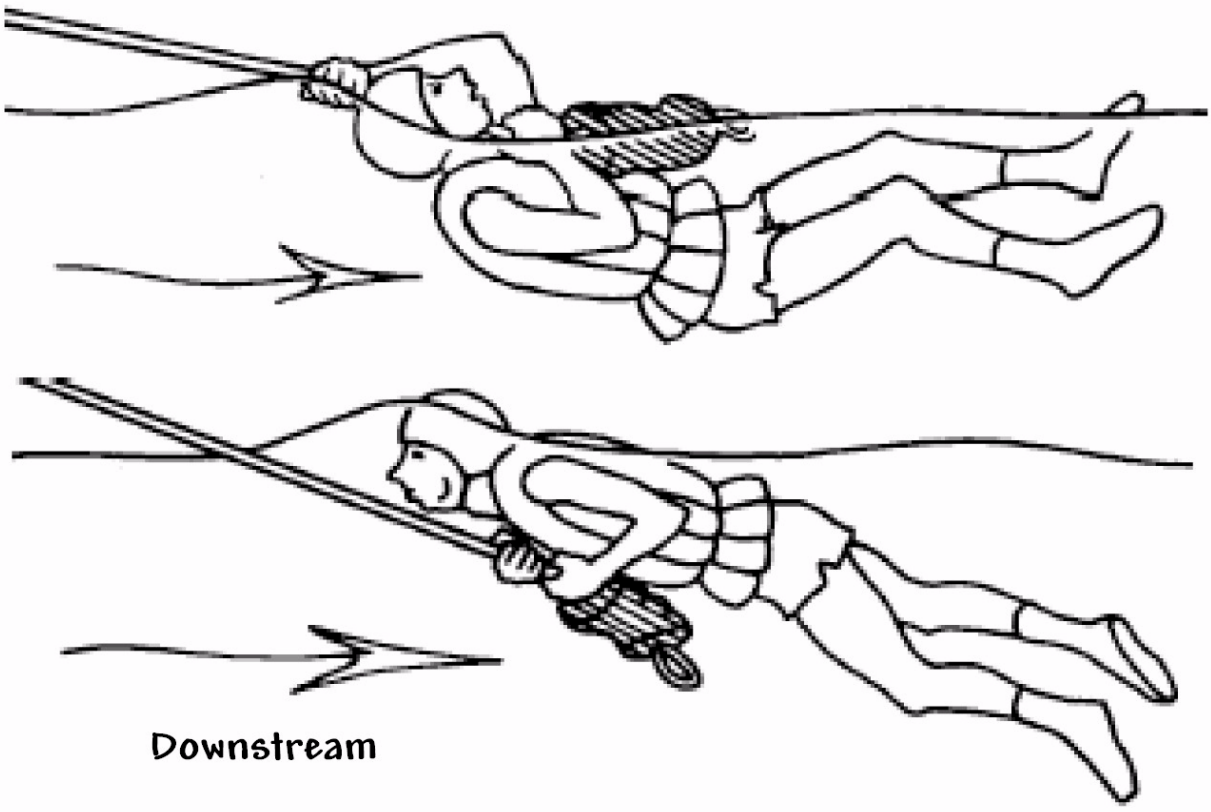
5. Do not attempt to stand up or stop yourself from going down stream by pushing against the arroyo bottom with your feet. Doing so invites a foot entrapment. Foot entrapment is usually caused when a swimmer attempts to stand up in moving water and gets a foot jammed into a crevice. The force of the current is usually enough to prevent self-rescue and drowning often results.

6. Your immediate objective is to get out of the water as soon as possible. Aggressively swim towards any eddies and do not attempt to stand up until you are out of the main current.

7. Be prepared for and expect a rescue attempt using throw ropes. If a throw rope is deployed to you, pull the rope to your chest, roll over on your back and put the rope over the shoulder away from the bank you are headed toward.

   a. Face downstream with the rope over your shoulder, angling your body at a 45º angle to the current. This body position, which is called a ferry angle, will cause the water to push you more quickly toward the side of the arroyo. See Figure 2.

Figure 2



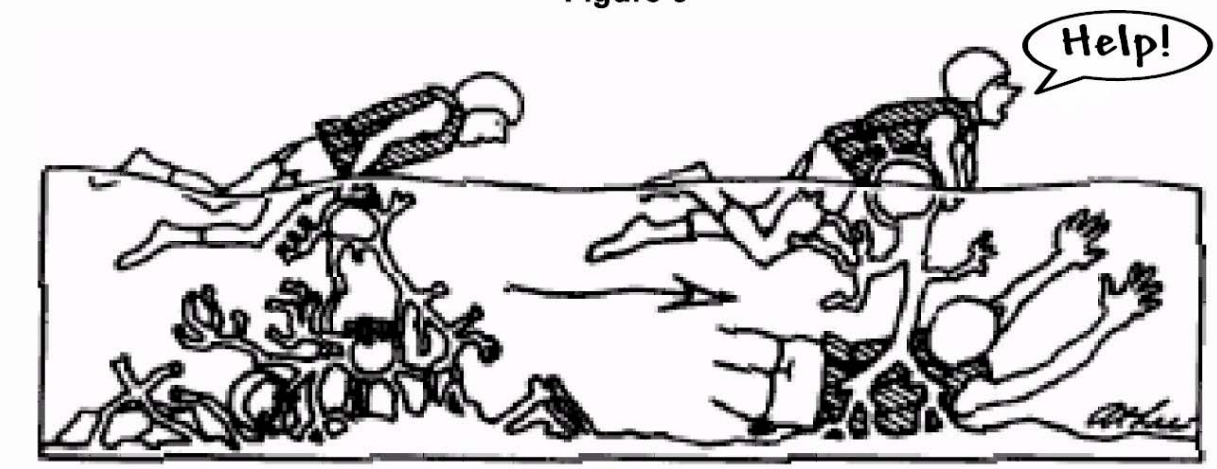
8. Do not grab the rope and face upstream, since this action will get you a face full of water and cause you to let go of the rope.

V. Special Hazards

A. In addition to obvious hazards, flood channel rescues may present other less obvious, but equally dangerous, hazards.

1. Strainers are debris screens constructed into arroyo channels. The best defense against strainers is to avoid them. If you see a strainer, swim aggressively away from it at a right angle to the current. If you cannot avoid it, quickly change swimming position. Roll over and swim as fast as possible toward the strainer. Try to hit the strainer with some momentum and pull yourself up onto the strainer. The goal is to, first, avoid being swept under the strainer, and second, to get your body out of the water and away from the force of the current. See Figure 3.

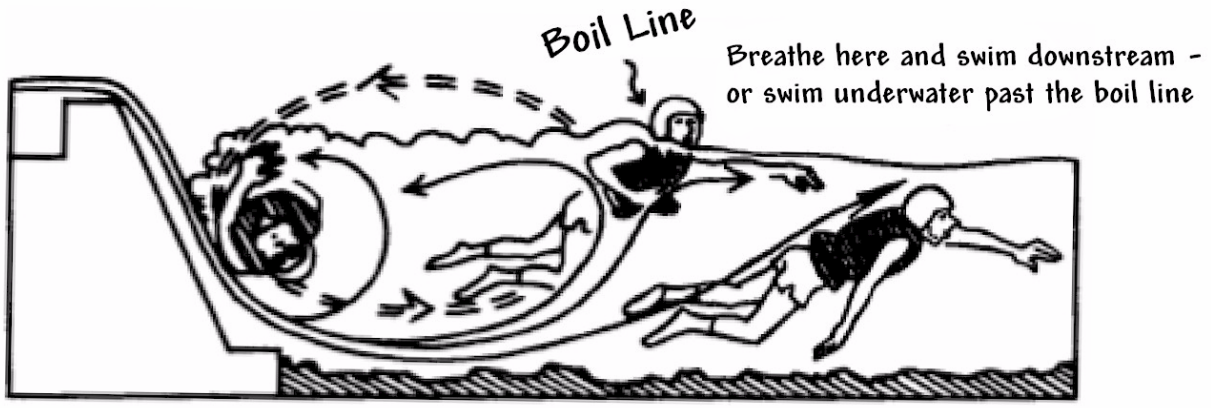
Figure 3



2. Vertical drops are common in arroyo channels. To avoid foot entrapments and extremity injury, pull your knees up against your chest and “ball up” if going over a drop.

3. Low-head dams (also called “hydraulics”) create re-circulating currents that will often hold a swimmer. Escape can be very difficult, and you can swim down stream after surfacing or attempt to catch the downstream current while underneath the water’s surface. See Figure 4.

Figure 4



4. Bridge abutments usually have little in the way of a hydraulic cushion and often collect debris piles that become dangerous strainers. React to bridge abutments by swimming aggressively away from them at a right angle to the current.

5. Stationary underwater debris may leave very little "signature" on the water's surface and may act as a strainer or may snag clothing. React to stationary debris like you would a strainer.

VI. Throw bag system overview

A. More people are probably rescued in slower moving water with throw bags than with any other single method. The flood channel "throw bag system" is inexpensive, lightweight, and simple to deploy.

B. Practice is essential to maintain proficiency. The system is an extended "r*each*" type of water rescue and may be used in any type of water rescue situation.

C. The "throw bag system" works more efficiently with six personnel but can be deployed with as few as four persons.

D. Be prepared for multiple victims. Due to the speed of the current there is probably only one opportunity for the throw bag to reach the victim. If the victim is not rescued with the throw rope, be prepared to throw him or her a PFD or other flotation device.

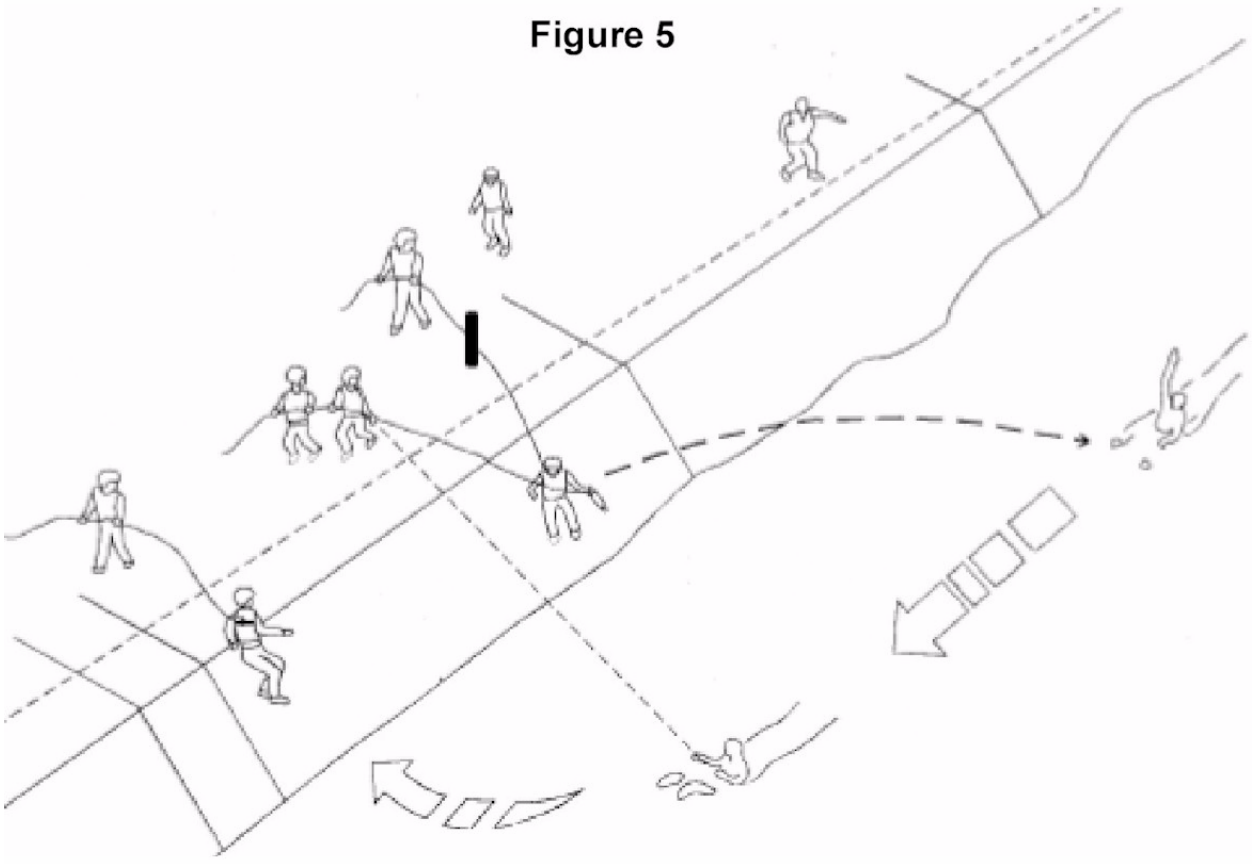
E. Deployment steps are detailed below and are illustrated in Figure 5.

1. Equipment is to be staged near the anchor location on the side of the arroyo.

2. All appropriate PPE is to be donned.

3. Companies will report to respective sector officers for assignment.

Figure 5



VII. Throw bag system deployment

A. Position #1 - Throw bag person.

1. Attach a lifeline to a ladder belt with a Figure-8 knot and/or a carabiner. Hand the lifeline to a belayer.

2. Hand an end of the throw rope to the throw bag belayers. Stage near the waters edge.

3. Position the rope between self and the pickup person. Open the top of the throw bag (may wet the throw bag and rope to increase control).

4. Grasp the bag with one hand and rope with the other. Establish contact with the victim by yelling “rope” or by blowing a whistle to get the victim’s attention.

5. Wait until the victim is closest to you and then throw. When throwing, aim slightly downstream and beyond the victim. Let go of rope when victim grabs rope.

6. Throw bag person and his or her belayer will then exit this area and sets up as an additional pick-up team with the first pick-up team.

7. Provide instruction to the victim as to how to hold onto the rope so that his or her body assumes the correct position.

8. An alternate technique, which may be used in any arroyo where the rope reaches easily from the top of the concrete embankment to the victim, is to have the throw bag person standing on the top, wearing full PPE, but not on belay. They should be prepared to move quickly downstream when the victim grabs the rope, to accommodate the pull on the rope due to the strong current. They should try to estimate the point where the victim will pendulum to the side of the channel, so that the pick-up person/people can get to them.

9. Instructions to the victim should be to pull the rope to their chest, roll over on back and put the rope over the shoulder opposite the bank where the rescuers are positioned. Face downstream with the rope over shoulder, which results in body position at a 45º angle to the current. This body position will cause the water to quickly push the victim to the side of the arroyo.

B. Position #2 – Belayer.

1. Place an anchor strap around anchor and attach a pre-rigged belay device with lifeline to the anchor, using a carabiner. Belay the throw bag person.

2. Keep system slack to a minimum to prevent throw bag person from falling into the water. Belayers should operate on level ground unless tied-off to anchor.

3. Belayer and throw bag person exit this position following rope deployment and set up as an additional pickup team near the first pickup team.

4. Note that all steep flood channels and arroyos require a belay system. Gentle slopes found in some of the flood channels/arroyos may not require a belay.

C. Positions #3 and #4 – Throw bag belayers.

1. Belay victim using throw ropes. Take end of throw bag rope and stands-by for victim contact after the rope is thrown by the throw bag person (Position #1).

2. The throw bag belayer may actually toss the throw bag if utilizing the alternate method described under Position #1 (Throw bag person). Throw Bag Belayers operate on level ground unless tied off to an anchor.

3. After victim makes contact with the rope, the throw bag belayer will provide a dynamic belay by moving downstream with the victim, at the same time allowing the current to pendulum the victim to the side. This action minimizes the shock load on both the throw bag belayer and the victim.

4. Belayers will not wrap or tie the rope to any part of their body.

D. Position #5 - Pickup belayer

1. Place anchor strap around anchor and attach a pre-rigged belay device with lifeline to the anchor with a carabiner.

2. Belay Position #6 (Pickup person). Together, positions 5 and 6 form a pickup team.

3. Keep system slack to a minimum to prevent the pickup person from falling into the water. Belayers operate on level ground unless tied off to an anchor.

E. Position #7 – Pickup person

1. Attach a lifeline to a ladder belt with Figure-8 knot and/or a carabiner. Give the lifeline to pickup belayer.

2. The pickup person(s) stages along the same side as the throw bag person(s), where the victim would be expected to pendulum to the side.
3. The ideal distance between the throw bag person and the pickup team is the approximate length of the throw rope, usually around 75’.

4. Tackle the victim against the flood channel and hold them, head above water, until more assistance arrives.

5. Pull the victim from the water. Secure the victim with a ladder belt and PFD tied off to a rope if possible. Assist them up the side of the channel.

F. Position #7 - Sector Officer

1. Supervise the operations at that rescue site.

2. May fill a dual role and perform another function in one of the above positions.

3. Report to the Incident Commander.

G. Note that all steep flood channels and arroyos require a belay system. Gentle slopes found in some of the channels/arroyos may not require a belay. The “reach” and “throw” methods are the approved ways to effect victim rescue from flood channels, rivers, ditches and arroyos, with special attention given to the throw bag system described above for flood channel rescue.

VIII. Patient care considerations

A. Be prepared for near-drowning, hypothermia, and traumatic injuries.

B. Consider using low-angle rope rescue techniques such as a “ladder slide / litter evacuation” to remove the patient from the bank of the arroyo.

IX. Special rescue site considerations

A. Near Snow Park, response companies may arrive at the same time as the victim passing by. If time permits, deploy a throw bag system, otherwise throw a PFD or flotation device to the victim.

B. Tramway Channel

1. The Kirtland Arroyo system has a unique feature in that the arroyo has eight-foot vertical walls from I-40 to the Kirtland Drain, and limited access due to a fence running the entire length of the arroyo.

2. One location has two low-head dams with eighteen-foot vertical sidewalls. This location, called “The Box,” has been the site of at least one fatality.

3. Rescue from “The Box” should be limited to a modified throw bag system with ground ladders extending into “The Box”.

4. Rescuers should pay close attention to their own safety when inside the fence. Belts should be worn and attached to suitable anchor points before conducting rescue operations.

5. Consider using a Heavy Technical Rescue (HTR) task force for patient packaging and rope rescue systems, along with Bernalillo County Fire Department (BCFD) or State Police for search operations if needed.

X. Vehicle in the water

A. It not uncommon for a vehicle to be caught in a flood channel, particularly in the far Northeast Heights along Wyoming Boulevard (near Station-20) and in the Four Hills Subdivision (near Station-12). Some roads in these areas still cross through arroyos.

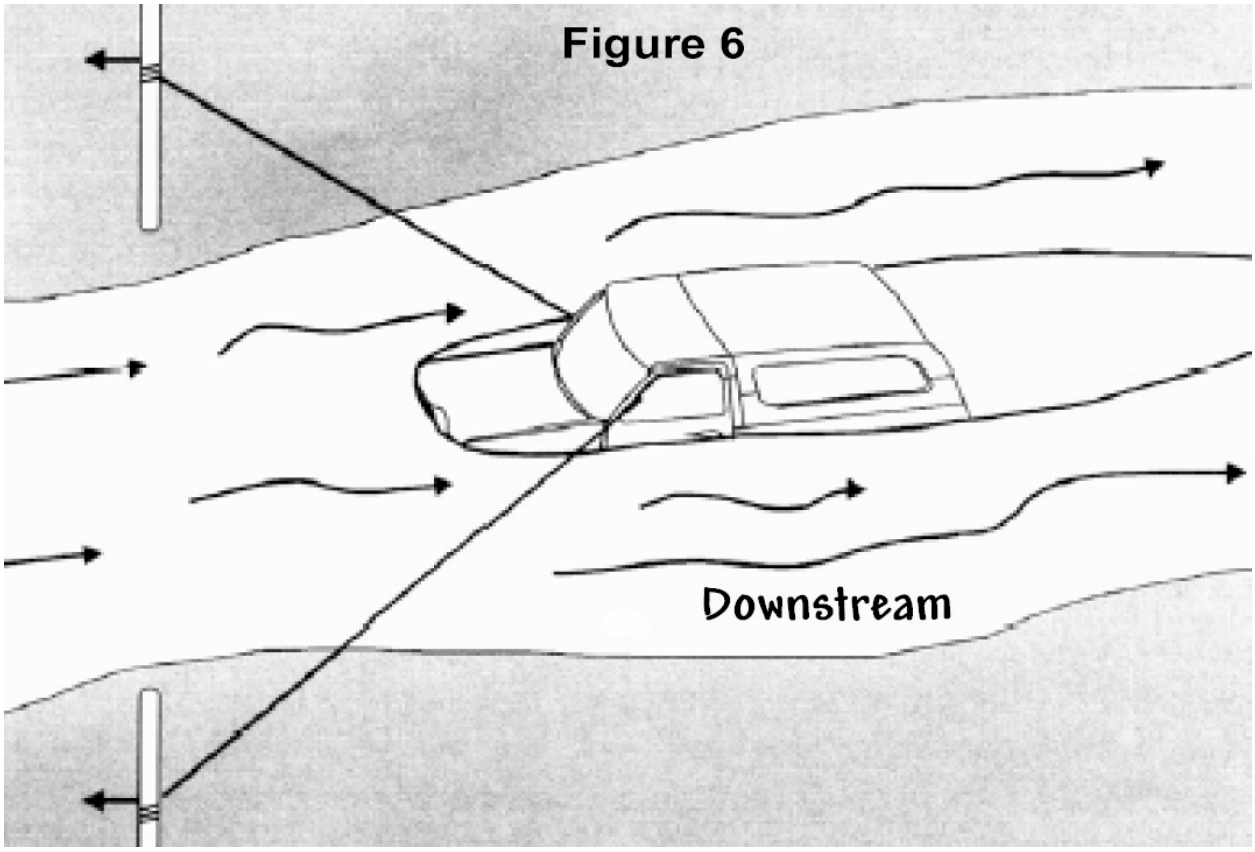
B. Two feet of water will move most vehicles depending upon the velocity of the current, whether or not the vehicle is sideways, and the type of arroyo bottom.

C. A vehicle on a hard surface is more likely to roll or move in the current, whereas on a soft surface, such as sand, the vehicle may sink down onto it's frame and becomes much more stable.

D. Specific rescue elements should be employed whenever there is a report of a vehicle (with trapped victims) in the water.

1. Determine the type of arroyo bottom.

2. Stabilize the vehicle. Attach a winch cable or rope (preferably cable) to keep the car from rolling or moving (any rope used in this fashion should be inspected and downgraded to hoisting use only). This is illustrated by Figure 6.



3. On hard surfaces, instruct the occupants to stay on the upstream side of the car to prevent rolling.

4. Get person flotation devices (PFD) and helmets to the victims prior to attempting any rescue effort.

5. Access the vehicle. Use reaching options, such as ground ladders, aerial devices, or consider approaching the car from the eddy created downstream of it. Be prepared to break windows.

6. Consider removing victims or protecting them in-place. If removing victims, they should have at least a PFD, and should be belayed in some fashion.

XI. HazMat considerations

A. Floodwater may contain toxic chemicals and sewage. Victims, rescuers and equipment should be decontaminated immediately after the rescue event.

B. The extent of decontamination required is situation dependent, but will usually be in the form of a shower for personnel and rinsing equipment with clean water upon returning to quarters.

C. Rescuers exposed to flood channel water may be seen at the City of Albuquerque Employee Health Office for a follow-up evaluation, especially if they have swallowed some water during the event.

XII. Post deployment

A. Following the deployment of any rescue system, the ranking officer of the station during that shift shall ensure that all equipment is inspected, dried, and returned to its designated location at its respective fire station.

B. The ranking officer shall document rope use in the rope log found in or on the flood channel equipment bag.

Swift Water Rescue Operation Plan

Purpose

The purpose of this guideline is to define the measures that should be considered when responding to flood channel or other swift water rescue incidents. They are intended to maximize responder safety, department resources, and victim rescue potential.

Guideline

Swift water rescue usually involves flood channels but may also involve both irrigation ditches and the Rio Grande. Flood control channels were designed to quickly remove rainwater from the city to prevent flooding. Swift water rescue is considered to be the most dangerous type of water rescue. Furthermore, flood channel rescue is considered to be the most dangerous type of swift water rescue.

Shore-based rescues are the preferred method of rescue from flood channels. It is the direction of the Albuquerque Fire Department that flood channel rescue operations be limited to shore-based rescues.

It is the responsibility of all companies assigned near flood channels to become familiar with their assigned rescue sites during flood conditions. It is also advised that companies drill on these rescue techniques on a regular basis, especially during the monsoon season.

Operational Guidance

I. Dispatch considerations

A. Flood channel rescue “Standby Status” notifications

1. The National Weather Service should notify AFD Dispatch, by telephone, of possible flash flood conditions. AFD Dispatch will relay this information to the Albuquerque Police Department, Bernalillo County Sheriff’s Office, and Bernalillo County Fire Department dispatch centers.

2. If not already notified of flash flood conditions, Operations Division battalion commanders and company officers shall notify AFD Dispatch when they notice heavy rainfall or heavy water flow in the arroyos.

3. AFD Dispatch shall notify all stations and units on-the-air of possible flash flood conditions by transmitting the following messages:

1. "Alarm to all stations and units on-the-air, be advised that potential flash flood conditions may exist for the next _____ hours."

2. "All companies involved in swift water rescue operations are on a stand-by status and shall confirm their assigned location, review swift water rescue guidelines and inspect equipment as outlined in SOGs."

II. Swift water task forces

A. The Albuquerque Fire Department employs ten fire stations as designated swift water rescue task forces.

1. Fire Station 4 – 301 McKnight NW

2. Fire Station 8 – 1400 Indian View Place NE

3. Fire Station 9- 9601 Menaul NE

4. Fire Station 12 – 201 Muriel NE

5. Fire Station 13 – 4900 Prospect NE

6. Fire Station 15 – 6600 McKinney NE

7. Fire Station 19 – 3520 San Andres NE

8. Fire Station 20 – 7520 Corona NE

9. Fire Station 29 – 501 Bear Canyon NE

10. Squad 2 (from Fire Station 3) – 141 Girard NE

B. All companies that have been include in swift water rescue task forces have been issued throw bags, PPE and belay systems for each apparatus.

C. Company Officers shall ensure that all assigned swift water equipment is placed on the apparatus when placed on "Standby Status."

D. Battalion Commander-2 shall return to, and remain in, District-2.

III. AFD Dispatch considerations

A. During the 9-1-1 call interview, the dispatcher shall attempt to gain all pertinent information from the caller, in addition those identified in the Fire Priority Dispatch for swift water rescue, 72 Echo 3.

1. Determine what arroyo or channel that the victim is in and at what cross street the victim was last seen.

2. Determine if the victim(s) are moving in the water or are stationary.

B. Strongly consider dispatching a fire company or APD officer to interview first-party witnesses that cannot be readily interviewed by phone.

IV. Dispatch - Victim in the water

A. When a confirmed report of a victim in the water, AFD Dispatch shall make a “swift water rescue dispatch”. AFD Dispatch shall dispatch the appropriate companies based on the location of the Arroyo and this SOG.

B. Appropriate companies shall be notified through the transmission of the following message:

1. “Alarm to (specific companies). Be advised that this is a swift water rescue dispatch. A victim has been seen in the _____ Arroyo/Channel at _____ cross street.”

2. The dispatch will be made by company ID, firebox, grid zone (as outline by this protocol), and any other pertinent incident information.

3. All responding using will be assigned a tactical radio channel.

C. One of the dispatched battalion commanders shall assume command and control of the incident from a base station, or if driving, he or she should pull over and command the incident from their current location.

D. The battalion commander need not be on scene, but shall assume a geographic command over all rescue sites. Driving “code 3” does not allow for adequate communicating, planning, forecasting, or coordinating.

E. At the discretion of the Incident Commander, the next-due battalion commander will respond to the primary rescue site, or to the location of the Incident Commander.

F. All companies shall provide en-route and arrival transmissions via both radio and mobile data terminal (MDT).

G. The Incident Commander shall assign sectors according to the cross street, or by the geographic area where companies are located. For example, Snow Park sector, Morningside sector, North Diversion sector, or Wyoming sector.

H. All sector officers shall inform the Incident Commander when their sector is prepared for rescue operations.

I. AFD Dispatch shall assign a tactical dispatcher to monitor and track all flood channel incidents and coordinate victim spotting with APD Dispatch.

V. Rescue sites

A. The following protocol is to be used to dispatch swift water rescues. The fire boxes provided are for the primary rescue sites.

B. The Incident Commander may divert responding companies and/or sectors to locations further downstream, based on the victim's last known location.

C. Once a victim passes a rescue site, that sector will stand-down and allow downstream sectors to make the next rescue attempt.

D. Chasing the victim downstream (driving "code 3" to the next cross street and deploying without belays) will not be permitted. Only under extreme circumstances will command deviate from the above guideline.

Embudo Arroyo			
Companies	Location	Fire Box	Grid Zone
E9, R9	Snow Park, Indian School and Parsifal NE	7403	CB240
E13, R13, L13, S3	Embudo @ Morningside NE	7041	BZ211
E4, R4, L4, S1	North Diversion Channel @ Menual NE	7001	BX205
B1, B2, S2			
Includes the following channels / arroyos: 1. Embudito 2. North Glenwood Hills 3. Piedra Lisa 4. Embudo			

Tramway Channel			
Companies	Location	Fire Box	Grid Zone
E12, R12, E8	Tramway Channel along Four Hills Rd NE	7403	CY257
B2, B3, S2			
Includes the following channels / arroyos: 1. Four Hills 2. Kirtland			

Hahn Arroyo			
Companies	Location	Fire Box	Grid Zone
E19, QI-78	Hahn @ Carlisle NE	7013	BN208
E29, R29	North Diversion Channel @ I-25 NE, along Chappell NE	6063	BH208
B1, B2, S2			
Includes the Julie Channel			

Grantline Channel			
Companies	Location	Fire Box	Grid Zone
E19, QI-78	Grantline Channel @ Carlisle NE	7051	BJ209
E29, R29	North Diversion Channel @ I-25, along Chappell NE	6063	BH208
B1, B2, S2			

Bear Canyon Arroyo			
Companies	Location	Fire Box	Grid Zone
E15, R15, L15	Arroyo Del Oso Park, Bear Canyon Arroyo west of Wyoming along Spain NE	7103	BH230
E29, R29	North Diversion Channel @ south of Osuna, along Chappell NE	6063	AZ208
B1, B2, S2			
Includes the Bear Tributaries			

Borealis Arroyo			
Companies	Location	Fire Box	Grid Zone
E15, R15, L15	Borealis Arroyo @ Pan American East NE	7151	AZ217
E29, R29	North Diversion Channel, north of Osuna NE	6045	AV208
B1, B2, S2			
Note: Drains into the Pino Arroyo			

Pino Arroyo			
Companies	Location	Fire Box	Grid Zone
E15, R15, L15	Pino Arroyo @ Wyoming	7157	AW220
E29, R29	North Diversion Channel, north of Osuna NE	6045	AV208
B1, B2, S2			

North Pino Arroyo			
Companies	Location	Fire Box	Grid Zone
E20	North Pino Arroyo @ Wyoming	7115	AV228
E29, R29	North Diversion Channel, south of Paseo del Norte Frontage Rd. NE	6055	AT208
B1, B2, S2			

Domingo Baca Arroyo			
Companies	Location	Fire Box	Grid Zone
E20	Domingo Baca Arroyo @ Wyoming	7114	AP228
E29, R29	North Diversion Channel, north of Paseo del Norte, Balloon Fiesta Park	6522	AL208
B1, B2, S2			

North Domingo Baca Arroyo			
Companies	Location	Fire Box	Grid Zone
E20	North Domingo Baca Arroyo @ Wyoming	7204	AL228
B2, S2			
Note: Drains into Domingo Baca Dam, located east of Louisiana			

La Cueva - Norestates Channel			
Companies	Location	Fire Box	Grid Zone
E20	La Cueva - Norestates Channel @ Woming NE	7203	AH228
E29, R29	North Diversion Channel, north of Alameda Rd NE	6514	AC210
B1, B2, S2			

VI. North Diversion Channel access

A. Engine-29, Rescue-29, Battalion-1, Battalion-2, and Squad-2 have been issued keys from AMAFCA to access the service roads along the North Diversion Channel.

VII. Squad-2, Heavy Rescue responsibilities

A. Squad-2 will act as the Incident Commander's tactical reserve, and will be deployed as determined by the Incident Commander - based on incident priorities.

VIII. APD roles and responsibilities

A. The Albuquerque Police Department's role in swift water rescue will be limited to spotting victim(s) location, scene control, and deploying flotation tubes.

B. The AFD Incident Commander shall contact APD on the "Metro" talk group and switch to the "APD_NE" channel.

C. The AFD Incident Commander will Inform APD of all incident details, as currently known, and will request the APD officer-in-charge to coordinate the spotting locations as determined by command. It is imperative that APD provide timely information to the AFD Incident Commander.

IX. Vehicle in the water - dispatch protocol

A. In addition to previously detailed protocols, AFD Dispatch will dispatch additional resources.

1. Ladder company

2. Squad-2 (Heavy Rescue)

3. Tow truck and/or wrecker

X. Stand down or termination of rescue operations

A. If no victims have been encountered at any rescue sites, or if there have been no new reports of "victim(s) in the water," and a reasonable period of time has elapsed since the most recent report, companies may "stand-down" and return to service.

B. "Stand-down" shall be at the direction of the Incident Commander.

XI. Post-deployment

A. Following deployment, company officers shall ensure that all equipment is inspected, dried, and returned to its designated location.

B. The ranking officer is responsible for documenting rope use in the rope log.

Vehicle Extrication

Purpose

The purpose of this guideline is to establish Albuquerque Fire Department's operational methods for vehicle extrication and to maximize operational effectiveness and patient care, while providing for rescuer safety.

Guideline

This guideline applies to all emergency incidents where a person(s) is trapped or pinned in, under, or in-between vehicles. Rescuers may be faced with many combinations of vehicle extrication scenarios, which could include one or more patients. Since the different scenarios are endless, this guideline will focus on general operational methods and precautions. It is the responsibility of all AFD personnel to become familiar with extrication equipment carried on engine and rescue companies, and with the capabilities of Squad 2 (Heavy Rescue). The basis of this guideline was obtained from NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents.

Operational Guidance

I. Scene size-up

A. Upon arrival, the first-arriving company officer will assume command, provide an appropriate size-up, acquire a tactical channel through AFD Dispatch, and initiate specific measures that include the following.

1. Request additional resources if appropriate.

2. Medical Priority Dispatch (MPDS) shall guide dispatch for vehicle accidents.

    a. The MPDS codes are the 29 card series.

    b. If a person(s) is found to be trapped or pinned, the first arriving company shall request Squad 2-Heavy Rescue and Battalion 2.

3. Determine the need for a hazardous materials response.

4. Determine the need for APD to provide for traffic and crowd control.

5. Contact PNM if there are any downed power lines.

6. Conduct a 360° scene survey.

7. Identify all involved vehicles.

8. Identify all potential hazards.

9. Establish hazard zones; restrict entry to only those who have a need to be within the hot zone.

10. Determine the number of victims.

    a. Determine the need for additional transport ambulances.

    b. Initiate the multi-casualty incident (MCI) process, if appropriate.

11. Use triage methodology to determine the general condition of patient(s).

12. Develop and communicate an “Incident Action Plan” (IAP).

13. Establish the necessary sectors.

    a. Rescue and extrication.

    b. Safety.

    c. EMS: triage, treatment, and transport.

    d. HazMat.

    e. Public Information.

    f. Law enforcement.

II. Hazard identification

A. The Incident Commander should identify as many potential hazards as may be found within the incident purview, and ensure that responders take preventive measures to guard against injury. Common hazards that may be encountered during an extrication operation include the following:

1. Traffic. Ensure traffic control measures are employed.

2. Electrical.

   a. Determine if utilities, such as downed power lines, are involved.

   b. Disconnect vehicle battery(ies). More than one may be found, and they may be in different locations than normally found.

   c. Hybrid or electrical vehicles have large high voltage batteries; their corresponding wires are usually orange in color.

   d. Consider moving electric seats back before disconnecting the battery(ies).

3. Vehicle hazards.

   a. Leaking vehicle fluids will require control measures to prevent fire and to protect the environment.

   b. Secure any doors or roof flaps to prevent them from swinging back and striking a rescuer or patient.

   c. Any lifting operation must be accompanied by immediate cribbing of the object lifted.

   d. Energy absorbing bumpers may be damaged and compressed. Do not approach the vehicle from the front.

   e. High pressure struts that support the hood, trunk lid, rear hatch, or rear glass are another danger that should be noted, especially if exposed to fire or the structure that they are connected to is damaged.

III. Supplemental restraint systems (SRS)

A. The supplemental restraint systems in passenger vehicles may include airbags, side air curtains, and seatbelt tensioners, especially in newer models.

1. Determine which SRS have deployed and which ones have not.

   a. Be cautious of any intact airbags.

   b. Intact airbags have the potential to deploy with an explosive force and can cause severe injuries to the rescuers and/or patient.

2. Newer vehicles have multiple SRS through out the vehicle, such as in the upper and/or lower dash, seat bolster, side curtain, seatbelt tensioners, and in and/or below the steering wheel.

3. Disconnecting the battery(ies).

   a. Disconnecting the battery(ies) does not immediately disable the SRS controllers.

   b. There are multiple capacitors in the vehicle that can store energy for up to 12 minutes.

   c. Pull back interior plastic panels; attempt to locate the wiring and controllers so they can be moved out of the way of any cutting operations.

4. SRS wiring.

   a. Cutting SRS wiring may cause deployment of the SRS.

   b. The wiring that carries the electrical power for the SRS can usually be identified by its bright yellow color.

   c. Actuators can be found in the A, B, and C posts, and in the bottom door sills.

   d. Controllers can be found in the front kick panels; these parts can be unbolted and moved out of the way

IV. Scene safety

A. The Incident Commander or company officer is responsible for ensuring that the operational scene is safe for all responding personnel.

1. The apparatus should be positioned is such a manner as to protect the scene from oncoming traffic.

2. All personnel should try to exit the apparatus on the side away from oncoming traffic.

3. Identify damaged any utilities and initiate control measures.

4. Establish safety zones.

a. The hot zone consists of a ten-foot circle around the vehicle, and requires full PPE use by all personnel.

b. The warm zone consists of an area ten-to-fifteen feet in all directions from the vehicle, is used for tool staging, and requires full PPE by all personnel.

c. The cool zone is located outside of the warm zone; personnel may use reduced levels of PPE, or may be unprotected.

V. Personal protective equipment (PPE)

A. Rescuer PPE includes head, eye, ear, hand, foot, and skin protection.

B. Universal precautions may apply.

VI. Rescue operations

A. Perform an “outer circle” survey for each vehicle.

1. Locate all patients.

a. Consider using the Thermal Imaging Camera to located ejected victims.

b. Determine the best access route to the patient location.

2. Conduct an “inner circle” survey.

   a. Turn off the vehicle ignition, if possible.

   b. Make patient contact and establish their condition.

   c. Determine how the patient is pinned or trapped.

3. Develop and communicate the “Extrication Plan”

4. Control hazards.

   a. Disconnect battery(ies). Remember that doing so may deactivate the Supplemental Restraint System.

5. Provide for fire protection.

   a. Use a 1¾” attack line at the minimum.

   b. Consider using either foam or micro-blaze for vapor suppression.

6. Evaluate the integrity and stability of the vehicle(s).

   a. The goal in stabilizing the vehicle is to prevent any vehicular movement by employing a combination of step chocks, cribbing, wedges, tire deflation and/or deployment of the Vehicle Stabilization Kit carried on Squad 2.

   b. Consider using winches from squads, commander’s vehicles or tow trucks.

7. Gain patient access.

   a. Protect the patient from harm by using blankets, tarps, backboards, safety glasses, and a helmet.

   b. Stabilize the patient’s medical condition while performing the extrication, if appropriate.

8. Use appropriate extrication techniques to free the patient from the vehicle.

    a. Make an access point.

    b. Create a patient removal point.

9. Displace or remove vehicle components.

    a. Remove glass.

    b. Flap or remove the roof.
    c. Displace or remove the door(s).

    d. Lift or displace the dash.

    e. Perform a total side removal.

    f. Remove or displace the steering wheel and/or pedals.

VII. Tools of the trade

A. Hand tools include the following:

1. Hammers, pry bars, saws, cable cutters, come-a-long, chains, wrenches, socket sets, high-lift jacks.

2. Simple machines include inclined planes (wedges), and levers (pry bars).

3. Pneumatic devices include air bags, pneumatic chisels and/or air guns.

4. Power tools include drills and hydraulic tools, such as rams, spreaders, and cutters.

5. Cutting tools include saws, torches, and grinders.

VIII. Termination of operations

A. Upon determining the termination of operations, the Incident Commander should perform or consider the following measures:

1. Obtain a personal accountability report (PAR) from all sectors.

2. Inventory and return all equipment to the appropriate apparatus or storage location.

3. Place damaged equipment out-of-service and notify one of the Heavy Rescue Commanders for a repair order/replacement authorization.

4. Decontaminate personnel and equipment as needed.

5. Coordinate termination of the incident with the law enforcement sector.

6. Consider the need for a Critical Incident Stress Debriefing (CISD).

7. Provide a tailboard critique and consider a formal debriefing at a later date and time.

Confined Space Rescue

Purpose

The purpose of this guideline is to establish the Albuquerque Fire Department's operational methods for addressing confined space rescue operations. These guidelines are intended to maximize operational effectiveness, patient survivability, and rescuer safety.

Guideline

This guideline applies to the entry of "confined spaces" by AFD personnel for the purpose of rescue/recovery operations. The basis of this guideline is NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents and OSHA 29 CFR 1910.146: Permit-Required Confined Spaces.

OSHA rule "29 CFR 1910.146 Permit-Required Confined Spaces" requires a variety of health and safety provisions, one of which is mandatory training for everyone who may perform confined space rescue. This guideline does not, in any way, waive or supersede the provisions of 29 CFR 1910.146, or the good judgment of Confined Space Rescue Technicians. It is the responsibility of all command and company officers to familiarize themselves with the methods described in this operational guide.

Operational Guidance

I. Definitions

A. An NFPA-defined "confined space" meets specific criteria:

1. It is large enough and so configured that a person can bodily enter.

2. It has limited or restricted means for entry or exit.

3. It is not designed for continuous occupancy.

B. A "permit-required confined space (permit space)" is a confined space that has one or more of the following characteristics:

1. It contains or has a potential to contain a hazardous atmosphere.

2. It contains a material that has the potential for engulfment.

3. It has an internal configuration that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section.

4. It contains any other recognized serious safety or health hazard.

C. The term "non-permit required confined space" means a confined space that does not contain or, with respect to atmospheric hazards, have a potential to contain any hazard capable of causing death or serious physical harm.

D. **Confined space scenarios include**:

1. Storm drains and sewers.

2. Underground vaults.

3. Above or below ground storage tanks.

4. Trenches and tunnels.

5. Transportation vessels.

6. Silos.

7. Machinery rooms and product lines.

8. Air handling units.

II. Command considerations

A. Scene size-up.

1. Upon arrival, assume command, provide size-up, and acquire a tactical radio channel.

2. Request a Heavy Rescue response, if one has not already been dispatched.

3. Command should attempt to secure a company representative or witness to the event to determine what happened.

a. Obtain and review an entry permit, if available.

4. Assess actual and potential hazards.

5. Attempt to make patient contact (voice).

6. Determine the number of victims.

7. Determine down time of the victim(s), the mechanism of injury, and the survivability profile of the victim.

8. Determine the mode of operation.

   a. Rescue or Recovery.

B. Evaluate the confined space.

1. Determine the confined space type.

2. Determine what products and/or hazardous materials are stored in the space.

3. Determine all known hazards present in and around the space.

4. Obtain a diagram, blueprint, or sketch of the confined space, including entry and egress locations.

5. Determine the victim(s) location.

6. Determine the structural stability of the confined space.

C. Manpower considerations.

1. Assess the need for additional Rescue Technicians.

2. Ensure that HazMat personnel are present to perform hazardous materials evaluation, provide PPE recommendations, and atmospheric monitoring.

3. Ensure for personnel accountability.

4. Assess the need **for Rehab and** crew rotation.

5. Ensure that all needed equipment is on-scene.

D. Designate Sectors as needed.

1. Safety.

2. Rescue (entry, rigging, air supply).

3. Rapid Intervention Team.

4. HazMat (research, PPE recommendations and atmospheric monitoring).

5. EMS (treatment and transport).

6. Rehab.

7. Welfare (for victim's family).

8. Industry Liaison.

9. Public Information.

III. Pre-entry operations

A. Make the area around the confined space safe.

1. Establish hazard zones and entry control. Restrict entry to only those who have a need to be within the general area.

2. Control ignition sources.

3. Establish ventilation to the area outside the confined space if needed.

4. Control any hazards in the general area.

5. Consider the location of combustion engines and its exhaust.

B. Make the confined space safe.

C. Atmospheric monitoring.

1. Conduct atmospheric monitoring of the internal atmosphere (of the confined space) with a direct reading atmospheric monitor for oxygen, flammability and toxicity.

2. Atmospheric monitoring shall occur prior to and during entry operations.

3. The atmospheric monitor shall be zeroed and calibrated, using the manufacturer's calibration gas, in a clean environment prior to sampling the internal atmosphere.

4. The following levels shall be considered Immediately Dangerous to Life and Health: (IDLH):

   a. Oxygen deficient < 19.5%.

   b. Oxygen enriched >23.5%.

   c. Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit. (LEL).

   d. Toxicity shall be defined as any limit that exceeds the Permissible Exposure Limit (PEL) for any particular substance.

   e. Airborne combustible dust at a concentration that meets or exceeds its Lower Explosive Limit. (LEL).

      i. This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.

5. If an IDLH atmosphere is present, action should be taken to reduce the atmospheric hazard or use an appropriate level of respiratory protection.

6. Results of atmospheric monitoring should be documented at least every fifteen minutes on the entry work sheet/check list.

IV. Ventilation considerations

A. Develop a ventilation strategy.

B. Consider positive pressure ventilation if there is more than one opening to the space.

C. Consider negative pressure ventilation with ductwork if there is only one opening to the space.

D. Consider the vapor density of the product stored within the space.

E. Ventilation exhaust should be directed to a safe area.

F. Fans powered by internal combustion engines are not to be used.

G. Consider if any ventilation will pull product through its flammable range.

H. If atmospheric conditions are determined to be unsafe, despite PPE protection, entry operations will be terminated until such time that the atmospheric conditions are corrected.

V. Isolation (lockout / tagout) considerations

A. Isolate the confined space from the release of hazardous energy.

B. All energy sources need to be brought to a zero mechanical state.

1. These include, but are not limited to the following:

a. Mechanical.

b. Electrical.

c. Hydraulic.

d. Pneumatic.

e. Steam.

f. Movable liquid and finely divided particles.

C. All electrical and mechanical equipment should be secured using appropriate lockout/tag out procedures according to OSHA 29 CFR 1910.147.

VI. Entry operations

A. When deploying personnel, consider specific assignment criteria.

1. Only current Confined Space Rescue Technicians are to be designated as entrants.

2. Assign a Rapid Intervention Team.

3. Entry teams should be rotated every thirty minutes.

4. The HazMat Specialists should recommend chemical Personal Protective Equipment requirements.

VII. Incident Action Plan

A. Prior to entry, all sectors are to be briefed on the incident action plan (IAP).

B. Each briefing should include specific criteria.

1. Roles and responsibilities.

2. Rescue plan of action

a. Along with a back-up plan.

3. Any known hazards.

4. Required personal protective equipment (PPE).

5. Atmospheric monitoring results.

6. Product particulars.

7. Communication methods.

8. Isolation considerations.

VIII. Post-entry considerations

A. Upon victim removal.

1. Transfer the victim to paramedics for an ALS level examination and treatment.

2. Gross decontamination should be provided prior to transport, if the victim is contaminated with product.

3. The Material Safety Data Sheet (MSDS) should be made available to the receiving hospital.

IX. Termination of operations

A. Obtain a personal accountability report (PAR) from all sectors.

B. Inventory and return all equipment to the appropriate apparatus.

C. Place damaged equipment out-of-service and notify one of the Heavy Rescue Commanders for a repair order/replacement authorization.

D. Decontaminate personnel and equipment as needed.

E. Secure the confined space by having the contractor or company representative seal entry points to prevent unauthorized entry.

F. Consider the need for a Critical Incident Stress Debriefing (CISD).

G. Provide a tailboard critique and consider a formal debriefing at a later date and time.

Elevator Operations

Purpose

The purpose of this guideline is to establish the Albuquerque Fire Department's safety protocol and to define the operations needed for the rescue and removal of individuals trapped in elevators.

Guideline

This guideline shall be followed whenever mitigating elevator emergencies. Adherence to this guideline will maximize both firefighter and elevator passenger safety while minimizing damage to the elevator system.

Operational Guidance

I. Elevator construction

A. Elevators systems are complex electrical systems. The mechanical aspects of elevator construction, however, are fairly simple and easy to understand. Rescuers must have a good understanding of elevator construction in order to perform rescue operations safely.

B. There are two basic types of elevator systems: hydraulic and electric traction.

1. Hydraulic elevator systems consist of a hydraulic fluid reservoir, pump, lift cylinder and elevator car. As fluid is pumped into the lift cylinder, the car elevates. As fluid returns to the reservoir, the car lowers. These systems are limited to seven stories of vertical travel.

2. Electric traction elevators consist of a series of cables that travel over a traction sheave and are connected to the elevator car on one end and counterweights on the other end. An electric motor spins the traction sheave. Based on the rotation of the traction sheave, the elevator car is raised or lowered. Travel distances for these cars are only limited by the lengths of the cables.

C. Elevator systems will have a machine room the houses the motors/pumps and electrical systems for car operations.

1. The machine room for a hydraulic elevator system is usually found at the lowest level of the building.
2. The machine rooms for electric traction systems are commonly found above the elevator cars either on the roof or within a penthouse.

3. Identifying the type of elevator system and the location of the machine room is critical before any intervention in an elevator incident can begin.

II. Dispatch

A. The majority of calls that involve elevators are incidents involving a person or persons simply stuck in the elevator. These incidents do not require techniques that damage elevator systems.

B. An emergency exists under three conditions.

1. Fire.

2. Illness or injury.

3. Panic.

C. If the elevator system is involved in fire, a passenger is sick/hurt, or if a passenger is a danger to himself or others, an emergency exists.

D. Any operations that may damage an elevator system are acceptable only under emergency conditions.

III. Size-up

A. Firefighters must determine several things in order to determine if the event is either an incident or an emergency. Size up will answer many of these questions.

1. Is the car operable?

2. Are people trapped? If so, what is their condition?

3. What type of system is involved?

4. What is the location of the elevator car and machine room?

5. Has an elevator mechanic been dispatched?

a. If not, one should be requested.

b. If so, what is the estimated arrival time?

IV. Firefighter intervention

A. Once the size-up has identified that either removal or rescue is needed, firefighters may initiate several actions to remove passengers from the elevator car.

1. Communications must be established with the passengers.

2. The condition of all passengers must be assessed. They should be kept informed of all actions being undertaken to ensure their safe removal.

B. If the size-up has determined that this is an incident requiring firefighter intervention, rescuers may employ the following techniques. These are listed in the order in which they should be performed.

1. Passenger self-removal.

a. Passengers may be able to open the car doors by pressing the “door open” button located on the panel inside the car. If this is unsuccessful, a radio-equipped firefighter must be sent to the machine room to shut off power to the elevator system.

b. Power should be shut off for a minimum of thirty seconds, then restored. This gives the electrical relays an opportunity to reset. With power restored, have the passenger attempt the “door open” button again. If again unsuccessful, have the firefighter assigned to the machine room again shut off the power. If the power can be locked-out/tagged-out, the firefighter may return to assist with other operations. If the power cannot be locked-out/tagged-out, the firefighter must remain in the machine room to ensure power to the elevator system remains de-energized and in fire department control.

2. Elevator recall

a. Elevators may need to be recalled.

b. The elevator car may be recalled using the Phase I feature.

3. Elevator keys

   a. Hoistway doors are required to have a keyhole located, at a minimum, on the lowest and highest floors serviced by the elevator. Many elevator systems have a keyhole located on every floor.

   b. At many buildings, security personnel and maintenance personnel will know the location of an onsite elevator key. Insert the key and attempt to open the hoistway door.

   c. Ladder companies and Squad 2 carry complete elevator key sets.

4. Horizontal poling

   a. If the elevator system has a multiple hoistway, horizontal poling may be attempted. A multiple hoistway has two or more cars traveling within the same hoistway. An operating car is positioned next to the inoperative car.

   b. While standing in the repositioned car, a pike pole is used to open the hoistway door in front of the inoperative car.

C. If these techniques are unsuccessful, firefighters are to await the arrival of an elevator mechanic. Any other attempts to open the doors will result in unjustified damage to the elevator system. It is very important that the passengers be continuously reassured and updated about the progress of their situation.

D. Under emergency conditions, there are other techniques that can be performed.

1. These include wedging, air bags and hydraulic power plants.

2. These operations are intended to spread the hoistway doors apart and break the interlock that keeps the hoistway doors closed.
3. These techniques are dangerous for both passengers and firefighters and are only to be performed under emergency conditions (fire, illness/injury, panic).

V. Safety

A. Elevator rescue operations can be hazardous. Hazards include pinching, crushing, electrical and falling. The importance of safe practices cannot be overstated when performing elevator operations.

B. In order to maximize safe operations, levels of firefighter intervention need to be defined.

1. All firefighters may attempt elevator recall, elevator key use and horizontal poling. These are considered basic elevator incident operations.

VI. Emergency operations

A. Only Rescue Technicians (Heavy Technical Rescue Personnel) that have received advanced training in elevator rescue may perform operations that require entry into the elevator hoistway.

B. Operations that involve working within hoistways, beside, above or below the elevator car, are special operations that require fall protection using full body harnesses and rope systems, and a more thorough understanding of elevator components and systems.

C. Tactical questions

1. Is there an inoperative elevator, and are people inside?

2. Has communication been established with the passengers, what is their condition?

3. Is a mechanic en route?

4. What type of system is involved?

5. Where is the car and the machine room?

D. Tactical operations

1. Position a firefighter in machine room and at the identified floor.

2. Establish communication with trapped passengers and the machine room firefighter.

3. For a passenger-assisted rescue

   a. Have them depress the “door open” button.

   b. Have them attempt to open car doors manually.

4. For a rescue requiring firefighter intervention

   a. Shut off power to car for minimum of thirty seconds; reestablish power; attempt “door open” button again.

   b. If unsuccessful, attempt to recall the elevator.

   c. If still unsuccessful, shut off power again, lock-out/tag-out or keep a firefighter in the machine room.

   d. In a hydraulic system, the restrictor valve can be operated.

E. Using keys or horizontal poling

1. An emergency exists only if a passenger is ill or injured; if passenger is panicked and has become a danger to himself or others; or a fire condition exists.

2. Enter the hoistway.

3. Access the top hatch.

4. Access the side door.

5. Forcible entry methods include:

   a. Wedging.

   b. Air bags.

   c. Rabbit tools.

   d. Hydraulic spreader.

Trench Rescue

Purpose

This purpose of this guideline is to establish the Albuquerque Fire Department's guidelines for trench rescues. It identifies accepted operational tactics for safety and efficiency in the resolution of trench emergencies.

Guideline

As an all-risk capable department, it is the direction of the Albuquerque Fire Department to provide for special operations involving technical rescues. Trench and excavation incidents are "Low Frequency, High Hazard" rescues. Such rescues usually involve a dynamic environment that is physically and mentally challenging due to the duration of the event and an unpredictable environment. It is the responsibility of all personnel to understand the guidelines for trench rescue operations. It is additionally the responsibility of all command officers to understand the structure for trench rescue command-and-control.

Operational Guidance

I. Dispatch considerations

A. If the caller's information indicates a trench/excavation collapse with a victim(s) trapped or EMS incident within a trench without a collapse, the following shall be dispatched:

1. Closest engine and rescue companies

2. Heavy Rescue Task Force

4. Squad 2

5. Battalion 2

II. Scene safety

A. All personnel on scene must don helmets, gloves, steel-toes boots, long pants or coveralls, and eye protection.

B. First- in companies shall stage no closer than 150' due to the potential for secondary collaps.

C. First-in unit officer has Command and Accountability and is responsible for scene safety.

D. Under no circumstances shall emergency responders enter a unprotected trench to provide patient care or extrication operations until a protective system is installed. Order any personnel in an unprotected trench to exit immediately. A failed trench wall has high probability of secondary collapse.

E. Reconnaissance shall be done by officers to minimize the number of personnel near the lip of the trench.

F. When approaching the trench use extreme caution. Always approach the trench from the short edge. The trench is weakest along its long edge and strongest along its short edge.

G. Other personnel should begin removing equipment from the HTR Squads to an equipment staging area in preparation for the rescue operatio. If a viable patient is present, Command should organize the rapid placement of shoring panels to protect the patient from secondary collapse.

III. Command responsibilities

A. Establish a strong, visible Command and designate the following accountabilities:

1. Safety – must be trained in Trench Rescue

2. Rescue – consists of a panel team, a shoring/extrication entry team, equipment staging team, and strut team

3. Apparatus staging

4. EMS – patient care

5. Haz Mat – atmospheric monitoring

6. Rehab – responder rehab and Red Cross

7, PIO

8. Welfare – provide support to family members and coworkers

9. Liaison – heavy equipment operators, OSHA

10. Law enforcement – scene control

B. Create hazard zones

1. Hot Zone: 0-50'. No apparatus except Heavy Rescue is permitted in this zone.

2. Warm Zone: 50-100'. Command and equipment staging shall be established in this area.

3. Cold Zone: 100-150'. Personnel staging, welfare, PIO, and responder rehab.

4. All operational zones should be cordoned off with fire line tape. All unauthorized personnel is remain outside the cold zone.

C, Perform size-up

1. Size-up is done to develop a plan of action based on safe working conditions and available resources. Utilizing observation of the scene and interview of informed individuals (e.g., worksite foreman), determine the following:

a. Who is in charge and what happened?

b. What is the nature of the incident?

c. Collapse, entrapment, medical emergency

d. How many victims?

e. What was their last known location?

f. What were the original dimensions of the trench? (width, length, and depth)

g. What is the scope of work being done before the trench collapse?

h. Are there any other hazards?

D, Risk management

1. Command must perform risk assessment and determine whether the operation is a rescue or recovery based on the following criteria:

   a. Is the patient partially or completely covered?

   b. How much soil is covering victims?

   c. Down time? Victims experience biological death in 4-6 minutes if completely buried.

   d. Can the risk to rescuers be minimized to an acceptable level?

   e. Capabilities of on-scene resources and availability of additional/community resources

IV. Rescue operations

A. Make the general area safe

1. Eliminate all sources of vibration within 300 feet of the trench.

2. Consider establishing a “no fly” zone by contacting the FAA.

3. Control the scene. Direct non-essential personnel to remain outside the cold zone.

B. Make the trench lip safe

1. Install a straight ladder into the trench.

2. Place ground pads along the edge of the trench using 2' x 8' plywood sheets or 2’ x 10’ planks.

3. Move the spoil pile at least 2 feet away from the lip of the trench.

C. Make the trench safe

1. Monitor the atmosphere and ventilate if necessary.

2. Support any utilities that intersect the trench.

3. Remove tripping hazards.

4. Remove water from the trench, if necessary.

D. Stabilize the trench

1. Install an appropriate protective system for the type of collapse encountered.

2. Consider the following protective system options:

   a. Shore area around the victim

   b. Install a whaler system to span the collapsed area.

   c. Use air bags to fill voids

   d. Install a trench box

3. Slope the trench face away from the victim only after outlining the original trench perimeter with tape.

4. Never use heavy equipment to dig in the original trench area.

5. Shoring installation

   a. Install shoring panels followed by cross braces.

   b. Shore from top to bottom or as dictated by the type of collapse.

   c. Rescuers shall not enter the trench more than waist deep when installing the first cross brace. Rescuer then proceeds down the ladder to the height of the installed cross brace and assists with the installation of the next cross brace. Rescuers must always work from within an area protected by the protective system when installing subsequent shoring panels and cross braces.

d. Cross braces should not be closer than 1' from the top of the trench and no lower than 2 feet from the bottom of the upright/sheeting. (Follow Paratech's Manufacturer's Tabulated data or use the tabulated data found in 29 CFR 1926, Subpart P, Excavations.)

e. If using 4" x 4" Douglas Fir cross braces as "Temporary Emergency Shoring" space cross braces 2' vertical and 4' horizontal.

E. Extricate the patient

1. Upon patient contact treat only life threatening conditions and support ABC's.

2. Partially buried patients must have soil removed from around their chest to alleviate respiratory distress.

3. If prolonged extrication is expected, consider ALS intervention and MCEP (Medical Control Emergency Physician) for the treatment of crush syndrome prior to the removal of compressive force.

4. Patients must be completely uncovered prior to extrication attempts.

5. Shovels and hand trowels can be used to remove the bulk of the soil.

6. Once rescuers gain immediate access to the patient, hand digging may be required to avoid further injury to patient.

7. Use rated collapsible buckets to remove soil from trench. Do not raise and lower buckets directly over patient or rescuers.

8. No more than 2' of unshored area can exist below the protective system. Add supplemental shoring as necessary.

9. Rotate crews as necessary.

10. Once the patient is completely uncovered, package the patient for removal from the trench in the appropriate device (e.g., Stokes).

11. Full spinal immobilization is recommended but may not be possible.

F. Remove the patient from the trench appropriate techniques.

1. Ladder slide - slide Stokes up a ladder by use of a 2:1 mechanical advantage rope system, or consider the use of

2. An aerial ladder or crane to establish an overhead anchor point and construct a rope system. Never use cranes or aerials to lift the patient out of the trench.

G. Once the patient is on the surface, transfer care to the EMS Sector for further ALS examination, treatment and transport. Consider using LifeGuard (establish an appropriate landing zone a safe distance from the trench).

V. Event termination

A. Removal of protective system

1. Regroup all rescuers and develop a plan for removal of the protective system. Removal is an extremely hazardous phase of the operation due to the high potential for secondary collapse. If conditions are judged to be unstable, leave the shoring in place. It is not worth a rescuer's life to retrieve equipment.

2. Remove shoring in reverse order of installation: Last shore in is the first shore out.

3. Inventory, inspect and return all equipment to the appropriate apparatus. Squad 2 Officer will place any damaged equipment out of service and make arrangements for repairs or replacement.

B. Return the scene to a responsible party. Consider backfilling the excavation if no responsible party is available and the trench area cannot be secured.

C. Conduct a operations critique at the appropriate time. Consider the need for Critical Incident Stress Debriefing (CISD).

Rope Rescue

Purpose

The purpose of this guideline is to establish the Albuquerque Fire Department's operational methods for conducting rope rescue operations, and the evacuation of trapped or injured persons from specific elevated or sub-grade areas, while providing for rescuer safety. Because of the infinite number of situations and environments (structural, confined space, wilderness) that could be encountered, this guideline will not define a specific evolution or technique to use, but rather, will provide general guidelines to follow for conducting safe and effective operations.

Guideline

This guideline applies to emergency incidents where a person(s) is in need of assistance in an elevated or sub-grade area where fall protection is appropriate. Fall protection is appropriate when the victim can fall from a height greater than one story, or needs to be lowered or raised to safety in a patient packaging device (such as a stokes basket). It defines size-up, response modes, and command structures that may be appropriate for rope rescue operations.

It also describes hazards that may be encountered on such operations, and the protective measures that should be employed to ensure AFD responder safety. It is the responsibility of all command and company officer to be familiar with the employment of this operational guide. The basis of this guideline was obtained from NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents.

Operational Guidance

I. Definition of rope rescue

A. Rope rescue is defined as any rescue attempt that requires rope and related equipment to safely gain access to, and remove patients from, any hazardous geographic areas with limited access (such as steep terrain, high-rise buildings, and above or below grade structures), using a rope rescue system.

B. Rope rescues are divided into two general categories; low-angle and high-angle rescue. Inclinations less than 30 degrees are considered low-angle and generally don't require rope rescue systems. Inclinations greater than 30 degrees are considered high-angle and do require a rope rescue system.

II. Scene size-up

A. Upon arrival, the first-arriving company officer will assume command, provide an appropriate size-up, acquire a tactical channel through AFD Dispatch, and initiate specific measures that include the following.

1. Request Heavy Rescue response if one has not already dispatched.

2. The Incident Commander should attempt to secure a company representative or witness to the event to determine what happened.

3. Deploy a Recon team to identify the patient's location, position and condition.

4. Attempt to make patient contact (voice).

5. Select an area from which rescuers will be deployed to effect the rescue.

6. Determine equipment needs.

7. Assess all potential hazards.

8. Determine the number of patients.

9. Determine the patient's down time and their mechanism of injury.

III. Command considerations

1. Determine the mode of operation: rescue or body recovery.

2. Identify manpower considerations.

3. Assess the need for additional rescue technicians.

4. Ensure for personnel accountability (PAR).

5. Assess the need for Rehab and crew rotation.

6. Ensure that all needed equipment is on scene.

7. Designate sectors as needed.

   a. Safety.

   b. Recon.

   c. Rescue (deploy rescuers, rigging, rescue system operation).

   d. Support/Logistics.

   e. Rescue Technician(s) to obtain and deliver equipment to the rescue area from Squad 2.

   f. EMS for treatment and transport.

   g. Rehab.

   h. Welfare (for patient's family).

   i. Liaison.

   j. Public Information.

IV. Hazard identification

A. The Incident Commander should identify as many potential hazards as may be found within the incident purview, and ensure that responders take preventive measures to guard against injury. Common hazards that may be encountered during a rope rescue operation include the following:

1. The damaged structure and its components.

2. Patient's compromised fall protection equipment.

3. Extreme weather.

4. Extreme fall hazards.

5. Moving rope found in rescue systems.

6. Trip hazards.

7. Vertical product lines.

8. Rope abrasion.

V. Personnel

A. Key roles should only be filled by qualified rescue technicians.

B. Only current rescue technicians are permitted to deploy on rope, and supervise the development and operation of rope rescue systems.

VI. Personal protective equipment

A. Helmet, gloves, eye protection and appropriate footwear are required while operating in the rope rescue environment.

B. Fall protection shall be provided for rescuers operating near any unprotected edge.

VII. Rescue operations

A. Make the rescue area safe.

B. Establish hazard control zones.

1. The area below the rescue should be included in the hot zone.

2. Restrict entry to only those who have a need to be in the area.

C. Select a rope rescue system appropriate for the situation.

1. The Incident Commander shall approve of the selected rope rescue system.

2. A safety officer, qualified as a rope rescue technician, may also approve the rope rescue system.

D. Rescue operations should be conducted with from low risk to high risk.

E. The rescue sector officer and qualified safety officer shall ensure the overall safety of the raising/lowering system.

F. Low angle rescue considerations.

1. When a non-ambulatory patient requires a patient packaging device, such as a stokes basket, four litter bearers and a belay system are required.

G. High angle rescue considerations.

1. A 15:1 safety factor shall be maintained utilizing two separate rope systems.

2. One rope is to be used as the main line and a second line is to be used as a safety line.

a. These lines should be attached to both the patient and rescuer(s).

3. Each line should normally have a “bomb proof” anchor.

a. A “bomb proof” anchor is defined as structural in nature and has no inherent possibility of failure.

b. Questionable anchor points should be reinforced using secondary anchors.

H. Prior to deployment, all sectors shall be briefed on the incident action plan, which should include incident-specific information.

1. The current situation.

2. Roles and responsibilities of each responder.

3. The incident action plan (IAP) and back-up plan.

4. Any known hazards.

5. Communication methods.

I. The rescue sector will assign rescue personnel to build the rope rescue system and to effect the rescue.

J. The support Sector supports the rescuers, before, during and after the rescue operation.

K. Upon completion of the rescue, patients will be transferred to paramedics for ALS-level examination and treatment.

VIII. Termination of operations

A. Upon determining the termination of operations, the Incident Commander should perform or consider the following measures:

1. Obtain a personal accountability report from all sectors.

2. Inventory and return all equipment to the appropriate apparatus.

3. Place damaged equipment out of service and notify one of the Heavy Rescue commanders for a repair order/replacement authorization.

4. Consider the need for a Critical Incident Stress Debriefing (CISD).

5. Provide a tailboard critique and consider a formal debriefing at a later date and time.

Wilderness Search and Rescue

Purpose

To establish the Albuquerque Fire Department's operational methods for maximizing search and rescue, and the evacuation of trapped or injured persons from wilderness areas within our jurisdiction or when providing mutual aid, while providing for rescuer safety.

Guideline

This guideline defines size-up, response modes, and command structures that may be appropriate for wilderness search operations. It also describes hazards that may be encountered on such operations, and the protective measures that should be employed to ensure AFD responder safety. It is the responsibility of all command and company officer to be familiar with the employment of this operational guide.

This guideline applies to all emergency incidents where person(s) are in need of rescue and/or evacuation from wilderness areas that are not accessible by emergency response vehicles that are within our jurisdiction. Wilderness areas are designated as follows: the bosque along the Rio Grande; Albuquerque Open Space areas along the foothills of the Sandia Mountains; and unimproved areas of the West Mesa. The basis of this guideline was obtained from NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents.

Operational Guidance

I. Command and control

A. The Albuquerque Fire Department shall retain Command and Control of all rescue incidents that occur within our jurisdiction.

B. Volunteer Search and Rescue Teams shall be utilized as an additional resource and shall be required to report to command and operate within the established Incident Command System and Incident Action Plan (IAP).

1. If utilized, volunteer rescue team members shall report to their Search and Rescue team leader. The team leader shall be provided with a radio and designation/call sign, be informed of their assignment, and to whom they are reporting.

2. At no time will there be two separate incident commanders and/or incident action plans; standard IMS/ICS practices will apply. Search and Rescue Volunteers shall be held in staging, located at the base camp until deployed by Command.

C. It is an option to utilize a "Unified Command" structure when multiple agencies respond to the same wilderness search and rescue incident.

D. Search and Rescue incidents that occur outside of our jurisdiction are coordinated by the New Mexico Department of Public Safety through a recognized "New Mexico State Police Incident Commander" who is supported by recognized Search and Rescue Teams.

1. Command is required to contact New Mexico State Police when the incident is determined to be outside of our jurisdiction.

2. Standard IMS/ICS practices shall apply when providing mutual aid to outside jurisdictions.

II. Scene size-up

A. Upon arrival, the first-arriving company officer will assume command, provide an appropriate size-up, acquire a tactical channel through AFD Dispatch, and initiate specific measures that include the following.

1. Request a Heavy Rescue response if it has not already been dispatched.

2. The Incident Commander should interview the reporting party to determine what happened and the situation's urgency.

3. Assess all hazards.

4. Determine the number of victims.

5. Determine the condition of the victim(s) and the mechanism of injury.

6. Define the mode of operation:

a. Search.

b. Rescue.

c. Body recovery.

7. Define manpower considerations:

a. Assess the need for additional rescue technicians.

b. Ensure personnel accountability.

c. Assess the need for Rehab and crew rotation.

8. Determine current and forecasted weather conditions:

a. Temperature.

b. Precipitation.

c. Winds.

9. Conduct a risk/benefit analysis.

10. Ensure that all needed equipment is on scene.

11. Designate the following Sectors (as needed):

a. Safety.

b. Rescue.

c. EMS (treatment and transport).

d. Rehab.

e. Welfare (for patient's family).

f. Liaison.

g. Staging.

h. Public Information.

12. Determine the need for additional resources.

a. New Mexico DPS Search and Rescue Coordinator.

b. Albuquerque Mountain Rescue Counsel (pager 969-0606).

c. Search dogs.

d. Trackers.

e. Aerial support to assist with search operations or patient evacuation.

f. Mine rescue specialists.

III. Hazard identification

A. The Incident Commander should identify as many potential hazards as may be found within the incident purview, and ensure that responders take preventive measures to guard against injury. Common hazards that may be encountered during a wilderness search operation include the following:

1. Personal hazards:

   a. Blisters.

   b. Soft tissue injuries.

   c. Dehydration.

   d. Sunburn.

2. Dangerous wildlife:

   a. Snakes, biting insects.

   b. Mountain lions, bears.

3. Extreme weather:

   a. Temperature extremes.

   b. Thunderstorms and lightning.

   c. Blizzards.

   d. High winds.

4. Fall hazards such as cliffs, steep slopes, and/or abandoned mines.

5. Difficult terrain such as loose ground cover or slippery surfaces.

IV. Personal protective equipment (PPE)

A. Conventional firefighting PPE is inappropriate for use in the wilderness setting.

1. If operating in a rope rescue environment, helmets with lights, gloves and eye protection are required.

2. Clothing worn by deploying personnel shall be appropriate for the anticipated weather conditions.

V. Responding personnel

A. Personnel not fit for wilderness deployment due to physical limitations or inappropriate clothing/footwear shall be limited to support functions at the base camp.

B. Deploying personnel should keep self-sufficiency in mind.

C. Deploying personnel should be familiar with land navigation techniques to include the use of a map and compass, and global positioning units (GPS).

D. Personal support equipment includes energy bars, bottled water, emergency shelter, whistle, a field radio, and environmental protective clothing.

VI. Search operations

A. Confine and sector (or segment) the search area.

B. Identify search strategies and methods.

C. Suspend the search when risk to rescuers is greater than the potential benefit.

VII. Rescue operations

A. Provide a briefing prior to deploying personnel. The briefing should include the following details:

1. Current situation.

2. Roles and responsibilities of the SAR group.

3. The incident action plan and any back-up plan.

4. Any known hazards.

5. Anticipated weather conditions.

6. Primary and back-up communication methods.

B. Utilize appropriate and proper rope rescue techniques.

C. Upon arrival to base camp, transfer the patient to paramedics for an ALS level examination and treatment.

VIII. Termination of operations

A. Upon determining the termination of operations, the Incident Commander should perform or consider the following measures:

1. Obtain a personal accountability report (PAR) from all sectors.

2. Inventory and return all equipment to the appropriate apparatus or storage location.

3. Place damaged equipment out-of-service and notify one of the Heavy Rescue Program Coordinator for a repair order/replacement authorization.

4. Consider the need for a Critical Incident Stress Debriefing (CISD).

5. Provide a tailboard critique and consider a formal debriefing at a later date and time.

Electrical Utility Lockout / Tagout

Purpose

This guideline establishes the Albuquerque Fire Department's operational methods for isolating a machine, device, or process from the release of hazardous energy to prevent unexpected release of stored energy during rescue operations. Adherence to these guidelines will prevent accidents due to unintentional machine or equipment start-ups or the unexpected release of stored energy. Stored energy includes electrical, compressed air, hydraulic, steam, and movable liquids or finely divided solids.

Guideline

This guideline applies to all emergency incidents where as a person(s) is trapped, pinned or caught in a device with moving parts or is within a confined space. Lockout/Tagout devices are required during confined space or machinery rescue operations. It is the responsibility of all personnel to become familiar with the methods described in this guideline. These operational methods are regulated by OSHA 29 CFR 1910.147 "The Control of Hazardous Energy."

Operational Guidance

I. OSHA requirements

A. This guideline will serves as the Albuquerque Fire Department's written program of operations for the control of hazardous energy.

B. OSHA makes specific requirements of emergency responder entities.

1. Steps are identified for shutting down and securing equipment using the proper sequence.

2. Steps are identified for applying lockout/tagout devices.

3. Responder personnel need to understand the significance of a lockout device and/or "Do Not Operate" tag.

a. The presence of a lockout device and/or "Do Not Operate" tag signifies that a piece of machinery, product line or process is out of service.

b. Under normal circumstances; only the person that applied the device can remove that device.

4. Personnel should be trained to shut down and secure the equipment.

    a. Since it is impossible for AFD Rescue Technicians to possess the knowledge required to secure every piece of equipment or process found in our jurisdiction, every effort shall be made to have a qualified machine/process technician respond to the scene.

    b. The absence of the machine/process technician shall not normally delay the extrication operation.

II. Lockout/Tagout

A. All energy sources shall be brought to a zero mechanical state prior to the initiating rescue operations.

1. Lockout/Tagout options should include a device that prevents activation and the application of “Do Not Operate” tag.

    a. Physical devices and lockout tags may include locks, chains, and specially manufactured devices.

    b. Activating the “Emergency Mechanical Off” (EMO), opening the electrical circuit by switching the power off, removing power by tripping circuit breakers, or by pulling electrical cords.

    c. Blanking and blinding.

    d. Double block and bleed.

    e. Disconnecting mechanical linkages.

    f. Removing drive belts, chains, and drive shafts.

    g. Misaligning or removing sections of pipe, line or duct.

    h. Removing valve handles.

    i. Chaining round-handled valve stems in the closed position and locking the chain with a padlock.

j. Draining any product stored in the storage vessel/tank.

2. If an energy source cannot be properly secured, a firefighter shall be assigned to guard the point of activation to assure that no one inadvertently releases the energy source during the extrication.

Structural Collapse

Purpose

The purpose of this guideline is to establish the Albuquerque Fire Department's operational methods for addressing both minor and major structural collapse incidents, maximizing operational methods, and optimizing patient care, while providing for rescuer safety.

Guideline

This guideline applies to all emergency incidents where a person(s) is trapped or pinned within a building by its structural components or is trapped or pinned by its contents following a structural collapse. While a large structural collapse incident is an uncommon event in most jurisdictions, it does have the potential to occur. Such incidents have proven to be very demanding on local emergency response agencies. Major building collapse incidents require good pre-planning, interaction with other agencies and an organized approach to ensure success. 80% of those who can be saved will be rescued in the first 24 hours of rescue operations.

It is the responsibility of all command and company officers to familiarize themselves with the methods described in this operational guide. The basis of this guideline was obtained from NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents and National Urban Search and Rescue Response System, Field Operation Guide.

Operational Guidance

I. Scene size-up (all structural collapse events)

A. Upon arrival, the first-arriving company officer will assume command, provide an appropriate size-up, acquire a tactical channel through AFD Dispatch, and initiate specific measures that include the following.

1. Request a heavy rescue response, if one has not already been dispatched.

2. Conduct a 360° scene survey.

3. Call for additional resources (as appropriate).

4. Identify all potential hazards.

5. Establish hazard zones and restrict entry to only those who have a need to be within the hot zone.

6. Conduct a risk/benefit analysis.

7. Determine the construction type (according to NFPA 1670).

   a. Light-frame construction.

   b. Heavy wall construction.

   c. Heavy floor construction.

   d. Pre-cast construction.

8. Determine building characteristics and the extent of damage.

   a. Identify the location of stairs, elevators, and basements.

   b. Identify access to stairs, elevators, and basements.

9. Determine the collapse type.

   a. Lean-to.

   b. Cantilever.

   c. Pancake.

   d. V-Type.

   e. A-frame.

10. Determine the occupancy type.

11. Determine the number of known and potential victims and their location(s).

   a. Consider the time-of-day.

   b. Determine the need for additional transport ambulances.

   c. Initiate the Multiple Casualty Incident (MCI) process, if appropriate.

d. Determine the general condition of patient(s) using AFD triage procedures.

12. Develop and communicate the “Incident Action Plan” (IAP).

13. Establish necessary sectors.

a. Rescue/Extrication.

b. Fire suppression.

c. Safety.

d. Rapid intervention teams (RIT).

e. Medical/EMS for triage, treatment, and transport.

f. HazMat.

g. Staging (Level II).

h. Public Information.

i. Law Enforcement.

B. At major incidents, the following issues may need to be initiated in addition to those detailed above.

1. Activate the EOC for resource support.

2. Determine scope and magnitude of the incident.

3. Determine the number and size of structures affected.

II. Additional resources

A. In certain instances, the collapse event may exceed AFD response capabilities. Additional resources may be notified or requested through the EOC.

1. Consider implementing mutual aid agreements (MOU) with neighboring Fire Departments.

2. Local law enforcement (APD, BernCo S.O.) and the FBI.

3. Volunteer search-and-rescue teams.

4. Medical air evacuation.

5. CABQ Public Works.

6. Public utility companies to control gas, electric, sewage, and water.

7. Structural engineers to determine and advise regarding building integrity.

8. Heavy equipment and operators from the construction and demolition industries.

9. Lumber and construction suppliers.

10. Red Cross for food services.

11. Sanitation services.

12. National Guard and military resources.

13. FEMA USAR - New Mexico Task Force 1.

14. Federal resource system.

III. Hazard identification

A. The Incident Commander should identify as many potential hazards as may be found within the incident purview, and ensure that responders take preventive measures to guard against injury. Common hazards that may be encountered during a structural collapse operation include the following:

1. Structural instability.

   a. Weakened structural components.

   b. Free standing walls.

   c. Damaged chimneys.

   d. Secondary collapse.

2. Overhead hazards

   a. Suspended loose debris.

   b. Power lines.

3. Surface hazards.

   a. Sharp debris and impalement hazards.

   b. Slippery surfaces.

   c. Downed power lines.

   d. Trip hazards.

4. Below-grade hazards.

   a. Hazardous atmospheres.

   b. Flooding from water mains and/or water pipes.

5. Utility hazards.

   a. Electricity.

   b. Natural gas.

   c. Water or sewage.

6. Other potential hazards.

   a. Confined spaces.

   b. Hazardous materials that are unique to the occupancy type.

   c. Fire and/or explosion potential.

   d. Vibration from rescue efforts or heavy equipment.

   e. Hazardous dust and particulate matter.

   f. Lack of scene control that may lead to unsafe or unorganized rescue efforts.

IV. Indicators of secondary collapse potential

A. Leaning walls.

B. Unusual building sounds.

C. Sagging floor or roof assemblies.

D. Missing, damaged or separating connection points of structural components.

E. Excessive loading of structural elements.

F. Sliding plaster and airborne dust.

G. Separating walls.

H. Racked or twisted structures.

I. Building vibration.

V. Personal protective equipment (PPE)

A. Conventional structural firefighting PPE may not be appropriate for search and rescue operations in collapsed structures.

B. The following equipment is required to be worn when engaging in search and rescue operations.

1. Helmet.

2. Steel-toed boots.

3. Fire resistant coveralls or long sleeve shirts.

4. Gloves.

5. Eye protection.

6. Air particulate masks or respirators, as required.

VI. Structural collapse hazard control

A. Secure utilities: gas, electric, and water.

B. Eliminate surface hazards.

C. Use atmospheric monitors or chemical detection devices to identify the presence of hazardous materials.

D. Ventilate void spaces that are to be entered.

E. Stabilize structure with shoring systems for search and rescue operations.

VII. Search and rescue operations

A. Phase 1. Establish command, perform size up, and recon the incident area.

1. Establish equipment and personnel staging areas.

2. Evaluate structural stability.

3. Shut down all utilities.

4. Establish scene control.

5. Establish hazard zones.

6. Control any potential hazards.

7. Implement and communicate the Incident Action Plan (IAP).

8. Identify search priorities to locate victims.

9. Establish and deploy search teams.

   a. Building marking systems should be utilized as indicated below.

   b. Search teams are tasked to identify victim location.

10. Deploy rescue teams to effect patient extrication.

11. At major incidents establish building “triage teams” to establish search and rescue priorities.

B. Phase 2. Remove surface victims as quickly and safely as possible.

1. Most surface victims are recovered by first responders or civilians.

2. Surface victims account for 50% of all victims.

C. Phase 3. Search void spaces and other accessible spaces.

1. If possible, rescue teams should attempt to gain access vertically, rather than horizontally, to reduce the possibility of secondary collapse.

2. Confined space practices should be utilized when entering voids.

3. Utilize search techniques as indicated below.

4. Utilize appropriate shoring systems.

5. 30% of victims will be lightly trapped.

D. Phase 4. Selected debris removal

1. Patient location should be pre-determined by search methods.

2. Remove debris to access patients.

3. Utilize appropriate shoring systems.

4. The situation may require breaching and breaking techniques.

5. Treat patients for “Crush Syndrome” prior to extrication attempts.

6. Void space or non-structural entrapment accounts for 15% of rescued victims.

7. Entombed victims account for 5% of rescued victims.

E. Phase 5. General debris removal

1. All known victims have been removed.

2. This situation requires heavy equipment and equipment operators.

3. This effort mainly involves the uncovering of human remains.

VIII. Search for victims

A. Search efforts must be given proper emphasis at the beginning of an incident to identify the location of live victims. At least two search methods should be used to verify a victim's location. The types of searches are identified below:

1. Physical search.

a. Visual.

b. Hailing system (voice call-out).

c. Enter accessible interior passages.

d. Enter void spaces.

2. Canine searches using specially-trained disaster dogs for specific search goals.

a. Live victim dogs.

b. Cadaver dogs.

3. Technical search techniques may involve the use of specific equipment.

a. Acoustic listening devices.

b. Fiber optic cameras.

c. Search cameras.

d. Thermal imaging cameras.

IX. Federal Urban Search and Rescue (USAR) building marking system

A. The Albuquerque Fire Department has adopted the Federal USAR building marking system and the "emergency signaling and evacuation procedure" for structural collapse incidents.

B. Structural / hazard evaluation marking

1 Designed to identify specific information pertinent to each affected building, based on structural evaluation.

2. A 2' x 2' square box, spray painted orange, adjacent to the most accessible point of entry.

a. The box may contain diagonal lines indicating structural stability.

b. An empty box means that the building is safe for search and rescue operations.

c. A single slash means that some areas are relatively safe, but other areas may require shoring systems.

d. An X indicates that the structure is not safe for search and rescue operations and will not be entered by rescuers.

e. Figure 1 illustrates the marking system.

Figure 1

3. The area left of the box has an arrow indicating direction to the safest entry point.

4. The area right of box is text used to indicate specific information.

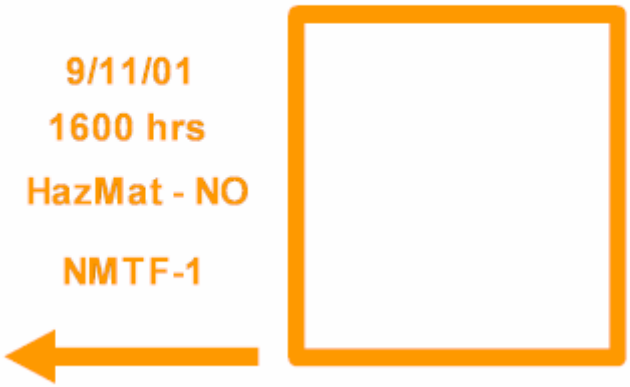
   a. Date and time of search.

   b. Hazards found.

   c. Search company or team designation.

   d. Figure 2 illustrates additional information that is provided.

Figure 2



X. Search assessment marking

A. A separate and distinct marking system is used to denote information relating to victim location in the areas searched.

B. It is used in conjunction with the structure/hazard evaluation marking system.

C. A 2' x 2' X, spray-painted orange, is formed on the side of the building near each area of entry.

   1. The X is constructed in two separate operations.

a. A single slash indicates search operations in progress.

b. Completing the X indicates that the search is complete and that rescuers have exited the building.

D. Areas within the X are marked accordingly.

1. The left quadrant indicates the rescue team identifier.

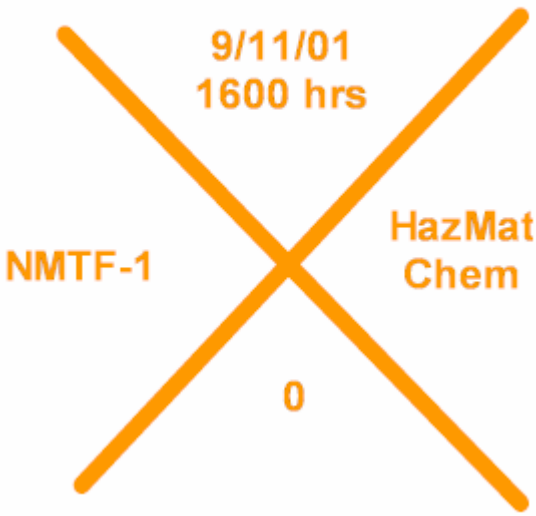
2. The top quadrant indicates the date and time that rescuers departed the structure.

3. The right quadrant indicates personal hazards found.

4. The bottom quadrant indicates the number of live and dead victims still inside the structure. A zero (0) is used to indicate no victims.

5. Figure 3 illustrates the search assessment marking system.

Figure 3



XI. Emergency signaling and evacuation procedures

A. Alerting devices, such as air horns, should be utilized to signal rescuers working in the hazard zone. Specific signals are commonly used to identify required actions.

1. Evacuate the area – 3 short signals (one second each).

2. Cease operations/All quiet – 1 long signal (3 seconds).

3. Resume operations – 1 long and 1 short signal.

XII. Termination of operations

A. Upon determining the termination of operations, the Incident Commander should perform or consider the following measures:

1. Obtain a personal accountability report (PAR) from all sectors.

2. Inventory and return all equipment to the appropriate apparatus.

3. Place damaged equipment out-of-service and notify one of the Heavy Rescue Commanders for a repair order/replacement authorization.

4. Decontaminate personnel and equipment as needed.

5. Coordinate termination activities with other agencies involved.

6. Consider the need for a Critical Incident Stress Debriefing (CISD).

7. Provide a tailboard critique and consider a formal debriefing at a later date and time.

River Rescue

Purpose

The purpose of this guideline is to define the measures that should be considered when responding to river rescue or irrigation ditch rescue incidents, and the Albuquerque Fire Department approach to dealing with those events. They are intended to maximize responder safety, department resources, and victim rescue potential.

Guideline

River Rescue applies to incidents that occur in the Rio Grande River, irrigation ditches, and slower moving water in the North Diversion Channel. A clear distinction must be made between River Rescue and Swift Water Rescue. At AFD, "Swift Water" refers to fast-moving water (with velocities greater than 15 MPH) which is often found in arroyos and flood control channels. This guideline addresses rescue efforts in slower moving water (with velocities less than 15 MPH) which is often found in the Rio Grande River, irrigation ditches, the North Diversion Channel, or in flooded areas. These “in-water” rescue techniques should only be performed in slower moving water, as defined above.

The Heavy Rescue Task Force, consisting of all companies assigned to Fire Station 3 and Battalion 2, provides a River Rescue capability. Only recognized River Rescue Technicians may enter the water (hazard zone) to perform in-water rescue techniques. River Rescue Operations may include shore based, boat-based, and contact swimming rescues.

Operational Guidance

I. River rescue considerations

A. The Rio Grande’s flow is very low in volume and is measured in cubic feet per second.

B. A thunderstorm may easily double or triple the flow within a short period of time.

1. As water speed is doubled, its force is quadrupled.

C. Low and high water levels present their own unique hazards and should be included in the size-up.

D. The United States Geological Survey provides a website at www.USGS.gov that contains real-time flow information for at least three locations along the Rio Grande.

E. The Rio Grande and the irrigation ditches contain what is considered to be "Cold Water".

1. Cold water is defined as being colder than 70 degrees Fahrenheit.

F. An Albuquerque Open Space master key is required to open the gate locks that provide access to the roads adjacent to the Rio Grande and irrigation ditches. The following units have access keys for these locks:

1. All Battalion Commanders.

2. Squad 2.

3. Wildland firefighting companies.

G. Equipment logistics

1. River rescue equipment and an inflatable boat is stored in a Sport Utility Vehicle that is housed at Station 3.

a. The boat should be inflated and secured on top of the SUV vehicle during the City's "monsoon season" and parked inside the fire station.

i. The rainy season typically begins in early July and ends in mid-September.

b. During all other periods, the boat may be deflated and stored inside the SUV vehicle and parked outside in the station parking lot.

II. 911 caller interview

A. AFD Dispatch will follow appropriate Fire Priority Dispatch protocol.

1. Standard questions for River Rescue (72 Echo 3) calls apply.

B. AFD Dispatch will additionally attempt to gain the following information from the caller:

1. Determine what ditch or section of the river the victim is in, and at what cross street and/or bridge the victim was last seen.

2. Determine if the victim(s) are moving in the water or are stationary.

3. Strongly consider dispatching another fire company or APD to interview third party witnesses that cannot be readily interviewed by phone.

III. Deployment considerations

A. For incidents in which the victim(s) are reported to be moving downstream, the Incident Commander does not need to be on-scene, but can assume a geographic command over all rescue sites.

1. Driving code 3 does not facilitate adequate communication, planning, forecasting or incident coordination.

2. At the discretion of the Incident Commander, a second Battalion Commander may be dispatched to the primary rescue site.

3. All dispatched companies will communicate "enroute" and "arrived" transmissions by both radio and MDT.

4. Command will assign sectors according to the cross street or by the geographic area where companies are located.

a. Example: Rio Grande at Alameda Bridge becomes the “Alameda Sector.”

5. All Sector Officers will inform Command when their sector is prepared for rescue operations.

B. For all other incidents, such as river rescue events based in one geographic location or where the victim is stationary, responding companies should respond directly to the incident location, as per dispatch protocols.

IV. APD role and responsibilities at river rescues

A. The role and responsibility of Albuquerque Police Department personnel in River Rescue is limited to specific issues.

1. Spotting the location of the victim(s).

2. Witness interviews.

3. Scene, crowd, or traffic control.

B. AFD-APD communication and coordination.

1. The AFD Incident Commander will contact APD on the “Metro” Talk Group and switch to the appropriate APD Channel.

a. The AFD Incident Commander will inform APD of incident details, as currently known.

b. The AFD Incident Command will request the APD Officer-in-charge to coordinate the spotting locations as determined by AFD Command.

c. It is imperative that APD provide timely information to the AFD Incident Commander.

V. Personal protective equipment (PPE) and HazMat precautions

A. Specific PPE will be worn during all River Rescue operations.

1. Swift water rescue helmet.

2. Knife.

3. Whistle.

4. Personal flotation device (PFD) Type III or V.

5. River rescue boots and fins.

6. Work gloves when handling ropes.

7. Dry suits for in-water rescue operations.

B. Water may contain biological and chemical contaminants.

1. The use of dry suits for in-water operations will reduce exposure potential.

2. River Rescue Technicians should avoid swallowing river water and have clean drinking water available to rinse out their mouths upon exiting the water.

3. Gross decontamination will be provided by an Engine Company, using tank water upon the rescuer exiting the water.

VI. Considerations for rescuer safety

A. "Self-sacrifice in rescue operations is traditional and commendable…. and usually a useless waste" (Rescue 3 International).

B. The desire to save a life that is already lost, especially a child's, can be fatal to a rescuer who ignores safety considerations. Rescuers must not allow compassion for that which is already lost to overrule better judgment or compromise the initial risk assessment.

C. Every rescue operation should establish downstream safety teams.

1. Safety teams should have throw bags.

2. Rescue board swimmers and/or additional personnel should be available to assist with victim removal.

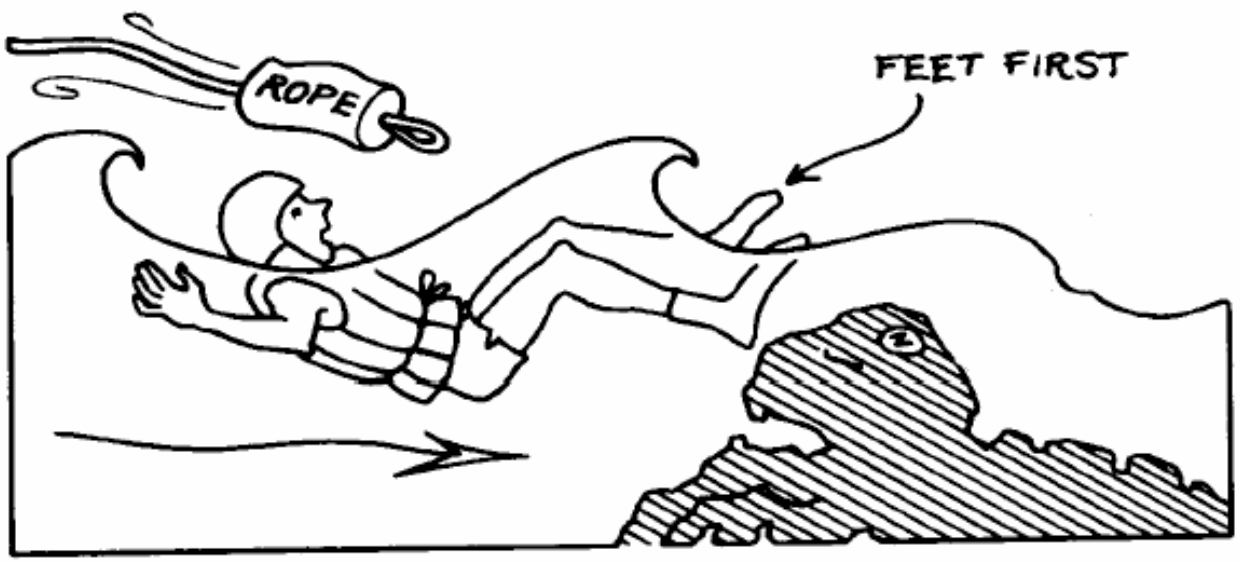
VII. Essential self-rescue skills

A. Any crewmember assigned to shore operations who falls in the water should utilize basic survival techniques.

1. Assume a safe swimming position: facing downstream, on one's back, keeping feet near the surface of the water.

a. This position minimizes the danger of entrapment [in obstacles or current hazards.

b. This position allows a downstream view and allows one to avoid/ fend off obstacles with the feet.



2. Avoid foot entrapment, which can lead to drowning as the force of the current is usually strong enough to prevent self-rescue.

   a. A person in the water should not attempt to stand up or stop going downstream by pushing against the river bottom with one's feet as this invites foot entrapment.

   b. Foot entrapment is usually caused when a swimmer attempts to stand up in moving water and gets a foot jammed into a crevice.

3. Get out of the water as soon as possible.

   a. Swim aggressively toward eddies (slow moving water).

   b. Do not attempt to stand up until completely out of the main current.

4. Be prepared for, and expect, a rescue attempt using throw ropes.

   a. Catch the throw rope.

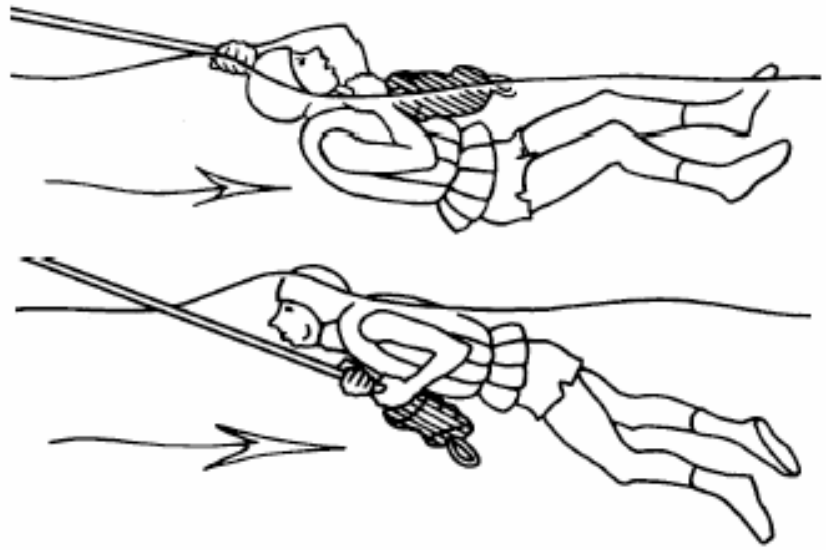
   b. Pull the rope to your chest.

   c. Roll over on your back, putting the rope over the shoulder furthest from the bank toward which you are headed.

d. Face downstream with the rope over your shoulder, angling your body at a 45º angle to the current.

i. This body position, which is called a ferry angle, will cause the water to push you more quickly toward the side.

e. Do not grab the rope and face upstream, since this action will get you a face full of water and cause you to let go of the rope.



5. Swim aggressively away from strainers.

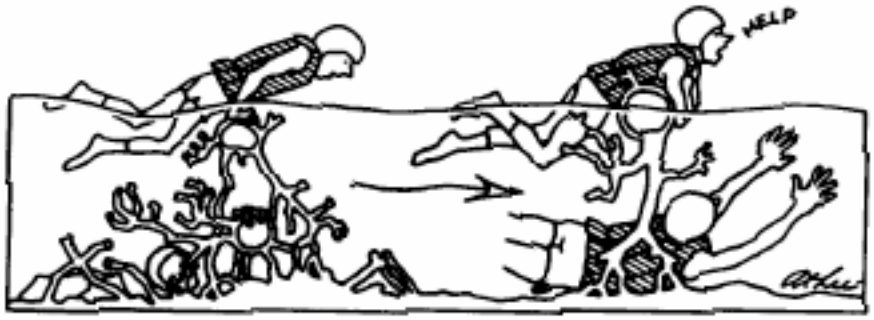
a. Strainers are obstacles through which the current is flowing, and constitute a drowning hazard for any victim who becomes entangled in the strainer. The best defense against strainers is to avoid them.

a. If you see a strainer, swim aggressively away from it at a right angle to the current.

b. If you cannot avoid it, quickly change swimming position: Roll over and swim as fast as possible toward the strainer.

ii. Try to hit the strainer with some momentum and pull yourself up onto the strainer.

iii. The goal is to, first, avoid being swept under the strainer, and second, to get your body out of the water and away from the force of the current.



6. React to stationary underwater debris as you would a strainer.

   a. Stationary underwater debris may leave very little “signature” on the water’s surface.

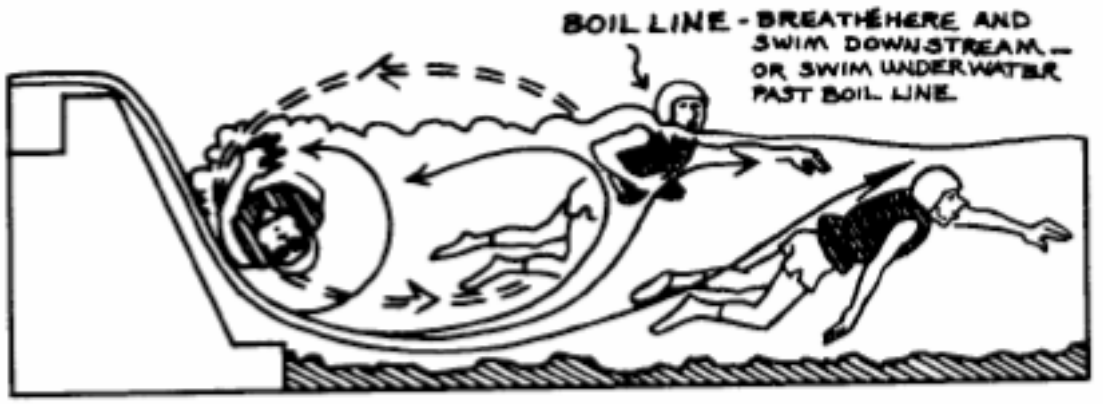
   b. Stationary underwater debris may act as a strainer or may snag clothing.

7. If the current is taking you over a vertical drop, pull your knees up against your chest and “ball up” to avoid foot entrapments and extremity injury,

8. If the current is taking you over a low-head dam (also called a “hydraulic”), which is a backwash that traps and recirculates anything that floats, your primary concern is to avoid getting caught underwater in the re-circulating current.

   a. Escape can be very difficult and can best be accomplished by swimming downstream, after surfacing.

   b. An alternate escape method is to catch the downstream current while underneath the water’s surface.



9. Avoid bridge abutments by swimming aggressively away from them at a right angle to the current.

    a. Bridge abutments usually have little in the way of a hydraulic cushion and often collect debris piles which become dangerous strainers.

VIII. Rescue techniques

A. "Reach" operations

1. Reaching is the safest and most preferable method of water rescue and should be the rescuer's first choice option. Objects which can be utilized include:

    a. Pike pole.

    b. Stick.

    c. Piece of hose.

    d. Backboard.

    e. Water rescue flotation buoys (Jim Buoys).

2. A rescuer who remains on shore and reaches an object to a person in the water can quickly assist the victim while maintaining a high degree of safety.

B. Throw bag operations

1. More people are rescued in moving water with throw bags than with any other method.

2. Rescuers assigned to perform throw bag operations should take at least two throw bags and deploy in an area where the victim can be safely brought to shore.

3. Throw Bag protocols are more thoroughly explained in the Swift Water Rescue Systems Guideline.

C. Boat operations

1. Inflatable boats provide a safe, stable rescue platform for in-water rescue operations and should be considered when shore-based techniques would be ineffective.

a. Boat operations require access to an upstream boat launch and a downstream takeout site.

b. The boat can be operated as a free-floating rescue platform or can be tethered on a rope rescue system.

2. Flat water (very slow moving water) is ideal for using paddles to maneuver the rescue boat into position.

3. Boat-tethered rope systems include the following:

a. Two-line tether.

b. Four-line tether.

c. High line with shore-controlled descent.

d. High line with boat-controlled descent.

4. The system used should be based upon the following considerations:

a. Water flow.

b. Number of victims.

c. Set-up time.

d. Weather.

e. Stability of the situation.

f. Rescuer and victim safety.

g. Available equipment.

h. Number and availability of trained personnel.

D. Rescue swimming operations

1. At times, the most effective rescue method is to deploy rescue swimmers into the water to affect the rescue by direct contact with the victim.

2. Rescue swimmers must be recognized River Rescue Technicians and be properly equipped and supported to perform in-water rescues.

3. Direct victim contact is the most dangerous type of water rescue technique and at no point should the rescue swimmer feel they must sacrifice themselves in order to provide for the rescue of a panicked victim.

a. Panicked swimmers are not rational and will grab on to anything, including the rescuer, in order to stay afloat.

b. Rescuers should avoid direct contact with panicked victims by employing evasive swimming maneuvers.

c. Panicked victims should be rescued by providing a floatation device (such as a rescue board) to the victim, who should then be towed to safety by the rescue swimmer.

d. Direct contact rescue techniques may be used on cooperative victims.

E. Boat-based rescue is usually the safest rescue technique when a vehicle is in the water with trapped victims inside.

1. Rescue operations should focus on removing the victims in the safest manner possible with the least amount of risk to the rescuers.

2. If the vehicle is unstable, stabilize the vehicle by attaching a winch cable or hoisting rope (a cable is preferable) to one of the vehicle posts to keep the vehicle from rolling or moving. Consider requesting a tow truck or wrecker.

3. Prior to any rescue attempt, provide personal flotation devices (PFD) and helmets to all victims.

4. Access the vehicle utilizing the inflatable boat or other reaching options, such as ground ladders**.**

a. Consider approaching the car from the eddy created downstream of the vehicle itself.

b. Be prepared to break windows.

c. Be aware that there may be sharp metal edges or other hazards located below the water line.

8. Rescuers should not be put at risk to salvage a vehicle.

a. River Rescue Technicians shall not go below the surface of the water to connect tow chains or straps.

b. The AFD/APD Metro Dive Team should be activated and deployed for any sub-surface salvage operations.

IX. Victim search considerations

A. The Heavy Rescue Task Force may be deployed to perform a search for submerged victims.

B. Additional resources may be needed to search the banks of waterways.

C. Witnesses must be interviewed to help determine a “last seen point.”

D. Every effort should be made to perform a rapid and complete search of a reasonable area to ensure victim accountability.

E. The Metro Dive Team may also be activated and deployed for sub-surface victim search.

X. Patient care considerations

A. All victims should be assessed for

1. Near–drowning.

2. Hypothermia.

3. Traumatic injuries.

B. Consider using low angle rope rescue techniques to evacuate litters up slippery slopes.

C. Handle patients gently even if they are conscious due to possible hypothermia.

D. Aggressive airway management should be considered for any unconscious near drowning victim per medical protocols.

E. All near-drowning patients should be transported to the hospital for further evaluation.

XI. Post deployment

A. Following any water deployment, the ranking officer shall ensure that all equipment is inspected, dried and returned to the appropriate response vehicle.

B. PPE will be inspected and returned to serviceable condition.

C. Dry suits will be rinsed in clean water and hung to dry by the feet.

1. After the dry suits are dried, zippers will be lubricated and worked with plain paraffin wax on both sides of the zipper teeth.

2. Wrist and neck seals will be treated with unscented talc and returned to their storage bags with the bag zipper ¾ open.

D. Ropes will be appropriately maintained.

1. Clean and dry ropes.

2. Rescue rope use will be documented in the rope log.

3. Rescue rope designated for water/river rescue will be kept separate from other rescue rope and will not be used for high angle rescue operations.

Incident Review

Purpose

This purpose of this guideline is to define the Albuquerque Fire Department method for conducting post incident reviews.

Guideline

It is the direction of the Albuquerque Fire Department that emergency response companies participate in post-incident reviews of most incidents in which they are involved. While the battalion commander or company officer can conduct a review after any incident, participants will benefit most when a post incident review is conducted at the incident scene. The “tailboard reviews” will include any information that can reinforce learning, and should allow all participating personnel to review what they observed, what they did, what they did well, and what they would do differently.

Operational Guidance

I. Review guidelines

A. The post-incident review should be conducted and concluded on a positive note. Single company reviews, which are conducted by officers after an incident or training exercise, can be used to chart a company’s improvement. In areas such as safety, the review may assist in focusing on areas a company may need to improve.

B. Criticism and comments by other members should be held for the end and then carefully handled by the officer conducting the review for positive outcomes.

C. Most tactical areas should be identified for discussion in each review.

1. Response times.

2. RIT response.

3. Safety.

4. Firefighting.

5. Rescue.

6. Property Conservation.

7. Loss Control.

8. Other customer service issues.

D. The reverse side of the tactical worksheet and other review check sheets are good tools to use in assisting a review of any incident. Visual references of the scene should be used whenever possible.

II. Safety component

A. The purpose of the safety component of the review is to emphasize firefighter safety by reinforcing safety behaviors, assessing current safety levels, measuring performance, and identifying areas where safety improvements can be made.

B. The safety portion of the review should be facilitated by the incident safety officer (ISO). The focus of the review should be on the overall operation, firefighter safety and survival, and customer service.

C. Reinforce all safety behaviors. In doing so, remember that individual successes should not outweigh the safety of the overall operation or crews. The ISO should address the following elements:

1. General risk profile.

2. Effectiveness of personnel accountability system.

3. Rehabilitation.

4. Use of personal protective equipment (PPE).

5. Any close calls.

6. Any responder injuries.

Purpose

This purpose of this guideline is to establish the Albuquerque Fire Department's guidelines for emergency communications.

Guideline

It is the mission of the Albuquerque Fire Department to respond to any report of an emergency that threatens the life, safety, or property of anyone within the AFD jurisdiction. It is the responsibility of the first-arriving units to provide timely and adequate information to both AFD Dispatch and to additionally responding units.

Timely response and effective communications represent immediate priorities in the successful mitigation of an emergency event.

Operational Guidance

I. On-scene reports

A. Units arriving at the scene of incidents must report that they are "On Scene" by MDT, or by radio if an MDT is not available.

1. No voice message is necessary when only one unit is responding, unless conditions at the scene are obviously different from the reported nature of the incident.

2. When more than one unit is responding, the first arriving unit shall report that they are "On scene," and additionally report their respective unit identification, on the assigned frequency, in addition to the MDT message.

II. Size-up report

A. The first-arriving unit at the scene of a First Alarm incident will give a brief size up report describing the situation.

B. For structure fires, the report should include all relevant information.

1. Apparent conditions.

a. Nothing showing (indicates that the situation is being investigated).

b. Smoke showing (should be reported when smoke is visible).

i. The report should describe the amount, color, and location of the smoke.

c. Fire showing (as appropriate, should describe the amount and location of the fire).

d. Working fire.

e. Fully involved.

2. Structure type.

a. Construction type (wood frame, ordinary, or heavy masonry).

b. Occupancy (residential or commercial).

c. Size (large, medium, small).

d. Height (assumed one story unless reported otherwise).

3. Action(s) taken.

a. Assuming command.

b. Laying supply line

i. Catch a hydrant with a 5 inch or 2 ½ inch.

c. Attacking with (hoseline size, or quick attack).

4. Attack Strategy

a. Offensive.

b. Defensive.

5. Accountability location.

a. Identify using recognizable place or street names.

b. Compass points (North, South, East, or West).

C. A size-up report is also required for brush fires or for any other significant incidents.

III. Command considerations

A. Establishment of Command limits minimizes communications on the radio.

B. Once command has been established, all communication between AFD Dispatch and the incident will be directed through the Incident Commander.

IV. Progress reports

A. During active firefighting operations, Command will provide AFD Dispatch with regular progress reports when significant tactical plans are changed or unusual situations are encountered.

B. Progress reports should be given in a timely and informative manner:

1. The first progress report should be given after initial action has been implemented, and should include the correct address and improved description of the building and fire condition if the arrival report was incomplete.

2. The first report should include the declaration of a working fire when appropriate and give an indication of the time companies will be held at the scene.

a. This will assist AFD Dispatch in making relocation assignment decisions.

b. AFD Dispatch will repeat the significant facts from all progress reports for the information of monitoring units.

V. Working Fire

A. The term “Working Fire” indicates a situation that will require the commitment of all responding companies.

1. This report advises AFD Dispatch that the companies will be engaged in tactical activities and will be held at the scene for an extended period of time.

B. When notified of a Working First Alarm or greater, AFD Dispatch will assume specific responsibilities.

1. Assign a Tactical Channel if requested by Command.

2. Dispatch APD for traffic and crowd control.

3. Dispatch gas and electric utilities when the need is indicated.

4. Be prepared to dispatch additional units for assistance.

5. Be prepared to dispatch any special agencies or equipment when the need is indicated.

6. Evaluate the need for relocation assignments.

7. Monitor radio traffic on all incidents to assist command as needed.

VI. Staging considerations

A. Units arriving in Level I Staging will report their unit identification and travel direction on the assigned Tactical Channel.

1. If assigned to a division or group on the fireground, the “On scene” key shall be depressed.

B. If Level II Staging is requested by Command, AFD Dispatch will announce the staging location, and dispatch all further assistance to that location.

1. Units arriving at the Level II staging area will report in person to the Staging Officer.

2. The Staging Officer will manage all radio communications to and from the staging area.

VII. All Clear, Under Control, and Loss Stopped

A. AFD Dispatch will acknowledge “All Clear,” “Under Control” and “Loss Stopped” reports from Command only.

1. The times received will be announced by Dispatch as the reports are given.

B. To avoid confusion between ordering primary search and reporting "All Clear," the following standard terminology will be used:

1. "Primary Search" is the term that refers to the function of performing a primary search and rescue.

2. "All Clear" is a completion report for a primary search.

a. Example: "Ladder 1 perform a primary search," is the order.

b. Example: "Ladder 1 has an All Clear," is the report indicating that a primary search has been completed.

3. "Under Control" is the term that means the forward progress of the fire has been stopped.

4. "Loss Stopped" is the term that means salvage and overhaul work is complete.

VIII. Accountability considerations

A. A Personnel Accountability Report (PAR) iinvolves a roll call of all personnel assigned to the event.

1. For the company officer, a "PAR" is a confirmation that members assigned to his/her crew are visually accounted for and indicates the crews current location.

a. Example: Command to Ladder one, are you PAR?"

b. Example: "Ladder one to Command, Ladder one is on the roof and PAR"

IX. Returning companies

A. Only Command can release companies from an incident.

1. Command will identify which units to "Hold" at the scene, and which units are being "cleared" from the incident.

2. AFD Dispatch will re-transmit this report from Command.

a. The balance of the assignment will automatically return to service, changing their status to “Available on Radio” and acknowledging their status to dispatch via the radio (AOR).

b. Committed companies returning back to service will change status to AOR when ready.

X. Division and groups

A. Division or Group officers should use a face-to-face mode of communication with assigned companies, as much as possible or practical.

B. Division or Group officers will keep Command informed of progress, by radio, regarding all significant progress or any problems that may be encountered.

XI. Support staff

A. Support staff members with fireground responsibilities will respond to greater alarms for assistance.

B. Support staff members may carry out various Division or Group functions.

1. Support staff members will report in person to the Command Post for assignment.

2. Communications from Support staff personnel should be with Command as much as possible; however, there will be situations that require direct communications with Division or Group Officers.

a. Support staff communications should be face-to-face whenever possible or practical.

XII. Communications order model

A. Radio communications will be regulated at all times.

B. Radio communications will be regulated by the following Order Model guidelines:

1. The sender will identify themselves using their unit ID and call the receiver using the receiver’s unit ID.

2. The receiver will give their ID to indicate they are ready to receive.

3. The sender will then extend their message, order, or report.

4. The receiver will respond with their ID, and acknowledge receipt of the transmitted message with a brief restatement.

5. AFD Dispatch will acknowledge all communications directed to them by a brief restatement of the message, with particular attention given to repeating on the scene, size-up and progress reports, recall reports, requests for additional resource and "All Clear," "Under Control," "Loss Stopped" and "PARs."

XIII. Emergency Traffic

A. The term "Emergency Traffic" will be used by any unit encountering an immediately perilous situation.

1. It will receive the highest communications priority from AFD Dispatch, Command, and all operating units.

B. Units may initiate emergency communications by verbally contacting the Incident Commander.

1. Example: "Ladder 1 to Command with emergency traffic." The unit will transmit their message.

2. Command will then repeat the message one time.

3. If Command does not acknowledge the transmission, the reporting unit will then establish contact with AFD dispatch and transmit the emergency message.

a. AFD Dispatch will then reinitiate the emergency traffic sequence with the Incident Commander.

C. The radio airwaves belong solely to the unit transmitting the "Emergency Traffic" report.

XIV. May Day messages

A. The radio message "May Day" will be used by firefighters to report their status as being in trouble and needing rescue.

B. Any member may use “May Day” to report a lost firefighter.

C. Any report of “May Day” will receive priority radio traffic.

D. The term “May Day” will be reserved only to report missing or trapped firefighters.

1. The term “Emergency Traffic” will be used to report all other emergencies.

XV. Clear text communications

A. “Clear Text” radio messages should be used in preference to numerical codes to clarify understanding

B. There is no official Albuquerque Fire Department radio code. The following coded messages (from the old AFD 10 Code) may be used in sensitive situations, if the transmission of a plain language message could cause a problem at the scene:

1. Rape: 10-43-2.

2. Dead body: 10-58.

3. Need Police Assistance Urgently: 10-83.

4. Bomb threat: 10-99.

C. Units should advise AFD Dispatch regarding the nature of their requests.

1. AFD Dispatch personnel should be aware of possible sensitive situations and word messages to field units accordingly.

XVI. Effective radio communications

A. Effective radio communications requires that users maintain radio discipline.

B. All emergency communications should follow strict guidelines.

1. Messages should be short and specific.

a. Before transmitting, you should know what you are going to say.

b. Do not make it up as you go along.

c. Choose precise terms to communicate the desired message as clearly and briefly as possible without wasting air time.

2. Messages should be task-oriented and/or company-oriented.

a. Orders received by companies should indicate a specific task that is assigned to the company.

b. It should be of a magnitude that can be reasonably performed by a single company, alone, or in concert with other companies.

3. Messages should indicate objectives.

a. In addition to being task and company oriented, assignments should indicate a clear objective to the action.

b. The assigned company should know exactly where to go, to whom they will report, what the task is, and what is the objective of the task.

c. Orders should tell what to do and not how to do it.

4. Messages should be given in a clear tone, with verbal self-control, and at an effective speaking rate.

a. Speak clearly at a practiced rate: not too fast and not too slow.

b. Deliberately control your emotions and excitement.

c. If you do not consciously control your voice, it will become garbled under stress.

5. Messages should be well-timed and effectively spaced.

a. Prioritize your messages.

b. Do not use up valuable air time with unimportant messages and insignificant details.

c. Let critical messages go first. Maintain an awareness of the overall situation and how you fit into it.

6. Do not interrupt conversations unless you have "Emergency Traffic." Listen before transmitting and wait until a message transaction has been completed.

7. Pause between consecutive messages.

a. This will make it clear when one message has been completed and another started. It will give other units a chance to get on the air with important messages.

C. Examples of appropriate radio reports.

1. For an offensive structure fire:

a. "Engine 11 is on the scene of a large two-story school with a working fire on the second floor.

b. Engine-11 is laying a 5-inch supply line and going in with a 2½ handline to the second floor for search and rescue.

c. This is an offensive fire attack. Engine-11 will be 7th Street Command and accountability."

2. For a defensive structure fire:

a. "Engine 1 is on the scene of a medium-size warehouse fully involved with exposures to the east.

b. Engine 1 is laying a 5 inch supply line and attacking the fire with a master stream and a 2½ inch handline to the exposure for search and rescue and fire attack.

c. This is a defensive fire. Engine 1 will be Lead Avenue Command and Accountability."

3. For an EMS incident:

a. "Ladder 3 is on the scene of a multi-vehicle accident.

b. Dispatch two rescue units and two ambulances, Code Three.

c. Ladder 3 will be Hermosa Command."

4. For a single company incident:

a. "Engine 6 is on the scene of a dumpster fire with no exposures.

b. Engine 6 can handle."

May Day Communications

Purpose

The purpose of this guideline is to identify communication priorities in the event that a firefighter is reported as lost or trapped. A well-defined communications structure is essential for any rescue operation, and AFD Dispatch plays an integral role in ensuring the effective rescue of firefighters.

Guideline

It is incumbent on Command to maintain an awareness of all fire personnel operating on the fireground. This should be accomplished primarily through the use of assignments and an appropriate accountability system. If a firefighter cannot be located through a PAR, or is otherwise considered missing, any AFD member should announce a “May Day.”

Operational Guidance

I. “May Day” radio transmission

A. The radio message “May Day” will be used by firefighters to report their status as being in trouble and needing rescue.

B. Any member may use “May Day” to report a lost firefighter.

C. Any report of May Day” will receive priority radio traffic.

D. The term “May Day” will be reserved only to report missing or trapped firefighters.

E. The term “Emergency Traffic” will be used to report all other emergencies.

II. AFD Dispatch responsibilities

A. Upon receiving a “May Day” transmission, AFD Dispatch will immediately take specific actions.

1. Upgrade the event to a Second Alarm or to the next level of alarm.

2. Notify the executive command staff of the May Day transmission.

B. AFD Dispatch will announce “Emergency Traffic” on all tactical channels being used on the fireground.

C. AFD Dispatch will announce that a “May Day” has been transmitted for missing or trapped firefighter(s) - on all tactical channels being used on the fireground.

D. The Alarm Room Supervisor will immediately dedicate as many dispatchers to the incident as is possible.

E. AFD Dispatch will immediately advise Command to assign accountability for monitoring all fireground frequencies, in the event the missing firefighter broadcasts on an alternate channel.

F. All non-emergency activity in AFD Dispatch will be suspended and additional personnel will be requested to report on an overtime basis.

G. AFD Dispatch will closely monitor all radio channels for any transmission from the missing firefighter(s).

H. If the missing firefighter transmits on a channel other than one of the tactical channels, AFD Dispatch will maintain communications with the firefighter on that channel to ensure that once communications have been established that they are not lost.

1. The information will be relayed between the lost/trapped firefighter and Command.

I. Once the firefighter has been rescued, or at the conclusion of the incident, all personnel and outside agencies will be notified that AFD Dispatch is resuming normal operating conditions.

Public Information

Purpose

The purpose of this guideline is to define the roles and responsibilities of Albuquerque Fire Department personnel when releasing information regarding AFD policy or department participation in any incident. It also defines the role of the AFD Public Information Officer (PIO), and appropriate times to have the PIO dispatched.

Guideline

The Albuquerque Fire Department recognizes the need to provide timely information to the general public and to the news media, and to serve as an information resource for the community. It is the goal of the Albuquerque Fire Department to maintain an open and mutually productive association with the news media as a means by which to promote fire department activities and to coordinate the release of pertinent information to the public.

These guidelines are implemented in order to responsibly meet the goal of providing the factual and consistent release of fire department information regarding fire, EMS, or other emergency response incidents, as well as any other department-related information.

Operational Guidance

I. Command considerations

A. At a fire, EMS, or other emergency, the on-scene Incident Commander will be responsible for tracking information at the incident. The Incident Commander will also be responsible for the prompt release of that information to the news media as appropriate.

B. If a PIO is unavailable, each Incident Commander (or designee) will be responsible for addressing media inquiries in the areas under their command. The information will be provided to the next shift officer so that he or she can address inquiries that may occur after the shift change.

C. The PIO will be dispatched to all second and greater alarms, to incidents that result in a civilian or fire fighter injury or fatality, and to all incidents specifically identified in this guideline. Any Incident Commander may request, through AFD Dispatch, that the PIO be dispatched to assist in coordinating the release of incident information to the media.

II. Public Information Officer responsibilities

A. The department acknowledges the need that the news media has for a point-of-contact for timely and complete information; however, the department also recognizes the responsibility to ensure confidentiality on sensitive issues.

1. In order to meet each of these needs, the PIO will be the department spokesperson for the release of all AFD emergency scene information.

2. While on-scene, at an incident, the PIO will be responsible for the coordination of all media requests for information, access to emergency scenes, and/or interviews with fire department personnel.

3. The PIO will also track ongoing arson investigations for updates and will address information requests from the media.

B. The PIO will coordinate the release of any significant information with the on-scene Incident Commander. The Incident Commander will determine what information will or will not be immediately released to the media.

C. At an incident, the PIO will be stationed at the incident command post, and work under the direction of the Incident Commander. A media briefing area will be established at a location that is visible, readily accessible, and is away from the command post.

1. Media representatives will be made aware of the briefing area and of the need for them to report there. At no time will they be allowed to compromise fireground or emergency scene operations.

2. The PIO will keep the media periodically informed of pertinent events as they develop within the incident.

D. When released from the scene of an incident, the PIO will prepare an updated summary of the incident and transmit a copy of the press release to local radio, television, and print media.

1. Local media will be advised of the method by which primary dissemination of information from the department will be transmitted.

a. The methods currently in use include facsimile or email.

2. A copy of all press releases will be provided to the Fire Chief and to the Mayor's Communications Officer.

E. The PIO will advise AFD Dispatch upon his or her arrival and departure from the incident, using standard department radio protocol.

F. The release of any issues related to Albuquerque Fire Department administrative policy or personnel will be directed to the Fire Chief or his designee.

III. Media access

A. At some time during the incident, arrangements may be made for the media to have the opportunity to interview the Incident Commander or other responding personnel. The interview will take place away from the command post, when appropriate.

B. When deemed safe and appropriate, the media may be provided the opportunity to tour and/or photograph or film the incident. The PIO will obtain permission from the Incident Commander to allow media access to the emergency scene.

C. If the situation warrants only limited access, the PIO will request that the media members present on-scene coordinate an agreement to pool and distribute among themselves any photographs, film, or videotape of the scene.

1. In fairness to all media present, this should be done as expediently as possible. If an agreement among various media members cannot be reached, no access will be allowed.

2. The PIO will advise all media members of the dangers inherent in a fire, rescue, or emergency scene, and the risk posed to those entering the scene.

IV. Role of on-scene personnel

A. AFD units arriving on-scene are often faced with inquiries from news reporters seeking immediate information.

B. In many cases, this may occur before an initial size-up is complete or before fire/rescue operations are underway. In these situations, AFD personnel should observe specific initiatives.

1. Designate one assembly point and advise media members to assemble there while initial fire ground operations take place.

2. Advise media members that they may photograph, film, or videotape as long as they do not interfere with incident operations.

3. As soon as possible, the Incident Commander should arrange to meet with media representatives to provide the basic facts regarding the incident.

a. The information released should follow that compiled on the press release guide sheet.

b. The guide is attached as an appendix to this guideline.

4. All fire department personnel will be aware that it is AFD policy to never release the names of injured or deceased persons involved at an incident until the next of kin have been notified.

a. Names of the deceased or injured will not be used over radio transmissions.

b. Notification is generally conducted by local law enforcement agencies or the Office of the Medical Investigator (OMI).

5. Personnel should make every effort to cooperate with the media; however, if media personnel compromise incident safety or otherwise hinder incident operations, the request that they leave should be made in a positive, non-confrontational, manner.

a. If this is not possible, the matter becomes a police issue.

b. APD assistance should be immediately requested.

V. Fire investigations

A. In fulfilling their responsibility to provide professional fire investigations, AFD arson investigators will also be responsible for providing timely information regarding the cases to which they are assigned.

1. The department acknowledges the implicit necessity of confidentiality of information regarding open cases and maintains the right to keep such information restricted.

2. Fire origin and cause, and/or any other information that may be of interest to the public will be released, through a Public Information Officer press release, as soon as it is made available by fire investigators.

3. Fire investigators will make a reasonable effort to provide this information to the Public Information Officer in a timely manner.

VI. Dispatching the PIO

A. An incident commander may request that the Public Information Officer be dispatched to any incident, day or night. The following are incidents requiring automatic dispatch for the PIO:

1. When there is a need for the coordination of reporters and/or photographers at an emergency or non-emergency incident, and/or to all incidents where the dissemination of information may be warranted.

2. To any mass casualty incident (MCI).

3. To any fire-related fatality.

4. To any fire, HazMat, and/or explosion at a public or private school.

5. To any gas leaks in lines of ¾" or larger.

6. To any fire fighter injury requiring transport to a hospital.

7. To any Heavy Technical Rescue (HTR) incident.

8. To any evacuation of more than two single-family dwelling units.

9. To any Wildland Task Force incident (with the dispatch of additional units).

10. To any swiftwater or flood channel rescue dispatch with a confirmed victim.

11. To any incident that requires a dispatcher dedicated to the incident for communications.

B. The PIO will be notified of any incident that may generate media and/or public interest, including confirmed structure fires.

C. All contacts between AFD personnel and the news media should be reported to the PIO, in the event that additional information needs to be released or for the clarification of information or department policy.

VII. Routine incidents of special interest

A. Often, routine but “unusual” incidents occur that ordinarily would not get media coverage. These incidents may be of interest to the public and often would illustrate AFD operations in a positive manner.

B. Department personnel are welcome to report information of this type to the Public Information Officer. Incidents of special interest to the public can cover a wide range, but may include those illustrated through the following examples.

1. The development or implementation of a new program or equipment.

2. When a member of the public wakes a neighbor to alert him or her that their house is on fire, even if the fire causes minimal damage.

3. A baby is delivered by firefighters.

4. The first chimney fire or Christmas tree fire of the year.

5. When firefighters collect food, clothing, or money for a needy family, or when firefighters volunteer to help rebuild a home lost to fire.

6. Any incident or issue that department personnel would like to see addressed in the media.

7. Any incident where an EMD saves a life by providing pre-arrival instructions.

8. Any rescues involving children and/or animals.

VIII. Requests for information

A. AFD routinely receives requests for department information from private industry, community organizations, and various government agencies. As a subsidiary entity of the City of Albuquerque, all operations and activities of the department are public information.

B. The department will fulfill all reasonable requests for information as long as they are a matter of open public record. Information that will not be released includes personal information regarding department personnel; any information that would breach the rights of patient confidentiality, including the names or addresses of those injured or deceased at an AFD incident; or any information regarding open or on-going fire investigations.

C. All requests for information should be directed to the Public Information Officer at AFD Fire Administration. All requests for information regarding department policy will be addressed by the Fire Chief or his designee.

Appendix

This appendix provides a press release guide to be used for the dissemination of information to the news media. This appendix includes a guide sheet and instructions for completing it.

This is a guide for completing Appendix A.

1. **Date.** The date the incident occurred.

2. **Incident type.** Situation found, such as, house fire, chemical spill, building collapse, etc.

3. **Address.** Address at which the incident occurred.

4. **Occupancy type**. Single-family residence, place of assembly, school, etc. Provide the name of the business, apartment complex, and/or school.

5. **Times.** The media and public are concerned with response and incident control times.

6. **Reported by**. Note the person who reported the incident: neighbor, passerby, police, or resident.

7. **Occupant(s).** Note primary occupants.

8. **Owner(s).** Note of occupancy owners.

9. **Address of owner.** Note address of occupancy owner(s).

10. **Fire cause and origin.** As determined by the Incident Commander and/or fire investigator.

11. **Brief description of incident.** A brief summary of the incident telling the who, what, why, when, and how of the incident. Also describe the actions taken by fire personnel. Detail the type of attack and/or rescue actions performed.

12. **Estimate of total property value.** Provide an estimate in either monetary value or an estimate of occupancy size in square feet.

13. **Estimate of property saved.** Note an estimated value of the property and the extent saved by firefighters (in a percentage of the whole or in estimated square footage).

14. **Is the occupancy insured**. Note whether or not the occupancy was reported to be insured.

15. **Were there working smoke detectors?** Note whether or not smoke detectors were installed in the occupancy, and whether they were reported to be operational.

16. **Units and personnel on scene.** Note the identification of all AFD units on-scene at the incident; note the number of personnel assigned to those units. Also note other units, such as Red Cross, PNM, or other agencies that were on-scene at the incident.

17. **Injuries / fatalities.** In the event of either fire department or civilian injuries or fatalities, note the full name, age or date of birth, and extent of injuries. Note whether the patient was treated and released or where transported (if appropriate). It is AFD policy to never release names or critical information regarding a patient to protect patient confidentiality. Be aware of AFD policy prohibiting the release of names of the injured or deceased until next of kin notification is confirmed.

PRESS RELEASE GUIDE SHEET **Incident # _____**

1. Date: _____/_____/_____
2. Incident type: _____
3. Address: _____
4. Occupancy: _____
5. Dispatch time: ____:____

   Arrival time: ____:____

   Scene control time: ____:____

   Time that units cleared: ____:____
6. Reported by: _____

   Address: _____
7. Occupant(s): _____
8. Owner(s): _____
9. Address of owner(s): _____
10. Fire cause and origin: _____
11. Brief description of the incident: _____

    _____

    _____
12. Estimate of total property value: $ _____, or _____ total square feet.
13. Estimate of property saved: _____
14. Is the occupancy insured?: _____

15. Were there working smoke detectors? _____

16. Units and personnel on-scene:

Apparatus / Unit	Unit Identification	Number of personnel
Engine		
Ladder		
Rescue		
HazMat		
Battalion Commander		
Other units		
Total		

17. Injuries / fatalities:

Name	Age	Address	Injuries	Disposition

Protective Clothing

Purpose

The following are Albuquerque Fire Department guidelines for the use of protective clothing. By definition, full protective clothing includes – at a minimum -- turnout coat and pants (with liners in), Nomex hood, firefighting boots, firefighting gloves, a helmet with face shield, and goggles.

Guideline

It is the goal of the Albuquerque Fire Department to provide the highest level of personal protection to all members operating on the fireground. It is the responsibility of each company officer to ensure that those under their command are fully equipped in personal protective equipment while operating in potentially hazardous conditions. It is also incumbent upon each member to ensure their own safety by the full and appropriate use of protective equipment that has provided to them.

Operational Guidance

I. Tactical considerations

A. Full protective clothing shall be worn by fire fighting personnel while responding to all structural fire alarms. This may be considered as optional for drivers not assigned to RIT duties, as well as for command and/or command staff. When responding from quarters, all members shall dress accordingly prior to response.

B. It is the intent of this guideline that no member shall cause a delay in any fire fighting operation by not being fully prepared to engage in fire fighting activities in a safe manner.

C. Full protective clothing shall be worn at all times when operating on the fireground, or at other incidents requiring full protective clothing for personal protection, whether an actual or a potential hazard exists.

II. Special operations

A. The face shield and approved goggles shall be utilized at any time the need for eye protection seems apparent such as during overhaul, when operating hand or power tools, and when fighting trash fires, grass fires, and any other fires where the SCBA face piece is not being worn.

B. An appropriate wildland firefighting ensemble should be utilized by all personnel engaged in fighting wildland or urban/wildland interface fires.

C. Gloves shall be worn when engaged in firefighting, overhaul, training with hose and ladders, when using hand or power tools, and any other situation where injuries to the hand are likely to occur.

D. While operating at EMS incidents, all members shall wear protective clothing required to afford complete personal protection per the Exposure Control Plan.

E. Full protective clothing shall be worn when personnel are operating forcible entry equipment and tools,

III. Command responsibility

A. In specific situations for which no guidelines have been provided, the proper protective clothing shall be worn to protect against foreseeable hazards.

B. Crew members should inspect each other's protective ensemble for proper donning (with attention to details such as storm flaps and flash hoods) prior to entering a hazard zone or structure fire.

C. Company officers may use their discretion to regulate the "suit up" criteria in terms of any unusual circumstance, such as extremely long responses, out-of-quarters responses, or when the vehicle is moving at the time they are dispatched. At no time will personnel be permitted to don PPE without being secured by a seat belt while riding in a moving vehicle.

D. The use of turnout coats and Nomex hoods during overhaul operations will be at the discretion of Command and Safety Officer.

Thermal Imaging Camera

Purpose

This guideline describes the.specifications and best usage of the Scott Eagle Imager 160 Thermal Imaging Camera currently assigned to all AFD Battalion Commanders, Ladder companies, special operations Squad companies, and the Quality Improvement Officer (Unit 78). It will be available for use at structure fires, multiple victim motor vehicle accidents, or at any incident where the Incident Commander believes the camera to be of assistance.

Guideline

The Thermal Imaging Camera (TIC) is an invaluable tool. It gives firefighters the ability to "see" when visibility may be otherwise obstructed, whether at a fire alarm investigation, exterior size-up, search, ventilation, or loss control operation. While the TIC can assist the user in the fireground decision-making process, it must be regarded as just one element in the process.

Firefighters and officers must not rely completely on the TIC; all fireground factors must be considered when making such decisions. The TIC should not be regarded as a substitute for practiced and proven techniques used to accomplish fireground tactics. Use of the TIC does not preclude firefighters from using walls, hoselines, or ropes as methods for staying oriented within a structure while conducting search operations.

The TIC is simply a piece of equipment that enhances firefighter visual aptitude, and as such, is not a replacement for common sense. Firefighters must always remember that equipment can malfunction and /or fail when least desired.

Operational Guidance

I. TIC applications

A. Use of the TIC during search operations.

1. The primary search.

a. The TIC may be used on the fireground by ladder or rescue crews to assist in searching for victims. Whenever possible the crew assigned to conduct the primary search will utilize the TIC as an adjunct.

b. The search will be conducted using a standard “right” or “left” hand search pattern while maintaining contact with interior walls. Crews assigned to search and rescue activities will do so using the “Buddy System” (minimum two person team).

2. The secondary search.

a. The secondary search group may also utilize the TIC in searches where adequate lighting is not available.

3. Use of the TIC by Rapid Intervention Teams (RIT).

a. The TIC may be assigned to the company officer of a designated RIT to assist in locating lost or trapped firefighters or other victims at an incident.

4. Use of the TIC in search operations at confined space, collapse, and other rescue scenarios.

a. The TIC can assist in locating victims during Heavy Technical Rescue (HTR) operations such as confined space and collapse rescues.

b. The TIC can be utilized night-time operations at motor vehicle accidents where victims may have been ejected from a vehicle or have wandered off from the immediate accident scene.

c. The officer in charge of these types of incidents may contact Dispatch to request a TIC.

B. Use of the TIC in determining fire conditions.

1. The TIC may be used during the initial fire attack to quickly locate the seat of fire and to assess fire conditions.

2. The Safety Officer may use the TIC to monitor changing fire conditions such as rapid fire growth and fire extension or to evaluate potential for structural collapse, flashover conditions, and backdraft.

a. Structural conditions may also be monitored by gauging the effects of fire involvement on lightweight trusses, floor joists, and rafters.

3. Use of the TIC to observe the thermal balance within a structure can aid in determining the effectiveness of firestreams.

4. The TIC can be used to assess the effectiveness of ventilation efforts.

a. Example: If high heat conditions are present after vertical ventilation is completed, this may indicate the vent hole is blocked.

5. The TIC can be utilized to locate fire or potential hot spots hidden in void spaces behind walls or ceilings, requiring further overhaul and extinguishment.

C. Use of the TIC during fire alarm activations.

1. The TIC can be useful on calls such as fire alarms and other investigative responses to determine if a fire actually exists.

D. Lightning strikes.

1. The TIC can also be useful in locating fire where lightning strikes or similar conduction on metal duct work and pipes has started a smoldering fire.

E. HazMat events.

1. The TIC may be utilized to determine thermal characteristics of liquids as at HazMat incidents, e.g., where heat is generated in closed containers due to chemical mixing.

II. TIC operation

A. TIC technology and limitations.

1. The TIC measures the varying amounts of infrared energy (heat) emitted by objects to create a thermal “image” and project that image onto a screen in the camera.

2. Differences in infrared energy (or heat) are displayed in varying shades of gray. The whiter/brighter the image is, the warmer the object.

3. The TIC is capable of reading temperatures within a range of 0 – 1100^{o} F.

4. The camera operates in two energy bands, a lower and upper band.

   a. The lower energy band functions when temperatures are between 0 – 200^{o} F.

   b. The upper energy band functions for temperatures greater than 200^{o} F.

      i. The activation of the upper energy band is identified on the camera's viewing screen by the presence of "EI" in the upper left hand corner of the display.

      ii. If the image being viewed appears red in color, the object is 450^{o}F or hotter.

5. Prolonged use of or an extremely hot environment may result in the TIC's internal components overheating. Under these conditions, a HIGH TEMP warning will be displayed.

6. The TIC is waterproof (to one meter) when the battery compartment is properly closed. The TIC will not provide thermal images underwater.

7. While the camera is designed to withstand temperatures up to 700º Fahrenheit without damage, exposure to high temperatures for prolonged periods of time may result in degradation or loss of the thermal image.

   a. If possible degradation of the thermal image is observed, allow for a "cool down" period until the thermal image is restored to normal.

8. Never point the camera directly at the sun. Damage to the detector may result.

9. Because some surfaces act like mirrors to the system, the TIC will not provide images through glass, water, or shiny objects.

8. The camera is not rated as “Intrinsically Safe” and cannot be used in potentially explosive atmospheres.

B. TIC Functions

1. To turn the camera on, depress the right button located beneath the display screen. (This button is the only operational button on the TIC.)

2. Press the right button at any time to quickly recalibrate the image.

3. Press and hold the right button for a few seconds to place the camera in STAND-BY mode. This mode is indicated by green lights flashing between the two buttons. STAND-BY mode should be used to conserve the battery whenever possible. Return to active mode by depressing the right button for a short period.

4. The camera is turned OFF by depressing the button until the display is no longer present.

C. TIC Use

1. In order to avoid dropping the unit the TIC should be carried using both the side strap-handle and neck strap. The shape of the viewfinder accommodates the shape of the SCBA facepiece.

2. The camera should be used with a slow, deliberate (from left to right, from ceiling to floor, etc.) sweeping motion allowing the viewer to assess and interpret the thermal images seen through the camera.

3. The use of the camera should augment, but in no way replace, regular search techniques (i.e. contact with walls, contact with crew members, staying low in high heat and smoke conditions, searching with hands and feet outstretched, communications, etc.).

4. The TIC is designed to work up to four hours on a completely charged battery.

a. An indicator of remaining battery power is displayed in the upper right hand corner of the display.

b. When the battery is at 20% remaining capacity, LOW BAT will appear in the upper right hand corner.

C. Maintenance

1. Batteries

a. Batteries should be removed from the TIC and charged either after extended use or after one week without use.

b. Each TIC should have a battery charger and two batteries.

c. Both batteries should be kept in the TIC case on the truck, with a full charge, as much as possible.

d. The battery must be placed in the charger carefully, with the flat sides of the battery lining up with the flat sides of the charger.

e. The charger has lights that indicate battery status:

i. RED = battery is charging

ii. GREEN = charging is complete

iii. YELLOW = battery is either too hot or too cold for charging.

iv. FLASHING RED = defect in battery; place battery out of service

2. After use on the fireground, the TIC should be wiped down with a damp cloth soaked in water and mild detergent and then dried with a cloth towel.

Air Bags

Purpose

An Air Bag System is assigned to each Rescue Company within the Albuquerque Fire Department. This guideline addresses the use of air bag systems. Although only Rescue Companies carry this equipment, any responding company may be required to operate this equipment. Familiarity with this guideline will maximize the effectiveness of air bag use during an emergency response.

The system includes rescue bags that are inflated with air from a compressed air tank, and used as lifting devices. The system is made up of the SCBA bottle, cables, and lifting bags.

Guideline

The selection and use of high pressure air bags must be determined based on factors such as the lifting requirements, weights, size, and/or shape of the object(s) to be lifted. The lifting capacities and lifting heights of the air bags themselves should also be considered before they are used.

Operational Guidance

I. Calculating lifting capability

A. The lifting capacity of an air bag is dependent upon a number of varied factors, including the following:

1. The amount of air pressure in the bags.

2. The surface contact area between the air bag and the load being lifted.

a. The more surface area contact between the air bag and the load, the greater the lifting capacity.

b. As the air bag inflates, it takes on a double-dome shape, decreasing the surface area contact between the load and the air bag thus decreasing the lifting capacity.

c. The rated lifting capability is possible for the first inch of lift, and decreases thereafter.

d. The lifting capacity of two or more air bags placed side by side and inflated together is the combined capacity of both air bags.

e. The lifting capacity of two air bags -- stacked and inflated -- is the maximum capacity of the smallest air bag.

II. Operating instructions

A. Develop a lifting strategy by considering the following:

1. The maximum lifting capacity for each air bag.

2. The maximum inflation height of each air bag.

3. The maximum load that can be lifted at full inflation height for each air bag.

B. Setting up the system

1. Make necessary connections according to the manufacturer's instructions.

2. Ensure that all connections and/or couplings are locked and are secure.

3. Ensure that all valves are in the closed position.

4. Open the SCBA bottle.

a. Set and verify the working pressure, if needed, at the regulator:

i. 118 psi for Hurst air bag systems,

ii. 116 psi for Holmatro air bag systems.

C. Placement considerations

1. Always estimate the center of gravity to determine the best placement of the bags.

2. If a one point-of-lift is used to make a one-sided or rolling lift, position the air bag in-line with the estimated center of gravity.

3. If two points-of-lift are desired, place one air bag on either side of the estimated center of gravity.

D. Lifting beams

1. An air bag's maximum lifting capability cannot be obtained when the air bag takes on the shape of a saddle during inflation; additionally, lifting beams may damage the air bag.

2. Position a plywood panel between the air bag and the load being lifted to distribute the load and to protect the air bag

E. Lifting a cylindrical object

1. Avoid lifting a large diameter cylindrical object with a single air bag due to instability.

2. Use two air bags, one under each side of the cylindrical object, and inflate the air bags simultaneously.

F. Pushing with air bags

1. Position the air bag between the object to be moved and another stable object. The object that is less secure, or has less mass, will move first.

G. Cribbing

1. There are two types of cribbing used with air bags.

a. Box cribbing is used to support a load that has been lifted.

i. Always build a box crib to support the load once the object is lifted.

ii. Rescuers should never solely rely on the air bag to support the load.

iii. Rescuers should never place any body part under the load unless the load is supported by a box crib.

iv. Assess the need for additional cribbing needs and call for additional resources if needed.

b. Support cribbing is used to support the air bag while lifting.

i. Support cribbing maximizes lifting capacity and the lifting height of the air bag.

ii. The bottom of the air bag should rest on a solid layer of cribbing base and the top of the support crib must be equal to, or greater than, the surface area of the air bag.

iii. It is important to protect the lifting surface of the air bag by using a plywood panel.

D. Stacking air bags.

1. Position air bags with the nipples pointing away from the load and opposite each other.

2. Use the following guidelines when stacking air bags of different sizes,

a. Always place the larger air bag on the bottom.

b. The smaller air bag must be centered on top.

c. Use different colored hoses to distinguish between air bags.

d. Never stack more than two air bags.

3. The result of stacked air bags include:

a. Less surface contact area.

b. A decreased lifting capacity.

c. Instability between the two air bags.

i. To prevent the two air bags from slipping, maintain a lower pressure in the bottom air bag than in the smaller air bag, so that the smaller air bag is cradled by the larger one.

III. Air bag inflation

A. Don PPE.

1. Helmet, eye protection, and gloves.

B. Establish a hot zone of at least 50 feet around the lifting operation.

C. Establish verbal commands and hand signals between the officer in charge, the air control valve operator, and the rescuer placing the bag.

1. Only one person is to issue commands as indicated in Table 1 below:

Table 1

Voice and Hand Signals

Command	Voice signal	Hand signal
Inflate	“up on (hose color)”	Thumb up
Stop inflation	“stop on (hose color)”	Clenched fist
Deflate	“down on (hose color)”	Thumb down

2. Anyone can stop the lifting operation for safety reasons by calling “STOP.”

D. Pressurize the air bag system slowly.

E. If stacking air bags, follow routine inflation guidelines, in addition to the following criteria:

1. Inflate the bottom air bag until the top air bag firmly contacts the underside of the load, then inflate the top air bag.

2. Anticipate and prepare for shifting loads.

a. Place wheel chocks.

b. Use cribbing.

c. Establish safety zones.

3. Continue inflation until the air bag reaches the desired height or until the bag reaches the maximum working pressure.

4. Always build a box crib to support the load once the object is lifted.

5. Never work under a load without cribbing.

6. Air bags should be filled using 1-hour SCBA bottles.

IV. Air bag deflation

A. Deflate the air bag slowly.

B. If stacking air bags, deflate the top air bag first followed by bottom air bag.

C. Deflate the air bag(s) and allow the load to settle on the box cribbing if more working space is needed.

V. Inspection, storage and maintenance

A. Inspection

1. Inspect all air bag components for damage after each use, or at least once a cycle.

a. Check air bags and hoses for cuts, cracks, or nicks.

b. Check nipples and couplings for damage.

c. Check all other hardware for damage.

2. At least once per calendar quarter, assemble the air bag system and inspect the system while it is inflated to the maximum operating pressure.

a. Check for bulges.

b. Check for leaks by applying soapy water.

B. Storage

1. Vertical storage.

a. Store air bags with nipples pointing upward and outward with protective caps in-place.

2. Horizontal storage.

   a. Store air bags with nipples facing outward with protective caps in-place.

   b. Store hose in a coiled position, with sections connected together, to protect nipples.

   c. Store the air valve controller with relief valves open.

   d. Store the regulator and air valve controller in protective cases.

C. Maintenance and cleaning

1. Clean air bags with a stiff brush, using mild soap and water.

2. Wipe all other components with a clean rag.

3. No other user maintenance is required. If other problems exist, report the equipment to AFD Logistics for replacement or repair.

VI. Safety considerations

A. The use of air bags should be considered an inherently dangerous operation. It is important to maintain the following safety considerations when performing such operations.

1. Always wear helmet, eye protection, and gloves during lifting operations.

2. Never work under a load without cribbing.

3. Never exceed the manufacturer's recommended working pressure.

4. Never stack more than two air bags on top of each other.

Reciprocating Saws

Purpose

This document establishes safe operating guidelines for Albuquerque Fire Department standard issue reciprocating saws.

Guideline

A DeWalt Cordless Reciprocating Saw is standard issue on each AFD Rescue Company. The saw is powered by a nickel-cadmium battery pack and supplied with a 1 hour charger, spare battery and various blades. These saws are intended to be used for a variety of rescue applications, including vehicle and machinery extrication.

Operational Guidance

I. General safety

A. Do not operate tools in explosive atmospheres, such as in the presence of flammable liquids.

B. Always wear eye protection.

C. Disconnect the battery pack from the tool or lock the trigger switch before making any adjustments, changing blades, or storing the tool.

D. Keep hands away from cutting area.

E. Do not use dull blades, as dull blades may cause the saw to swerve.

F. Remove any cracked or damaged battery packs from service. Turn damaged battery packs into AFD Logistics for replacement.

G. Do not store or use the tool and battery pack in locations where the temperature exceeds 105º F.

II. Charging

A. According to the manufacturer, the nickel-cadmium battery packs will not develop a memory.

B. Place a fresh battery in the saw on the first morning of every cycle (first day shift), during vehicle checks.

C. Batteries will charge in about one hour.

D. During charging, a red light on the charger will blink continuously.

1. When the charge is complete, the red light will remain on.

2. The battery will maintain its charge if the battery pack is left in the charger.

3. Battery packs will slowly lose their charge when not left in the charger.

III. Operation

A. Always use two hands when operating the saw.

B. Place the saw shoe firmly against the material that is being cut.

C. If the saw fails to produce significant power, discontinue use and cut the material with a hack saw.

1. Continued use of the saw may damage the battery if it is completely drained of power.

2. Replace the battery as needed before it is drained of power.

D. Do not force the blade. Let the saw do the work.

E. Always use heavy-duty blades that are rated for “demolition and/or extrication.”

Power Saws

Purpose

This purpose of this guideline is to define safe and appropriate usage of power saws

Guideline

The adverse operational conditions during which power saws are used during emergencies creates a high potential for accidents. A slight miscalculation or sudden unplanned move can result in a serious accident. Performance, skill, common sense, and strict observation of safety measures can prevent accidents.

It is the responsibility of all personnel to learn and understand these safety guidelines. It is the responsibility of all command and company officers to ensure that their subordinate personnel observe these guidelines whenever power saws are operated in training or at an emergency scene.

Operational Guidance

I. Personal protection

A. Full protective clothing, including proper eye protection, shall be worn by those members operating, and in close proximity to, the operation of power saws.

B. To prevent accidents that may be caused by moving belts, gears, chains, or blades, it is imperative that the saw operator and the guide both have their protective clothing completely buttoned up.

II. Operational considerations

A. Always carry the chain saw with the engine stopped, the guide bar and saw chain to the rear, and the muffler away from your body.

B. Always keep both hands on the control handles when operating the saw. Use a firm grip with thumbs and fingers encircling the saw handles.

C. Make sure that you have secure footing before operating the saw.

D. A team of two firefighters shall always perform cutting operations. The firefighter operating the saw (operator) shall be assisted and/or guided by a second firefighter (guide).

E. The saw shall always be shut off when unattended.

1. The saw shall be shut off while it is hoisted.

F. Have a plan of action before putting the saw into operation. The plan should include:

1. Location and sequence of cuts and openings needed.

2. Consideration of wind direction, products of combustion, reduced visibility, and force on the saw operator, or on any exposures.

3. Provision for at least two means of egress, if possible.

III. Tactical considerations

A. Whenever possible, an officer should be present to supervise cutting operations and to maintain safety precautions by acting as a “guiding firefighter” for the firefighter operating the saw.

1. The number of personnel (involved in cutting operations) should be limited to the minimal number required to sustain the operation.

2. All other personnel shall be removed to a safe location until the operation is complete or assistance with the operation is needed.

B. Before operating the saw, always place the safety guard in the correct position to provide proper protection for the person using the saw.

C. The “guiding firefighter” should maintain hand contact with the back of the saw operator, and tap once to halt the operation if a problem should occur.

D. Once a cut is made, the operator should stop the blade rotation on the material prior to lifting the unit.

E. The “guiding firefighter” should monitor roof conditions and be aware of position on the roof so as not risk safety by working too close to roof edge.

F. Power saw operations are safest when cutting on horizontal surfaces near ground level, or on vertical surfaces near waist level.

G. Operating a power saw above chest height is extremely hazardous and should not be attempted as a normal course of action.

1. This type of operation shall be conducted only under the direct order and/or under the supervision of an officer.

2. The officer ordering this operation shall weigh heavily the value gained against the extreme hazard to personnel.

H. The use of a power saw from a ladder is not recommended if there are other alternatives.

I. Do not operate power saws in suspected flammable or explosive atmospheres.

Heat Stress

Purpose

The purpose of this guideline is to define the means by which the effects of heat stress may be minimized for emergency responders, and to identify the signs and symptoms of conditions related to heat stress.

Guideline

These guidelines are to be implemented whenever ambient temperatures are expected to exceed 95 degrees F., or whenever the combination of air temperature and humidity equal a heat index of 95 degrees (humidity has an important impact on human health and well-being since it contributes to the body's ability to cool itself by evaporation of perspiration). It is the responsibility of all personnel to learn and become familiar with this guideline.

Operational Guidance

I. Heat stress overview

A. Simply defined, heat stress is an illness caused by heat.

B. Hot conditions place the human body under considerable stress. High temperatures, along with physical activity, stress the body even more.

1. The loss of fluids, fatigue, and other conditions can lead to a number of heat-related illnesses and injuries. Death is even possible.

C. Heat stress is commonly associated with warm weather. While warm weather increases the number of heat-stress injuries and illnesses, it is not the only cause of heat stress.

1. Heat stress may occur any time the surrounding temperature is elevated.

2. Even if weather is cool, you may work in warm areas, indoors or outdoors.

D. Conditions that could cause heat stress are varied.

1. Temperature.

2. Humidity.

3. Movement of warm air.

4. The radiant temperature of surroundings.

5. Clothing.

6. Physical activity.

II. Personal responsibility

A. Personnel should accept personal responsibility to monitor their own health and well-being, and during warm conditions, should ensure that they observe specific practices.

1. Maintain proper rest and nutrition regimens.

2. Observe appropriate work/rest cycles.

3. Hydrate before, during, and after each shift (minimize coffee, tea, and cola products).

4. Inform supervisor of any ill effects due to heat.

III. Company officer's responsibility

A. During weather or work conditions that may lead to heat-related stress, company officers should be aware of the effect that heat may place on their subordinates, and shall be responsible to monitor and/or manage specific issues.

1. Cardiovascular activity, such as tennis, basketball, or running, should be limited to a maximum of thirty minutes.

2. A minimum of 64 ounces (two quarts) of water should be consumed during the 24-hour shift.

3. Work / rest cycles are to be closely monitored. During fire ground operations, company officers should request replacement of their crew by a relief company and assignment to rehab after the crew has consumed two bottles of air.

4. Company officers should monitor company activity and request additional resources as necessary.

IV. Command responsibilities

A. At all working fires or extended operations, the Incident Commander will initiate specific protocol.

1. Establish a rehab sector on all working fires.

2. Assign companies to rehab as needed or requested.

3. Allow working companies to remain in rehab for a minimum of twenty minutes.

4. Utilize the practice of first-in, first-out routine.

5. Request additional resources as necessary.

V. Dispatch and deployment responsibilities

A. During periods of high temperatures, AFD Dispatch will follow specific guidelines.

1. Announce the projected high temperature for the day.

2. Consider dispatching an additional RIT company, as a relief RIT company, to all working structure fires.

3. Consider dispatching an additional company, as a relief company, to all working first-alarm assignments.

Rehabilitation Sector

Purpose
It is the policy of the Albuquerque Fire Department that no member will be permitted to continue emergency operations beyond safe levels of physical or mental endurance. The intent of the Rehabilitation Sector is to lessen the risk of injury that may result from extended field operations under adverse conditions. This procedure is in no way intended to diminish initial fire attack aggressiveness.

Scope
The Rehabilitation Sector, radio designation *REHAB*, will be utilized to evaluate and assist personnel who could be suffering from the effects of sustained physical or mental exertion during emergency operations. Rehab Sector will provide a specific area where personnel will assemble to receive:
• A physical assessment
• Revitalization - rest, hydration and refreshments
• Medical evaluation and treatment of injuries
• Continual monitoring of physical condition
• Transportation for those requiring treatment at medical facilities
• Initial stress support assessment
• Reassignment

A Rehab Team concept will be utilized wherever possible to establish and manage the Rehab Sector. This team will consist of:
• Rescue company
• QIO officer designated as Rehab Sector officer
• Engine Officer with Crew as needed
• Critical incident stress specialist (Psychologist or EAP counselor) as needed

It will continue to be the responsibility of Command to make an early determination of situations requiring the implementation of a Rehab Sector.

At times, due to the incident size or geographic barriers, it may be necessary to establish more than one Rehab Sector. When this is done, each sector will assume a geographic designation consistent with the location at the incident site, i.e., Rehab South.

At incidents involving large life loss, or extended rescue operations (i.e., plane or train wreck, bombing, terrorist attack), the New Mexico State Critical Incident Stress Team should be contacted and be assigned to Rehab Sector.

Should the Bernalillo County Fire Department Rehab vehicle be available there is a mutual aid agreement in place for it’s use. A City bus may also be called to the incident scene to provide cooling and/or heating.

The Rehab Sector should be located adjacent to the Command Post whenever possible.

The Rehab Sector area boundaries will be defined with tape and will have only one entry point. It will be divided into the following four sections:

Section A: Entry Point
This is the initial entry point and decontamination area. Assigned personnel will collect passports from crews and take a pulse rate on all crew members. Any member who has a pulse rate greater than 120 bpm will report directly to Section C, Medical Treatment and Transport, where they will be treated appropriately. Members that do not require medical attention will then report to Section B, Hydration and Replenishment.

Section B: Hydration and Replenishment
All personnel will be provided supplemental water and/or electrolyte replacement, and the proper amount of nourishment. Initial CISD support will be provided in this section, if needed.

Section C: Medical Treatment and Transport
This section will be staffed by a Rescue crew. Personnel reporting here will receive evaluation and treatment for heat stress and injuries. The Rescue company assigned will advise the Rehab Sector Officer of the necessity of medical transportation and extended medical attention requirements of personnel due to physical condition. Crews released from Section C will be released as intact crews to report to Section D.

The ALS crew in this section will pay close attention to the member's:
- Pulse
- B/P
- Body Temperature

After allowing 20 minutes for a cooling down period the pulse, blood pressure, and temperature will be rechecked. Any person with a pulse rate greater than 100 will be relieved from duty for the remainder of the shift. Anybody who has a temperature greater than 101 or a blood pressure less than 100 systolic will need IV fluids and transportation to an appropriate medical facility.

Section D: Medical Reassignment
This critical section determines a crew's readiness for reassignment. Diligent efforts and face-to-face communication with the Rehab Sector Officer are required. Personnel staffing this section advise the Rehab Sector Officer of all companies' status for reassignment and crews that are running short or without a Company Officer. This information is relayed to Command by the Rehab Sector Officer. Crews without a Company Officer will be assigned to another company or have a member of the crew upgrade to the officer's position.

The Rehab Sector Officer will collect accountability passports from companies reporting to Section A - Entry Point. The passports will be placed on a status board and all personnel will be logged on Rehabilitation Sector Personnel Log. The log will indicate the assignments as directed by Command. Companies may be reassigned to operating sectors or released from the scene.

The Rehab Sector Officer will update Command throughout the operation with pertinent information including the identities of companies in Rehab, the companies available for reassignment, and the status of injured personnel. All personnel leaving Rehab will retrieve passports from the Rehab Sector Officer.

Company Officers must keeps crews intact and report to the proper sections in Rehab. The Rehab Sector Officer will direct the crew to the proper sections; however, it is the Company Officer's responsibility to make sure crew members receive refreshments, rest and a medical clearance

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 associate write-off by Command. The two strategies are based on a standard Risk Management plan that is to be employed at all structure fires.

Within a Structured Risk Management Plan:

- *We may risk a lot to protect savable lives*
- *We may risk a little to protect savable property*
- *We will risk nothing to save what is already lost*

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 assignment is 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-toface 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 ladder pipes go into operation.

Do not operate exterior streams, whether hand lines or master streams 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.

When laddering a roof, the ladder selected shall be one which will extend 2’- 3’ above the roof line. 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.

Hazard Zone
The Hazard Zone will be defined as any area that requires an SCBA, charged hoseline, special protective clothing, or in which firefighting personnel are at risk of becoming lost, trapped, or injured by the environment or structure. The following situations would be included inside the Hazard 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 firefighters working in the Hazard Zone shall be in crews of a minimum of two personnel. A portable radio is required for crews working in the Hazard Zone. The Passport accountability system will be in place.

Warm Zone
The Warm Zone will be defined as just outside of the Hazard Zone where the firefighters start their operations on the fireground. This zone is where the fire fighter 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 lines
• Haz-Mat and Heavy Technical Rescue Teams developing tactics and strategies
• Utility trucks
• Special equipment needs
• Accountability Officer
• Fire Investigations

If at any time firefighters in the Warm Zone become threatened, then this would become a Hazard 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 and Level II staging
• Support and Staff personnel
• Rehab
• Media
• Law Enforcement Liaison
• Interviewing the responsible party

Sectors
The safety of firefighting personnel represents a major reason for fireground sectorization. Sector officers 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. (See Personnel Accountability System SOG 307).

Company officers shall insure that all crew members are operating within their assigned Sector only. Crews will not leave their respective sectors unless authorized 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 resource to tactical situations to effectively stabilize that situation, and to maintain adequate resource 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. The Alarm Room will assist in coordinating the rotation of companies during such campaign operations.

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.

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 incidents involving an inordinate danger to personnel. Command should consider establishing a Safety Sector on any situation where it may be advantageous to the overall safety of operations.

Assigned Squad personnel will respond automatically to multiple alarm incidents to establish a Safety Sector and will report to the Command Post upon arrival. When the need for specialized assistance is noted, Command should confirm the response of the appropriate personnel (Department Safety Officer).

Command may designate any available personnel to establish a Safety Sector when the need is indicated. 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 fire fighters.

Example: *A 100' length of unprotected steel expands 9" when heated to 1100° 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.

A 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 which may tip off an alert fire officer. Action might be taken to avert any imminent hazard.

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--leaning, twisting or flexing.
• Sagging or otherwise distorted roof lines.
• 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.

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, communicate, and redeploy.

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:
- Imminency 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 fireground personnel of a notable hazard that is either about to occur, or has occurred.

The use of “Emergency Traffic” should be initiated only when the hazard appears to be imminent.

Any member has the authority to utilize the “Emergency Traffic” announcement 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.

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 redeploy/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, 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 when 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 crows 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.

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

Fireground Strategy

Purpose
The following procedure outlines the fireground strategy to be employed at structure fires. Fireground operations will fall in one of two strategies, *Offensive* or *Defensive*. The two strategies are based on a standard Risk Management Plan that is to be employed at *all* structure fires. This is the basis for this procedure.

Within a structured Risk Management Plan:
• We may risk a lot to protect savable lives.
• We may risk a little to protect savable property.
• We will risk nothing to save what is already lost.

Considering the level of risk, the Incident Commander will choose the proper strategy to be used at the fire scene. The strategy can change with conditions or because certain benchmarks (i.e. “All Clear”) are obtained.

The strategic mode will be based on:

• The building (type of construction, condition, age, etc)
• Structural integrity of the building (contents vs. structural involvement)
• The fire load (what type of fuel is burning and what's left to burn)
• The fire and/or smoke conditions (extent, location, etc.)
• The rescue profile (savable occupants/survivability profile)

The Incident Commander is responsible for determining the appropriate fireground strategy. Once the appropriate strategy is initiated, it becomes the Incident Commander’s job to ensure that all personnel are operating within the strategy. By controlling the fireground strategy, the Incident Commander is providing overall incident scene safety. The proper strategy will be based on the following:

Avoiding simultaneous **Offensive** and **Defensive** strategies in the same fire area. This usually happens by first committing personnel to interior positions, then opening up on them from exterior positions with master streams. Once the two strategies have been used in this fashion, there will be no winners in the interior.

Matching the appropriate strategy to the fire conditions of the structure, and minimizing risk to firefighters.

Managing fireground strategy must start with the arrival of the first unit and be constantly monitored and evaluated throughout the entire incident. The initial Incident Commander will *include the fireground strategy in the on-scene report.* As Command is transferred to later arriving officers, these new officers assuming command must evaluate the fireground strategy based on the Risk Management Plan.

Fireground strategy provides a starting point to begin fireground operations. Once the strategy is announced, all the players involved should know what to expect as far as the position and functions of themselves and one another. The fireground strategy cannot be a mystery to anyone, everyone operating on the fireground should be operating in the same strategic mode, Offensive or Defensive.

Offensive Strategy
Within the framework of the Risk Management Plan, the structure must first be determined to be safe to enter. Once determined safe, an Offensive Fire Attack is centered around rescue. *When safe to do so,* the Albuquerque Fire Department will initiate offensive operations at the scene of structure fires.

The following are guidelines for offensive fire attacks:
• Initial attack efforts must be directed toward supporting a primary search - the first attack line must go between the victims and the fire to protect avenues of rescue and escape (i.e. stairwells).
• Determine fire conditions and extent before starting fire operations (as far as possible). Never operate fire streams into smoke.
• Offensive fires should be fought from the *interior - unburned side* (interior capability is the principal offensive strategy factor).
• Avoid exterior application of water during offensive operation. This is usually the very worst application point.
• Avoid fire attack from the burning side of the building. An attack from the burning side generally will drive the fire, smoke, and heat back into the building and drive the interior fire control forces out of the building.
• Companies must resist the urge to focus only on the fire (this is known as the “candle moth” syndrome or “tunnel vision”). In some cases, the most effective tactical analysis involves an evaluation of what is *not* burning rather than what is actually on fire. The unburned portion represents where the fire is going and should establish the framework for fire control activities and requirements.

Command must consider the most critical direction and avenues of fire extension, plus it's speed, particularly as they affect:
• Level of risk to firefighters
• Rescue activities
• Confinement efforts
• Exposure protection

Command must allocate personnel and resources based upon this fire spread evaluation.

Command must not lose sight of the very simple and basic fireground reality that at some point firefighters must engage and fight the fire. Command must structure whatever operations are required to *put water on the fire.* The rescue/fire controlextension/ exposure problem is solved in the majority of cases by a fast, strong, wellplaced attack. Command must establish an attack plan that overpowers the fire with *actual* water application, either from offensive or defensive positions.

Command must consider the seven sides (or sectors) of the fire: front, rear, both sides, top, bottom, and interior. Fires cannot be considered under control until all seven sides are addressed. Not doing so may result in fire extension.

Where the fire involves concealed spaces (attics, ceiling areas, construction voids, etc.), it becomes paramount that companies open up and operate fire streams into such areas. Early identification and response to concealed space fires will save the building. Officers who hesitate to open up because they don't want to beat up the building may lose the structure.

Early ventilation (natural or positive pressure) is a major support item that must be addressed during concealed space attacks. This must be initiated early and be well coordinated. Ventilation openings should be made in the fire area. Positive pressure should be injected into the unburned side and exit out of the fire area.

Command must get ahead of the fire. Command must make critical decisions that relate to cutoff points and must develop a pessimistic fire control strategy. It takes a certain amount of time to get water to a location, and the fire continues to burn while the attack is being set up. Command must consider where the fire will be when attack efforts are ready to actually go into operation; if misjudged, the fire may burn past the attack/cutoff position before resources and personnel are in position. Don't play “catch up” with a fire that is burning through a building (the fire will usually win all these races).

Project your set-up time, write off property and get ahead of the fire. Set up adequately ahead of the fire, then overpower it.

Write-off property that is already lost and go on to protect exposed property based on the most dangerous direction of fire spread. Do not continue to operate in positions that are essentially lost.The basic variables relating to attack operations involve:
• Location/position of attack
• Size of attack
• Support functions

Command develops an effective attack through the management of these factors. Command must balance and integrate attack size and position with fire conditions, risk and resources.

Many times offensive/defensive conditions are clear cut and Command can quickly determine the appropriate strategy. In other cases, the situation is *marginal* and Command must initiate an offensive interior attack, while setting up defensive positions on the exterior.

The only reason to operate in marginal situations is rescue. The effect of the interior attack must be constantly evaluated, and the attack abandoned if necessary. Strategy changes can develop almost instantly or can take considerable time. Command must match the strategy with the conditions. The Incident Commander controls overall incident scene safety by determining the proper strategy to be used. If the Incident Commander doesn't change strategies from offensive to defensive until the building is disassembling itself due to structural damage, Command is late in strategy determination and on the receiving end of the building's decision governing the new strategy to be employed. Often times when the building gets to make those decisions, firefighters become traumatized (physically and/or emotionally). *The Incident Commander determines the strategy the building shouldn't.*

Command should abandon marginal attacks when:
• A primary all clear is obtained and the situation is still marginal.
• The roof is unsafe or untenable. Especially working fires in large unsupported, or lightweight trussed attic spaces.
• Interior forces encounter heavy heat and cannot locate the fire or cannot make any progress on the fire.
• Heavy smoke is being forced from the building under pressure and is increasing.

Command needs to constantly evaluate conditions while operating in a marginal strategy. This requires frequent and detailed reports from Sector Officers.

It is imperative that Command assign a Roof Sector as early as possible during marginal operations for rapid evaluation of roof conditions. In certain situations Command should strongly consider not committing crews to the interior of a structure unless he/she receives a report from Roof Sector that the roof of the structure is safe to operate on and under. It is better to go from an offensive to a defensive strategy too soon rather than too late.

Defensive Strategy

The decision to operate in a defensive strategy indicates that the offensive attack strategy, or the potential for one, has been abandoned for reasons of personnel safety, and the involved structure has been conceded as lost (the Incident Commander made a conscious decision to write the structure off).

The announcement of a change to a defensive strategy will be made as “Emergency Traffic” and all personnel will withdraw from the structure *and maintain a safe distance from the building.* Officers will account for their crews and and advise their Sector Officer on the status of their crew. Sector Officers will notify Command of the status of the crews assigned to their sector. A PAR (Personnel Accountability Report) shall be obtained after any switch from offensive to defensive strategy.

Interior lines will be withdrawn and repositioned when changing to a defensive strategy. Crews should retreat with their hose lines if safe to do so. If retreat is being delayed because of hose lines, and it's unsafe to stay in the building, hose lines should be abandoned.

All exposures, both immediate and anticipated, must be identified and protected. The first priority in defensive operations is personnel safety, then to protect exposures. The next priority may be to knock down the main body of fire. This may assist in protection of exposures but does not replace it as a higher priority.

Master streams are generally the most effective tactic to be employed in defensive operations. For tactical purposes, a standard master stream flow of 750 GPM should be the guideline. Adjustments may be made upward or downward from this figure but it is very significant in the initial deployment of master streams.

When the exposure is severe and water is limited, the most effective tactic is to put water on and, if need be, from the interior of the exposure. Once exposure protection is established, attention may be directed to knocking down the main body of fire and thermal-column cooling. The same principles of large volume procedures should be employed.

Fire under control means the forward progress of the fire has been stopped and the remaining fire can be extinguished with the on-scene resources; it does not mean the fire is completely out. When the fire is brought under control, Command will notify Alarm utilizing the standard radio report of “Fire Under Control”. Alarm will record the time of this report. Command must initiate a PAR report from all on scene Sectors and crews.

If defensive operations are conducted from the onset of the incident, Command will notify Alarm that there will not be a primary search completed for the affected structure

Boot Decontamination

Firefighting Boots

Only Albuquerque Fire Department issued leather and/or composite rubber boots which meet National Fire Protection Association (NFPA) standard 1971 (2000 edition) for structural fire fighting shall be worn on the fireground. The following guidelines provide direction for the proper decontamination of boots and shoes.

Decontamination

Individual Protection (PPE)

When cleaning contaminated boots or other equipment appropriate personal protective clothing shall be worn. At a minimum latex gloves and protective eye wear must be utilized.

Moderate Exposure

For moderate footwear exposure issues, (blood or other potentially contaminated body fluids), the exterior of the boot or shoe will be washed and scrubbed thoroughly with a 1:20 solution of bleach and water and liquid soap. The contaminated water will be disposed of in any drain which connects directly to a sanitary sewer line and is suitable for infectious control purposes. No sinks or drains used for personal hygiene or cooking will be used.

Gross Exposures

Grossly contaminated footwear, (footwear immersed in contaminated blood or bodily fluids or those with contamination to the interior of the boot), will be put in an infectious control bag and taken to supply for appropriate cleaning with a contracted cleaner.

Fires

Footwear used at fires whether of leather or rubber composite must be flushed with water prior to leaving the fireground and cleaned immediately after returning to the station. Other people are put at risk of carcinogenic and toxic products of combustion if these boots are worn home or at the station without cleaning. To effect this cleaning 1/4 cup of liquid soap mixed in a five gallon container of hot water will be used. All boots will be thoroughly scrubbed with a stiff bristle brush.

Live Burn Training (on site)

Purpose
The purpose of this procedure is to establish standard guidelines for conducting on-site training fires in the Fire Academy burn building, while complying with National Fire Protection Association (NFPA) Standard 1403. All other AFD procedures will apply to training fires where applicable.

General Use
Any Fire Department member or outside agency wishing to use the burn building must first obtain permission from the Training and Safety Division Commander.

The time and date of the training drill must be scheduled with the Academy staff. Drills involving recruit training and departmental training will always have first priority.

An officer representing the Academy staff must be on-site for any live fire drills involving the facilities or the burn building. A fee may be charged to outside services/agencies.

Burn buildings have been designed specifically for the purpose of repeated live fire training evolutions and include safeguards that only become unacceptably hazardous through misuse and neglect.

Fire Academy burn building shall have live fire burns on the first and second floors only. Live burns will not be conducted in the training tower.

All non-Albuquerque Fire Department agencies must comply with all existing Albuquerque Fire Department procedures relating to live burn training.

Command
One officer on the scene shall be designated as “Command” and will assume the Command functions.

Training and Safety Division Commander will assume senior advisor role.

A Command Post shall be established and positioned to afford maximum visibility of the structure, operating companies and fire conditions.

Communications
Command is responsible for establishing radio communications with each company officer or training officer involved in the drill. Channel assignment must be coordinated with the Alarm Room and all companies involved. Companies operating at the training fire will continuously monitor the assigned radio channel. All radios will be checked for proper functioning and correct channel prior to initiating training fire operations.

Sectors
To eliminate confusion, and provide adequate scene control, all personnel operating within the fireground perimeter shall operate under the direction of a sector officer. The fireground perimeter shall be defined as the hazardous area surrounding the burn structure and shall be determined by Command following guidelines stated in Fireground Safety.

The following sectors shall be established on all burn building fires:

Interior Company or training officer directing interior suppression activities.

Rescue Provide a staffed, charged back-up line for each fire attack team, in position to (RIT) assist in fire extinguishment and rescue of interior personnel. This sector will be manned by experienced firefighting personnel (not recruit firefighters) and each Rapid Intervention Crew (RIT) shall consist of a minimum of three firefighters. A company officer shall be in charge of each RIT unit. There shall be one rescue team for each fire attack team.

Safety The Safety Officer or a safety representative will be in attendance at all structural rat training fires and will assume safety sector responsibilities. The safety sector will monitor personnel and fire conditions, and work with Command to ensure all safety procedures are complied with, and that risk to personnel is minimized.

Other Other sectors may be established as necessary to control training/fire control operations and to minimize risk to firefighters.

Safety
The Safety Officer shall have full authority-to intervene and control or stop any aspect of the operations when in his/her judgment, a potential or real risk to personnel exists. He/she will not be assigned other duties that would distract from his/her safety responsibilities.

Additional Safety Officers may be assigned to the training fire the conditions dictate. Responsibilities of the Safety Officer(s) will include but not be limited to the prevention of unsafe acts and elimination of unsafe conditions.

Company officers acting as instructors will be responsible for the direct supervision of assigned students and their safety and welfare, including the prevention of unsafe acts and the elimination of unsafe conditions.

Fire Department personnel may operate on the root at the ventilation prop to demonstrate proper vertical ventilation techniques during live fire.

The number of personnel involved in training fires often exceeds the number normally assigned at actual incidents. To reduce risk, and assist with scene management, training fire participants shall be formed into individual companies consisting of no more than four (4) members and be supervised by a company officer.

Exposing recruit firefighters to live fire conditions presents special safety considerations All firefighters involved in burn building training fires shall have received training to meet the performance objectives of Firefighter 1, NFPA 1001 in:
• Forcible Entry
• Protective Breathing Apparatus
• Fire Hose, Nozzles and Appliances
• Fire Streams
• Ladders
• Ventilation
• Rescue
• Safety
• Fire Behavior

One officer on the scene shall be designated as an accountability officer and will assume the accountability functions.

To enhance accountability and to improve tracking of firefighters in the Hazard Zone, the “PASSPORT” system shall be used.

Personnel Accountability Report or “PAR” shall be used at the following accountability benchmarks:
• Any report of a trapped or missing firefighter
• By all crews reporting an “All Clear”
• At a report of fire under control
• Upon exiting the structure
• Sudden hazardous event
• Change from offensive to defensive mode
• At the discretion of Command

Passports will remain with the designated accountability officer near the “point of entry” to the Hazard Zone. Upon entry, crews will turn in their PASSPORT. Upon exit, the crew must retrieve their PASSPORT. The accountability status board will contain only the PASSPORTS of those crews in the Hazard Zone. The Hazard Zone shall be clearly marked with fire line tape and understood by ail participants.

No personnel shall be permitted to act as a victim(s) during training fires.
To reinforce safety procedures, a protective clothing and equipment inspection shall be conducted on all firefighters immediately prior and after engaging in suppression activities. The inspection shall insure that all clothing and equipment is serviceable and worn in a manner to provide the maximum personal protection.

Required Fire Equipment and Companies
• Two separate sources of hydrant water supply shall be established (two engine companies minimum). The water supply shall be test flowed by the forward pumper to insure adequate water supply of a minimum of 500 gallons per minute.

• All fire attack hoselines shall be supplied by one pumper with its own hydrant water supply. The RIT unit backup hoselines shall be supplied by a second pumper using a separate hydrant water supply. All hoselines will be flow tested to confirm a minimum of 95 gpm, immediately prior to igniting the fire.

• An ALS company and a rescue shall be on scene prior to the start of the burn.

Burn Building Preparation
• All doors, windows, ventilation props, and standpipes necessary for the training drill shall be checked and operated prior to any live fire conditions to ensure correct operation.
• Burn buildings shall be left in a safe condition upon completion of each live fire exercise. Debris hindering the access or egress of firefighters shall be removed before continuing further operations.
• Obtain approvals from Air Quality Control.
• Obtain approval from immediate supervisor.
• Obtain approval of the Safety Officer.

Starting the Fire
The use of flammable or combustible liquids, as defined in NFPA-30, shall be prohibited for use in live fire training evolutions. Only Class A materials shall be used in live fire training. A charged and manned hose line shall be in position to provide additional protection. The ignition process will be conducted under the direct supervision of the Safety Officer.

Command shall assign an experienced firefighter to become “FIRESTARTER.” It is the responsibility of the FIRESTARTER to initially ignite the fire. FIRESTARTER shall also regulate the fuel load for each evolution to maintain a tenable atmosphere inside the burn rooms.

The ignition of the fire shall be coordinated through Command so the burn rooms do not become overheated before attack teams make entry.

Pre-planning
A pre-fire tour of the burn building is required.

Attack Plan
The Officer in charge shall develop an attack plan based upon information obtained during the pre-plan and building preparation stages.

The Attack Plan shall specify:
• Points of ignition
• Amount of fire load
• Position of entry attack lines
• Position of RIT units
• A Rescue Plan
• Accountability Plan

All personnel involved in the drill shall be instructed on each element of the attack plan prior to igniting the structure and shall receive a walk through briefing of the building prior to each training fire. An evacuation plan and signal shall be reviewed and agreed upon.

Notification of Live Burn Training
Prior to conducting burn building training fires, the following notification must be made:
• Alarm Room
• On-duty Public Information Officer (PIO)
• Safety Officer
• Air Quality Control
• Environmental Health//Animal Control (west)
• Emergency Operations Center (south)
• Solid Waste Convenience Center (north)

Use of Hose Streams and Equipment
The interior protective wall panels will be damaged during live fire training by use of solid bore/straight stream hose streams. To protect these panels, solid bore streams will be used with caution during live fire training in Academy burn buildings. The protective wall panels are brittle, care must be taken to prevent breakage. Care should be taken to avoid SCBA bottles or other equipment hitting the walls during training.

On-site Burn Operations Checklist:

- ☐ Adequate fire apparatus on site
- ☐ ALS company on-scene
- ☐ Pumpers flow tested for 500 gpm water supply from separate hydrants
- ☐ Separate hydrant water sources for each pumper
- ☐ Fire load; conservative; not excessive
- ☐ Ignition location determined
- ☐ Safe ignition fuel utilized
- ☐ FIRESTARTER in full protective clothing/SCBA
- ☐ Protection line in place for FIRESTARTER; manned and charged
- ☐ Training Command Officer on-scene
- ☐ Safety Officer (or representative) on-scene
- ☐ Command and sectors established
- ☐ Command location identified and announced
- ☐ All radios checked for proper functioning/channel

Sectors established:

- ☐ Interior
- ☐ Rescue/Rapid Intervention Team (RIT)
- ☐ Safety
- ☐ Ventilation as needed

- ☐ Accountability officer established
- ☐ Attack lines in place, flow tested for a minimum of 99 gpm each
- ☐ RIT lines in place, flow tested for a minimum of 95 gpm each
- ☐ RIT staffed by minimum of three firefighters
- ☐ One RIC unit in place (with hoseline) for each attack entry team
- ☐ Attack lines from one pumper, RIC lines from a separate pumper
- ☐ Fire attack entry and RIC units in full protective clothing, PASS and SCBA checked for proper functioning
- ☐ Company officers in charge of each attack and RIT unit
- ☐ Attack plan established and understood by all
- ☐ Walk through briefing conducted for all crews
- ☐ Rescue plan established and understood by all
- ☐ PASSPORTS and status boards near point of entry
- ☐ Rehab established

Post Burn Activities

The building shall be left in a safe condition upon completion of live fire training. All hot spots shall be completely extinguished to prevent rekindle. It is recommended that an infrared camera be utilized to locate hot spots. Members shall be rehabed and rehydrated. Protective clothing and SCBAs shall be rinsed clean.

Table of Contents

Policy Statement

PURPOSE: To provide a comprehensive infection control system with the goal of maximizing protection against communicable diseases for all members of the Albuquerque Fire Department and the public they serve.

SCOPE: This policy applies to all personnel of the Albuquerque Fire Department and will enable this department to comply with the Occupational Safety and Health Administration Regulations, 29 CFR Part 1910.1030, Occupational Exposure to Bloodborne Pathogens; Final Rule.

The Albuquerque Fire Department recognizes that communicable disease exposure is an occupational health hazard. Communicable disease transmission is possible during any aspect of emergency response, including in-station operations. The health, safety, and welfare of each member is a joint concern of the member, the chain of command, and this department. While each member is ultimately responsible for his/her own health, the department recognizes a responsibility to provide as safe a workplace as possible. The goal of this program is to provide all members with the best available protection from occupational exposure to communicable diseases.

It is the policy of the Albuquerque Fire Department:

- To provide fire, rescue, inspection, investigation, and emergency medical services to the public without regard to known or suspected diagnosis of communicable disease in any patient.

- To regard all patient contacts as potentially infectious. Standard Precautions will be observed at all times and will be expanded to include all body fluids and other potentially infectious material (body substance isolation).

- To provide all uniformed members with the training, immunizations, and personal protective equipment (PPE) for protection from communicable diseases.

- To recognize the need for work restrictions based upon infection control concerns.

- To encourage participation in Employee Assistance and/or Critical Incident Stress Debriefing (CISD) programs.

- To prohibit discrimination of any member for health reasons, including infection and/or seroconversion with HIV or HBV virus or other pathogens.

- To regard all medical information as strictly confidential. No Employee health information will be released without the signed written consent of the employee.

Exposure Control Plan Overview

Purpose: To identify those tasks and corresponding job positions within the Albuquerque Fire Department for which it can be reasonably anticipated that an exposure to blood, or other body fluids, or other potentially infectious materials may occur; to establish policies and procedures for this Department's infection control plan, and to identify the procedure for the evaluation of the circumstances surrounding exposure incidents.

I. Exposure Determination

A. The following tasks are reasonably anticipated to involve exposure to blood, body fluids, or other potentially infectious materials:

- Provisions of emergency medical care to injured or ill victims.
- Rescue of victims from hostile enviroments, including burning structures, water contaminated areas, or oxygen deficient atmospheres
- Extrication of persons from vehicles, machinery, or collapsed excavations or structures
- Recovery and/or removal of bodies from any situation cited above.
- Response to hazardous material emergencies, both transportation and fixed site, involving potentially infectious substances.

B. The following job positions within this department are reasonably anticipated to involve exposure to blood, body fluids, or other potentially infectious substances in the performance of their duties:

Firefighters	Emergency Medical Technicians
Paramedics	Maintenance Personnel
Company Officers	Resource Management Personnel
Fire Inspectors	Fire Investigators
Haz-mat Personnel	Training Personnel
Drivers	Safety Office Personnel
Chief Officers	Personnel not otherwise Classified

II. Implementation

This Infection Control Program is applicable to all members of the Albuquerque Fire Department. It is effective upon issuance of this document. The infection control program consists of a policy statement, identification of roles and responsibilities, Standard Operating Procedures, training, and record keeping. Standard Operating Procedures identify specific guidelines for all aspects of response and station environments where disease transmission can be reasonably anticipated, as well as training, administrative aspects of the program, and post-exposure evaluation/investigation. Specific program components are identified as follows:

Policy Statement

Exposure Control Plan Overview
Roles and Responsibilities
Infection Control SOP # 1: Health Maintenance
Infection Control SOP # 2: Infection Control Training
Infection Control SOP # 3: Station Environment
Infection Control SOP # 4: Personal Protective Equipment
Infection Control SOP # 5: Scene Operations
Infection Control SOP # 6: Post-Response
Infection Control SOP # 7: Post-Exposure Procedures
Infection Control SOP # 8: Special Tuberculosis Precautions
Infection Control SOP # 9: Compliance Monitoring and Program Evaluation
Health/medical, training, and post-exposure record keeping and documentation are addressed in corresponding standard operating procedures.

III. Evaluation of Exposure Incidents

The procedure for the evaluation/investigation of circumstances surrounding incidents of exposure to blood, other body fluids, or other potentially Infectious materials is detailed in Infection Control SOP # 7: Post Exposure Procedures. Medical follow up. documentation, record keeping, and confidentiality requirements are also defined in SOP # 7.

Roles and Responsibilities

Chief of the Department: The tasks of managing the department Occupational Health and Safety and Infection Control programs shall be delegated to appropriate staff officers as noted below. The ultimate responsibility for the health and welfare of all members remains that of the Chief of Department.

Chief Officers, Commanders, and Company Officers will:

- Support and enforce compliance with the Infection Control Program.
- Correct any unsafe acts, and refer members for remedial infection control training as required.
- Refer for medical evaluation any member possibly unfit for work for infection control or any other reasons.

The department's Health and Safety Office: In addition to existing functions, this section shall be responsible for the development of a comprehensive infection control education program, which complies with OSHA Regulation, 29 CFR, Part 1910.1030. Technical assistance may be provided through various state and local agencies and the Employee Health Services office. Additionally, the following components shall be administered through the Health and Safety Office:

- Develop, implement, and maintain records of an immunization program.
- Develop and implement a post-exposure program.
- Provide technical assistance and guidance for infection control training
- Maintain confidentiality of all medical and exposure records as required by OSHA regulations; Part 29 CFR 1910.1030 and 29 CFR 1910.20
- Provide follow up information as necessary for incidents involving exposure to blood, body fluids, or other potentially infectious materials.

Department Health & Safety Officer:

The Department Health & Safety Officer will:

- Serve as the department's Designated Officer (DO) as required by the "Ryan White Comprehensive AIDS Resource Act of 1990" Public Law 101-381.
- Develop criteria for the purchase of infection control personal protective equipment and determine adequate stocking levels for each station and response apparatus.
- Evaluate possible member exposures to communicable diseases and coordinate communications between the department, hospitals, and the Employee Health Services office.
- Collect and maintain data relating to quality assurance of the department's infection control program.

- Conduct inspections of on-scene and station operations to ensure compliance with this policy and local, state, and federal regulations.
- Coordinate immunizations of members with the Employee Health Services office.
- Maintain a confidential database of exposures and treatments administered, in conjunction with the Employee Health Services office.
- Keep abreast of new developments in the field of infection control and provide appropriate recommendations to department staff officers.

Department personnel will:

- Assume ultimate responsibility for their own health and safety.
- Always use and promote use of proper personal protective equipment as the situation dictates. (See Standard Operating Procedure #4.)
- Immediately report any suspected occupationally acquired communicable diseases and/or exposure incidents to their company officer/immediate supervisor.

Health Maintenance
Standard Operating Procedure # 1:

- All uniformed employees of the Albuquerque Fire Department shall receive a pre-employment entrance physical, and additional physicals as specified in NMOHSB 11.2.5.10. This examination shall certify that the member is fit for duty.

- Work restrictions for reasons of infection control may be initiated by a designated physician or his/her designee. Prior to returning to duty members will be cleared by the physician or his/her designee.

- All members of the Albuquerque Fire Department will be offered immunizations against the Hepatitis B Virus (HBV). Members may refuse immunizations or may submit proof of previous immunizations. If a member refuses such immunization, they shall sign a declination form (page 28). However, members who initially refuse may later receive immunizations upon request at no cost to the member. The Department will provide the physician or his/her designee administering the immunizations with a copy of the OSHA regulation, 29 CFR Part 1910.1030.

- The Albuquerque Fire Department in conjunction with the Employee Health Services will maintain records in accordance with OSHA: 29 CFR Part 1910.1030. Member participation in the infection control program will be documented, including:
    - Name and Social Security number
    - Immunization records
    - Circumstances of exposure to communicable diseases
    - Post-exposure medical evaluation, treatment and follow-up.

Additionally

- Members health maintained according to OSHA regulations.
- Medical records are strictly confidential. They shall be maintained by a physician or his/her designee, and will not be kept with personal files. Medical records will not be released without the written consent of the member. Records of participation in Employee Assistance or Critical Incident Stress Debriefing (CISD) Programs are considered medical records
- Members may examine their own medical records, and may request that copies be sent to their personal physician.

Training of Personnel
Standard Operating Procedure # 2:

- Members of the Albuquerque Fire Department will be required to complete:

  - Initial training at the time of assignment to tasks where occupational exposure may occur
  - Exposure control training annually thereafter.

- All infection control materials will be appropriate in content and vocabulary to the educational level and language of members being trained.

- Training will be in compliance with OSHA Regulation, 29 CFR 1910.1030; Occupational Exposure to Bloodborne Pathogen and guided by NFPA Standard 1581; Fire Department Infection Control Programs. This instruction shall include:

  - An accessible copy of the OSHA Regulation available at, httc://www. osha. aov/cls/oshaweb/owadisc. show document?c table=STA NDARDS&c id=10051.
  - A general explanation of the epidemiology and symptoms of bloodborne and airborne diseases
  - An explanation of the modes of transmission of bloodbome and airborne pathogens
  - An explanation of the departments infection control program
  - An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood or other potentially infectious materials Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment
  - An explanation of the basis for selection of personal protective equipment information on the Hepatitis B Virus and immunization benefits
  - An explanation of the reporting process to follow for occupational exposures to blood or other potentially infectious materials and postexposure follow up
  - An explanation of the signs and labels and/or color-coding required for biohazard materials; information on the proper storage and disposal of regulated medical waste

- Persons conducting infection control training shall be knowledgeable in all aspects of program elements as they relate to emergency services provided by this department.

- Written training records will be maintained according to department policy, which exceeds the current OSHA requirement of three years after the date on which the training occurs. These records will include:
  - The dates of training sessions
  - The contents or summary of training conducted
  - The names and qualifications of persons conducting the training
  - The names and job titles of all persons attending the training sessions

Station Environment
Standard Operating Procedure #3:

Purpose: The Albuquerque Fire Department shall make every attempt to furnish each employee a place of employment, which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to each member.

Scope: The following recommendations are recognized as a means of reducing injury as they directly relate to the contact of blood or other potentially infectious materials through storage, decontamination, and disposal techniques. Albuquerque Fire Department personnel shall be familiar with these guidelines with compliance monitored by all officers.

Storage:

- Each station will be supplied with adequate storage facilities.
- Stations will be supplied with appropriate containers for storage of
- contaminated materials.
- Clean equipment shall be kept separate from that which may be contaminated.
- Under no circumstances should contaminated equipment be cleaned in areas such as kitchens or living areas.
- Infectious waste storage areas will be identified with BIOHAZARD signs (figure #1) and will be maintained in accordance with OSHA, EPA, and local or state regulations.

BIOHAZARD
SYMBOL
Figure #1

Contaminated materials will be stored in leakproof bags (figure #2) with appropriate labeling and color-coding.

BIOHAZARD BAGS
Figure #2

- If outside contamination of disposal bags is possible, a second bag with identical markings should be placed over the first.
- Contaminated sharps will be stored in closed puncture-resistant containers (figure #3) with proper labeling and color-coding.

SHARPS CONTAINER
Figure #3

- Materials that may be contaminated shall be placed into properly labeled (BIOHAZARD) containers which will then be stored in areas identified with proper (BIOHAZARD) labels as per OSHA, EPA, and local or state regulations.

Decontamination:

- Stations will be supplied with appropriate disinfecting solutions.
- Material Safety Data Sheets (MSDS) for cleaning and disinfecting solutions will also be provided.
- Personnel should be familiar with these solutions as well as the recommended personal protective equipment utilized during the decontamination process.

Disposal:

- Contaminated items, which are considered regulated medical waste, will be placed into proper disposal containers supplied by this department.
- Personnel will ensure that waste products are placed into the proper containers.
- Personnel will always recover items, which may be used at incidents (i.e., syringes, needles, I.V. sets, etc.) and dispose of them in the prescribed manner.

All Albuquerque Fire Department personnel are advised that biohazardous waste will be handled through the departments Resource Management Division located at 1801 Fourth Street NW, which will coordinate disposal with the contracted service provider.

The contracted service will provide the department with the required containers that are available through the departments Resource Management Division. Each required work site with a forty-four gallon container (RC44) and each required apparatus with a six gallon container (RC6) for disposal of bio-hazard waste. Both the RC44 and RC6 containers must be used with the appropriate bio-hazard liner.

When the RC44 is full the Station Commander will make arrangements with the Alarm Room to go out of service to deliver the RC44 to the departments Resource Management Division during normal working hours. The container will be replaced by the departments Resource Management Division to assure the station is never without a container. In the event that the RC6 container becomes contaminated, it will be replace in the same manner.

If any questions or concerns arise regarding this process, contact the Quality Improvement Office at Station 19 (888-8110).

Personal Protective Equipment
Standard Operating Procedure # 4:

Purpose: The Albuquerque Fire Department will provide to its members the necessary personal protective equipment to limit their exposure to blood or other potentially infectious materials that may occur during scene operations, decontamination, or disposal activities.

Scope: The following recommendations are to be followed by all personnel and shall be monitored for compliance by all officers.

Equipment:

- Available personal protective equipment (PPE), in addition to structural firefighting clothing will include: disposable gloves, N-95 face masks, face masks or face shields, eye protection, fluid impervious gowns, sharps collectors, leakproof red disposal bags, and in-station disposal containers.
- Disposable gloves will be constructed of latex or nitrile.
- Sharps collectors will be closable, puncture resistant, and leakproof. They shall be color coded, labeled as biohazard and accessible for on scene and in vehicle use.

Selection and Use of PPE:

- Emergency response is often unpredictable and uncontrollable. While blood is the most significant source of HIV and HBV infection in the workplace, in the field it is safest to assume that all body fluids are potentially infectious. For this reason, PPE will be chosen to provide barrier protection against all body fluids.
- In general, members should select PPE appropriate to the potential spill, splash, or exposure to body fluids. No SOP or PPE ensemble can cover all situations common sense must be used. When in doubt, members should select maximal rather than minimal protection.
- Disposable latex/nitrile gloves will be worn during any patient contact when potential exists for contact with blood, body fluids, non-intact skin, or other infectious material. Members should also carry a set of latex/nitrile gloves in the interior pocket of turnout coats.
- Disposable latex/nitrile gloves will be replaced as soon as possible when soiled, torn, or punctured. Personnel will wash hands as soon as practical following removal.
- Structural firefighting gloves will be worn in situations where sharp, or rough edges are likely to be encountered. As an added layer of protection, latex/nitrile gloves shall be worn under firefighting gloves.

- Latex/nitrile gloves will be worn during the handling, cleaning, decontamination, or disinfecting of potentially contaminated patient care equipment.
- Facial protection will be used in any situation where splash contact with the face is possible. Protection may be afforded by using both facemask and eye protection, or by using a full-face shield. When treating a patient with a known or suspected airborne communicable disease an OSHA mandated, NIOSH-approved N-95 mask shall be used.
- Face shields on structural firefighting helmets will not be used for infection control purposes.
- Fluid-resistant gowns are designed to protect clothing from splashes. Structural firefighting clothing also protects from splashes and is preferable in fire, rescue, or extrication activities. Gowns may interfere, or present a hazard to, the member in these situations. The decision to use barrier protection to protect member clothing, as well as the type to be worn, will be left to each member. Structural firefighting gear will always be worn for fire suppression and extrication activities.

Proper Removal of Latex/Nitrile Gloves

- The key to removing both sterile and non-sterile gloves is to keep

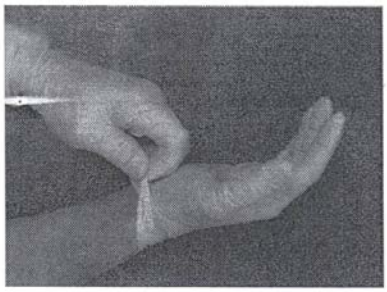
"Dirty to Dirty - Clean to Clean"

that is, contaminated surfaces only touch other contaminated surfaces; your bare hand, which is clean, touches only clean areas inside the other glove.

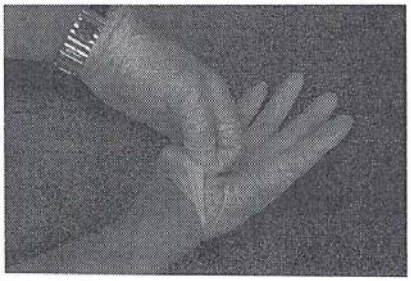
- **Never remove latex/nitrile gloves while holding waste of any kind in either hand. As is the case with the proper disposal of any contaminated biomedical waste, every independent component should be dealt with completely and with the greatest of care and attention.**

- Great attention and detail should be paid to maintaining the protective barrier and controlling the means by which contaminates could be liberated and subsequently come in contact with personnel or other work surfaces.

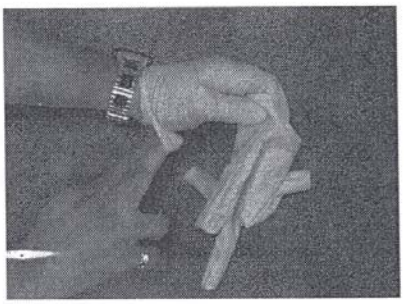
1. Take hold of the first glove at the wrist.



2. Fold it over and peel it back, turning it inside out as it goes. Once the glove is off, hold it with your gloved hand.



3. To remove the other glove, place your bare fingers inside the cuff without touching the glove exterior. Peel the glove off from the inside, turning it inside out as it goes. Use it to envelope the other glove.



- Remove used gloves before touching anything: Countertops, faucets, and pens and pencils are frequently contaminated because health care workers touch them while wearing used gloves. Avoid snapping off the gloves, as this may cause contaminants to splash into your eyes, mouth, or onto your skin or other people in the area as a result of being aerosolized.

Summary:

- If it's wet, it's potentially infectious - use gloves for every patient contact.
- If you can reasonably expect splashes onto your face, use eye shields and mask or a full-face shield.
- If it's airborne, mask yourself and the patient if possible
- If you can reasonably expect splashes onto your clothes, use a gown or structural firefighting clothing.

Scene Operations
Standard Operating Procedure # 5:

Purpose: The purpose of this procedure is to provide standard operating guidelines for on scene operations as they apply to the management of situations where contact with blood or other potentially infectious materials may be present. It shall be the responsibility of each company officer to ensure compliance.

Scope: Members of the Albuquerque Fire Department should consider the following points as standard procedures for safe emergency scene operations thereby reducing opportunity for occupational exposure to bloodborne and/or airborne disease.

- The blood, body fluids, and tissues of all patients should be considered potentially infectious, and standard precautions/body substance isolation procedures will be used for all patient contact.
- While complete control of the. emergency scene is not possible, scene operations as much as possible will attempt to limit splashing, spraying, or aerosolization of body fluids.
- The minimum number of persons required to complete the task safely will be used for all scene operations. Members not immediately needed will remain a safe distance from operations where communicable disease exposure is possible or anticipated.
- Hand washing is most important in reducing disease transmission. Members will wash hands following: removal of PPE, patient contact, handling potentially infectious materials, cleaning, disinfecting, or decontaminating equipment, using the bathroom, before eating, before and after preparing food.
- Eating, drinking, smoking, handling contact lenses, or applying cosmetics or lip balm is prohibited at the scene of emergency operations.
- Used needles, lancets, and other sharps shall be disposed of in approved sharps containers. Needles shall not be recapped, resheathed, bent, broken, or separated from disposable syringes. The most common occupational blood exposure occurs when needles are recapped.
- Sharps containers will be easily accessible for scene operations.
- Disposable resuscitation equipment (i.e., masks, bags) will be utilized whenever possible.
- Transport vehicle windows should be opened and interior ventilations systems turned to the non-recalculating setting.
- Personal protective equipment will be removed following completion of tasks and placed into leakproof bags, color coded and marked as biohazard, and transported back to the station for proper disposal.

- The public should be reassured that infection control PPE is used as a matter of routine for the protection of all members and the victims they treat. The use of PPE does not imply that a given victim or member may have a communicable disease.
- Patient confidentiality will be maintained at all times, members shall release medical information only to those persons authorized to receive such information. Queries from other agencies or the media shall be referred to the EMS section commander.
- At the conclusion of scene operations, all potentially contaminated patient care equipment will be removed for appropriate disposal, decontamination, or reuse.

The following are examples of situations and the required types of personal protective equipment necessary to protect against the transmission of bloodborne and airborne pathogens in the prehospital setting.

Special Procedures

Task:	Disposable Gloves	Gown	Mask	Eye Wear
Bleeding control, spurting blood	X	X	X	X
Bleeding control, minimal control	X			X
Emergency Childbirth	X	X	X	X
Venipuncture	X			X
Nebulizer Treatment	X		X	X
Suctioning/Intubation	X		X	X
Handling, cleaning contaminated items	X	X	X	X
Measuring BP	X			X
Administering Injection	X			X
Measuring Temperature	X			X
Rescue/Extrication	X			X

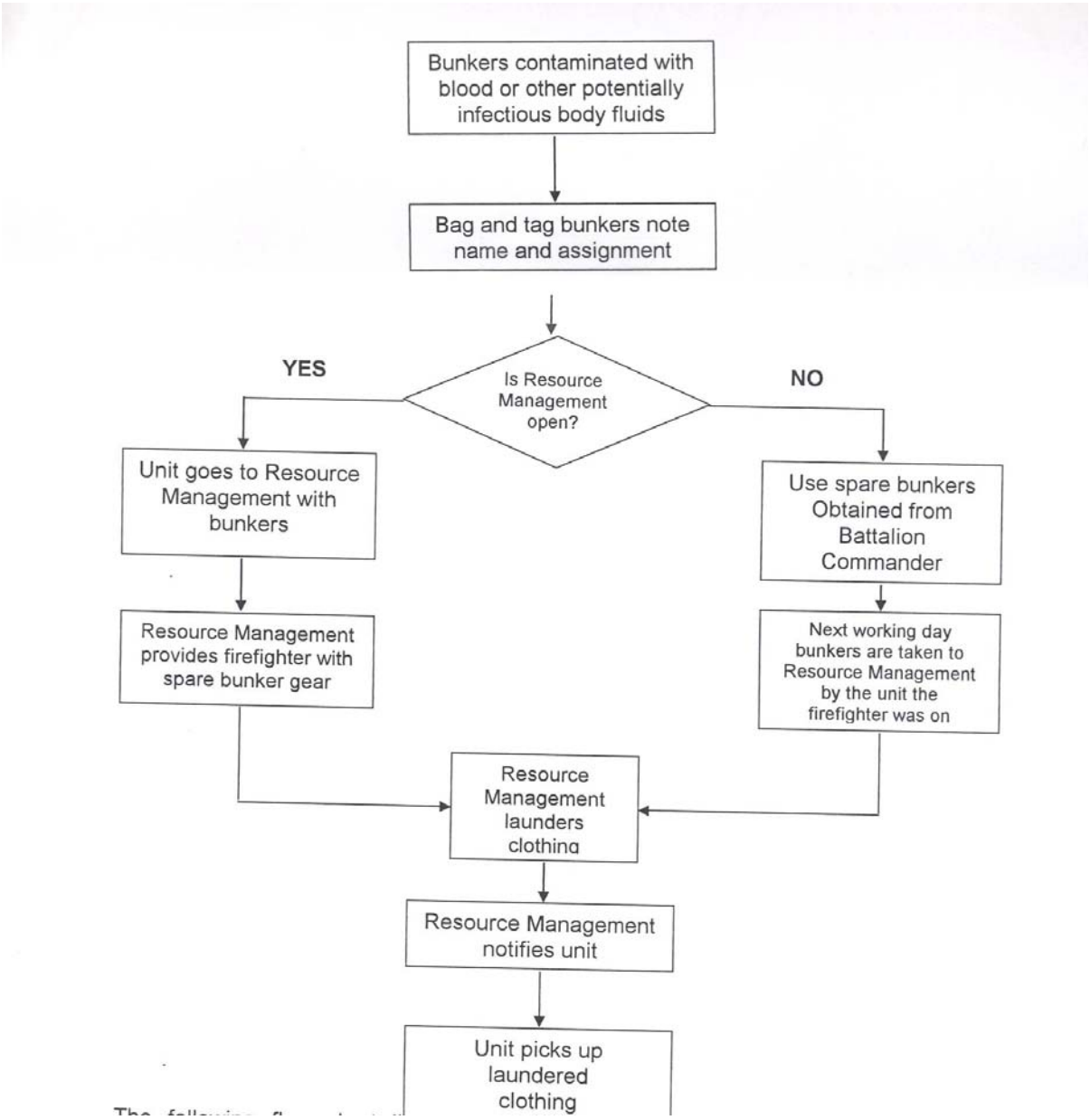
Department issued eve protection will be worn at all EMS scenes. All companv officers will be responsible for enforcement of this requirement.

Post Response Procedures
Standard Operating Procedure # 6:

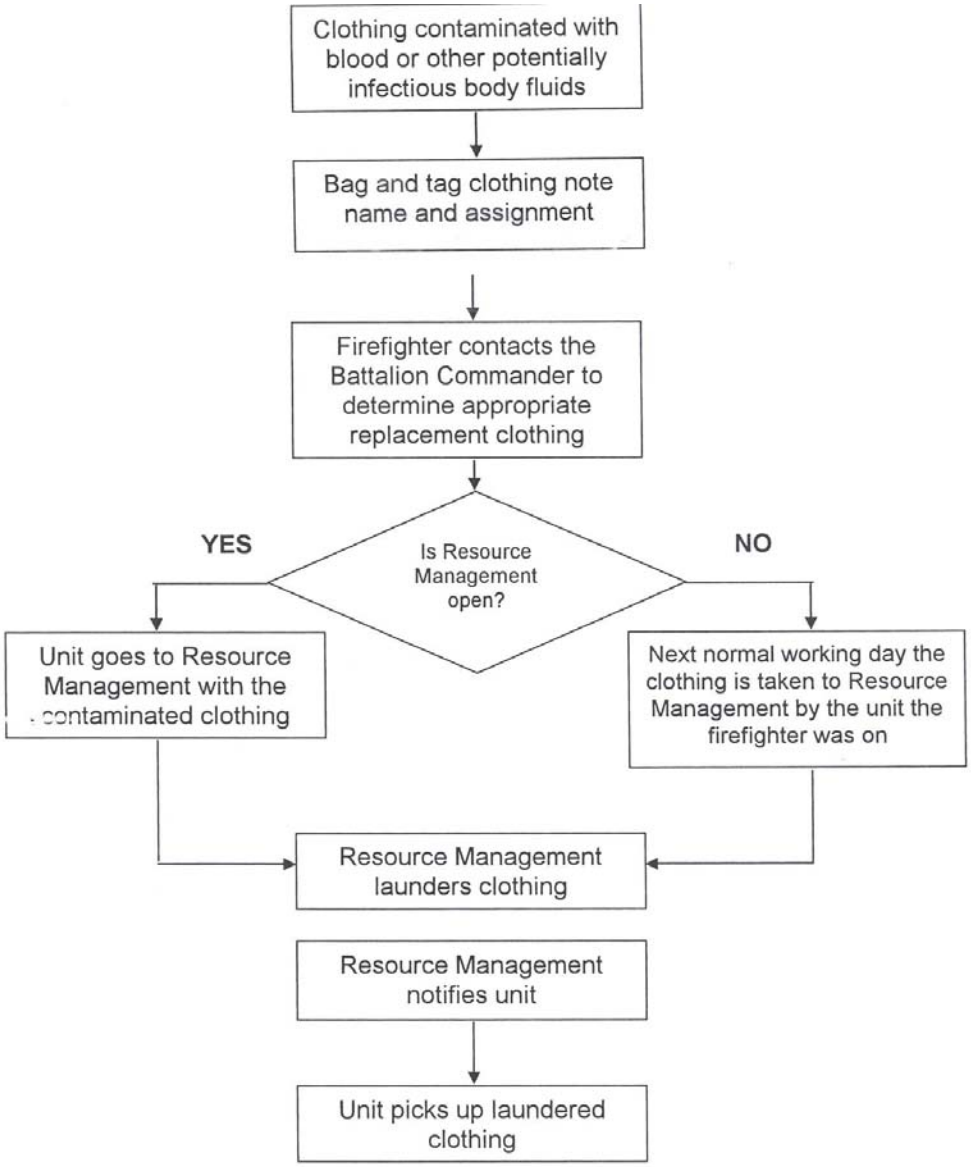
- Upon returning to stations members of this department shall remove all contaminated equipment and replenish supplies as needed.
- Contaminated equipment will be stored and/or cleaned in areas designated for such work, i.e., slop sinks, cabinets.
- Disposable equipment and other biohazard waste generated during on-scene operations will be stored in properly labeled leakproof biohazd bags or containers. Sharps containers, when full, along with all other properly packaged biohazard waste will be transported to and deposited in the specially labeled storage facility located at Resource Management, 1801 Forth street NW as outlined section #3 of this standard.
- Members shall utilize the recommended PPE when handling contaminated equipment.
- Disinfecting will be performed with a department issued/approved agent or with a 1 :10 solution of bleach in water. All disinfectants will be tuberculocidal and EPA approved and registered.
- Any equipment, which has been damaged, must be cleaned and disinfected before being sent for repair.
- Durable equipment (backboards, splints, MAST pants) will be washed with hot soapy water, rinsed with clean water, and disinfected with an approved agent. Equipment will be air-dried.
- Delicate equipment (radios, cardiac monitors, etc.) will be wiped clean of any debris using a moist cloth containing a hot soapy water solution, wiped with another cloth containing clean water, then wiped with an approved disinfecting agent and air dried.
- All other work surfaces will be decontaminated with an approved disinfecting agent. Seats on response vehicles contaminated with body fluids from soiled personal clothing also will be disinfected upon return to quarters.
- Contaminated structural firefighting gear should be placed in a biohazard bag, taken to the Resource Management office, and exchanged for a loaner set. Bunker gear will be cleaned at the Resource Management office according to the manufacturer's guidelines found on attached labels, and will be done in the designated washing machine. **Chlorine bleach may alter the fire retardant properties of firefighting gear, and is therefore not to be used.**
- Contaminated boots, helmets and structural firefighting gloves will be brush scrubbed with a hot soapy water solution and then rinsed with clean water, and allowed to air dry.

- Contaminated work clothes should be exchanged for clean clothes. The member should shower if body fluids were in contact with skin under work clothes. Contaminated work clothes shall be placed in a biohazard bag and taken to the Resource Management office to be washed in the designated washing machine.
- Infectious wastes generated through the cleaning process will be properly disposed of in biohazard, color-coded bags and/or containers.
- Run-off generated during the cleaning/disinfecting process must be washed into a sanitary sewer system. For the purposes of this document a sanitary sewer is any sewer or drain that runs to the city's wastewater treatment facility. Note: infectious waste generated at Station # 29 will not be washed into the septic system. Cleaning/disinfecting of equipment will be conducted at a facility with a sanitary sewer.

The following flow chart illustrates the necessary steps to clean bunker gear contaminated with potentially infectious waste in accordance with CFR 1910.1030



The following flow chart illustrates necessary steps to clean work clothing contaminated with potentially infectious waste in accordance with CFR 1910.1030



Post Exposure Procedures
Standard Operating Procedure #7:

Purpose: To create a uniform method for reporting, documenting, and providing for medical follow-up for members of this department following occupational exposure to blood or other potentially infectious materials.

Scope: This SOP applies to all personnel within this department and provides guidance for members when occupational exposure occurs. Additionally, these procedures meet or exceed current legislative requirements for notification of communicable disease exposure.

General Principles:

- All information concerning pre-hospital personnel exposure to infectious diseases will be kept confidential. All information released concerning the infectious disease status of patients will be kept confidential.
- Documentation of medical follow-up will be maintained by Employee Health Services, their personnel will be used as resources to this department to determine appropriate actions, medical care, and follow-up.
- Ensure timely and complete notification of member involvement.

Procedures/Bloodborne Pathogens
In order to ensure that timely handling of possible exposure to bloodborne pathogens are t.eated appropriately, especially the two-hour window prescribed as the best opportunity for dealing with HIV, the following protocol will be followed.

Once a possible bloodborne exposure takes place the following steps are to be taken by AFD members:

1. Report possible exposure(s) immediately to your direct supervisor. When the supervisor is notified he/she must ensure that the following actions occur:

- Place the affected unit out of service by contacting the Alarm Room. The unit will remain out of service until all necessary procedures have been completed. Remember that the exposed employee has been injured, and is now our primary patient.
- Contact the department's Health and Safety Officer at 934-8731 so that a request can be initiated for source patient testing for bloodbome pathogens from the hospital to which the source patient was transported. This departments Health and Safety Officer will do this by contacting the hospitals Infection Control Officer.

- Give the departments Health and Safety Officer the following information:
  - Exposed employee's name
  - Source patient name
  - Source patient date of birth
  - Source patient SSN, if available
  - Name of hospital that source patient was transported to

- Ensure that the employee reports to Employee Health, if during a normal business day, or contact the Occupational Health Nurse at Presbyterian Hospital nights and weekends at 841-1234.
- Ensure that the employee fills out all necessary paperwork identified in the following Section and coordinate delivery of them to the department's Health and Safety Officer as soon as possible.

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2. Document exposure in writing by filling out the AFD Exposure Form, City of Albuquerque Supervisor's Injury Investigation Report, and Emergency Medical Report in Sunpro for the employee. No source patient information is to be recorded on any of these documents: only the information requested is to be filled in. no exceptions. The original Exposure Form and the Supervisors Investigation Report must then be sent to the departments Health and Safety Officer "immediately." No copies of these forms shall be made by anyone forwarding this documentation to the departments Health and Safety Officer. The departments Health and Safety Officer will access the source patient information as well as the employee Emergency Medical Report via Sunpro. If there are any questions on this contact the departments Health and Safety Officer. The Health and Safety Officer for the department is Lieutenant Tafoya. Office 764-6358, Cell 362-4192.

3. The exposed individual will immediately do one of the following:

- During business hours, you are to report immediately to Employee Health located in the basement of the City County building.
- On nights or weekends contact the Presbyterian Telephone Operator at 841-1234, identify yourself as an employee of the Albuquerque Fire Department, report the possible exposure, and leave a return phone number.

4. An Occupational Health nurse will call the employee back as soon as possible, but in no more than ten (10) minutes.

- The Occupational Health nurse will question the employee and assess exposure significance according to the Center for Disease Control Guidelines.
- If possible, the source patient's name and social security number will be given

to the Occupational Health nurse.
- The name of your immediate supervisor, and Safety Officer may be requested. If so, provide the Occupational Health nurse with this information.

5. When HIV-Prophylaxis is appropriate, the exposed employee will choose whether they want to begin this treatment.

6. If the exposed employee wants treatment or is uncertain, then a consultation will be conducted by either the Physician at Employee Health, or with an Infectious Disease Consultant which will be arranged through the Occupational Medical Nurse by phone.

- Infectious Disease Consultant will contact the employee by phone within fifteen (15) minutes and explain HIV-Prophylaxis treatment and possible side effects.
- If the employee chooses to begin this treatment the Physician at employee Health or the Infectious Disease Consultant will contact the designated pharmacy to dispense a starter dose (usually three days) of appropriate medication.
- The Physician at Employee Health or the Infectious Disease Consultant will direct the exposed employee to follow-up. This will be at the Employee Health Center.

7 All original documents pertaining to the exposed employee must be sent to the departments Health and Safety Officer immediately.

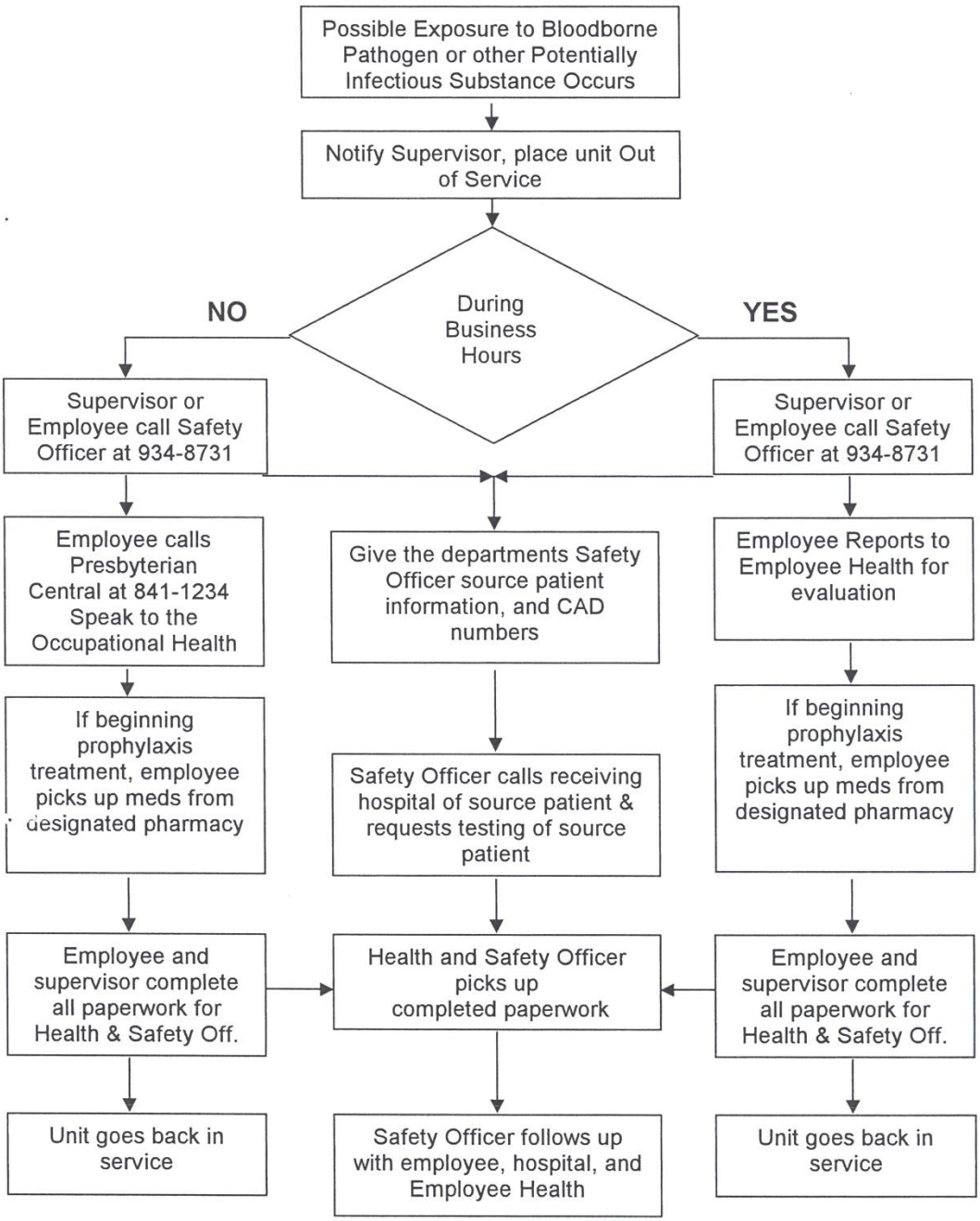
8. The Department Health and Safety Officer must be kept informed of all follow-up procedures and changes. Any documentation regarding the exposed employee during this period must be delivered to the Department Health and Safety Officer.

9. Any system delays or problems must be reported to the departments Health and Safety Officer immediately.

10. After initial HIV prophylaxis is received, the employee must report to Employee Health Center on the next business day.

11. The departments Health and Safety Officer is the main point of contact between the hospitals, Employee Health Center and the employee. All information in the process must be made with the Health and Safety Officers knowledge in a timely manner.

The following flow chart illustrates the necessary steps to follow after an exposure to blood or other potentially contaminated body fluid.



Special Tuberculosis and Airborne Pathogen Precautions
Standard Operating Procedure # 8

Scope: This policy applies to all members of the Albuquerque Fire Department and shall allow this department to comply with the Occupational Safety and Health Administration enforcement policy on Tuberculosis.

1. Early Identification of Individuals with Active Tuberculosis
Symptoms consistent with active TB infection
- Fever
- Night sweats
- Lethargy/weakness
- Weight loss
- Loss of appetite
- Sputum-producingc ough
- Coughing up blood

2. Medical surveillance program for members at risk for exposure to TB
Evaluation, administration and Interpretation of TB mantoux skin tests as follows:
- Initial baseline screening at time of employment and/or prior to placement in high-risk position.
- Annual screening for all uniformed members.
- Evaluation and management of members with a positive skin test or with a history of a positive skin test who are exhibiting symptoms of TB infections.

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3. Engineering/work practice controls to reduce the possibility of TB infection.

Respiratory protection: The use of a National Institute for Occupational Safety and Health (NIOSH)-approved respirator is the minimum acceptable level of respiratory protection under the following circumstances:

- When members enter rooms housing individuals with suspected or confirmed infectious TB
- When performing high hazard procedures on individuals with suspected or confirmed infectious TB, including:
  - Administering nebulized/aerosolized medications
  - Endotracheal intubation or tracheal auctioning

- When transporting individuals with suspected or confirmed infectious TB in a closed vehicle

NIOSH- approved respirators can be reused as long as they maintain their structural and functional integrity-

Transport Precautions: When transporting individuals with suspected or confirmed infectious TB, the following precautions will be utilized:

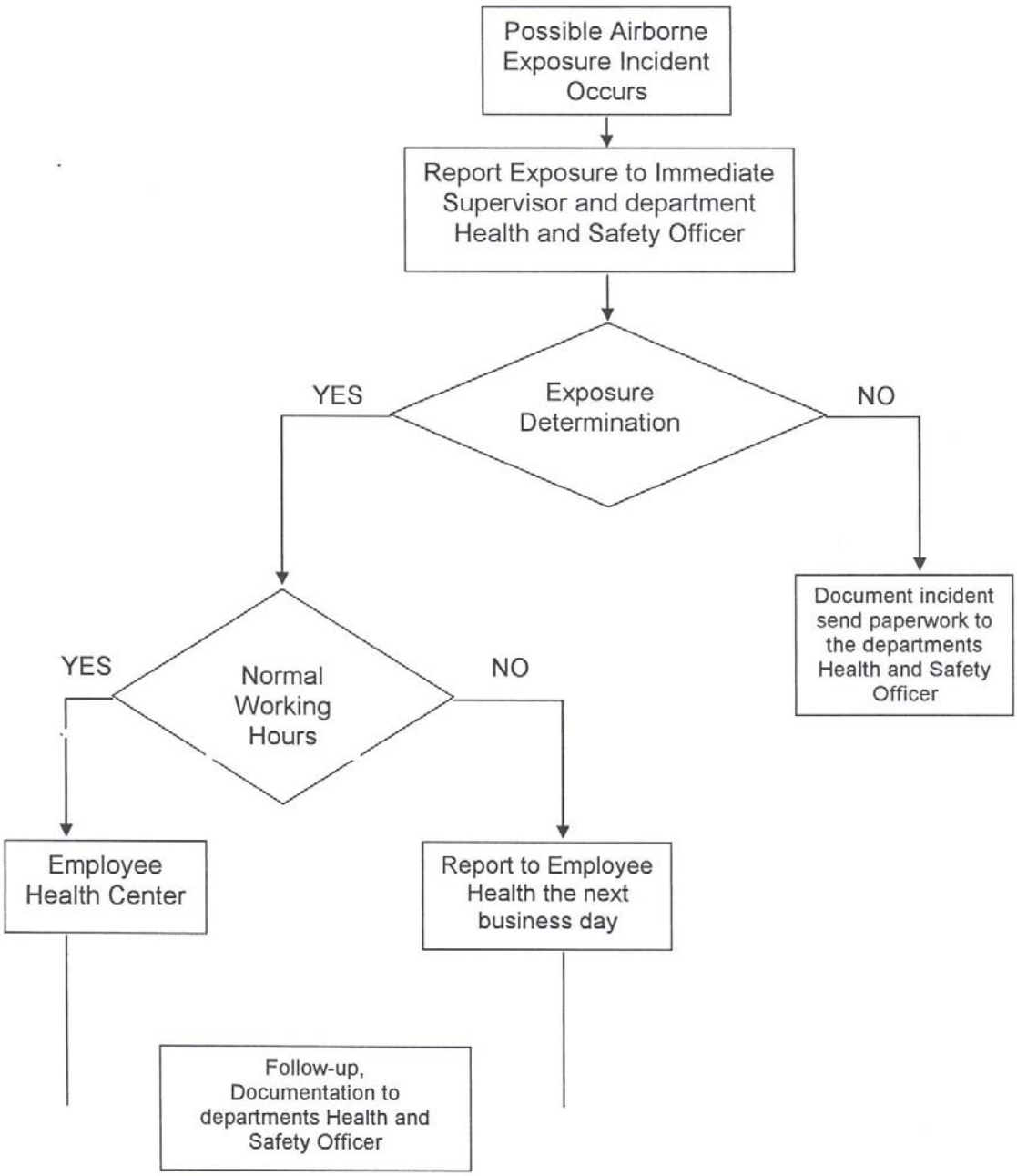
- Air conditioning or heating controls will be set to non-recirculating Mode
- Open vehicle windows or vents if feasible
- NIOSH- approved respirators will be worn
- Have the patient don a dust filter mask or NIOSH- approved respirator if possible

4. Record keeping procedures/standards applicable to TB exposure
29 CFR 1910.20 - Access to Employee Exposure and Medical Records:

Exposure to TB infection is an employee exposure record within the meaning of 29 CFR 1910.20. All results of TB skin testing and medical evaluation and treatment will be handled according to 29 CFR 1913. 1 0 so the Safety Officer can determine compliance with 29 CFR 1910.20.

29 CFR 1904 - Log and Summary of Occupational Injuries and Illnesses:
TB infection (positive TB Mantoux skin test) and TB disease will be recorded on the OSHA 200 log.
If a members TB infection which has been entered on the OSHA 200 log progresses to TB disease during the five year maintenance period and the original entry will be updated to reflect the new information.

The following flow chart illustrates the necessary steps to take after a possible exposure to an airborne pathogen.



Compliance Monitoring and Program Evaluation
Standard Operating Procedure # 9:

- The Department's Safety Officer will collect compliance and quality monitoring data including:
  - Inspections of station facilities.
  - Observations of on scene activities.
  - Analysis of reported exposures to communicable disease.
  - Recommend policy changes geared towards reducing the occurrence of occupational exposures.

- Program evaluation:
  - The Infection Control Plan and exposure engineering controls will be reevaluated at least annually to ensure that the program is both appropriate and effective.
  - In addition, the plan will be reevaluated as needed to reflect any significant changes in assigned tasks or procedures; in medical knowledge related to infection control; or in regulatory matters.

Albuquerque Fire Department
Hepatitis B Vaccine Declination

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

_____
Employee Name (print)

_____
Employee Signature

_____
Social Security Number

_____
Date

Apparatus Inspection and Maintenance

Purpose

Fire apparatus must always be ready to respond and must be capable of performing in the manner for which they were designed. This guideline directs personnel in the proper maintenance of department equipment. Equipment is to be maintained in as impeccable a condition as possible.

Guideline

A clean, well functioning apparatus is essential for effective emergency operations and a source of pride for crew, department and the public. A systematic and routine program of inspection, cleaning, maintenance, and accurate documentation will greatly aid in maintaining equipment in optimal condition.

Operational Guidance

I. Cleanliness

A. Cleanliness is a vital part of vehicle maintenance. Dirt and grime buildup damage moving parts, prevent free movement of parts and cover defects or damage. The process of keeping a vehicle clean helps to give personnel intimate knowledge of that piece of equipment and causes defects to be found sooner.

B. Washing, waxing, and polishing.

1. Rinse as much loose dirt from the vehicle with clean water, in order to reduce the chance of scratching.

2. Wash the exterior of the vehicle, including the top of the cab, wheel wells and diamondplate, with a good automotive soap.

3. Never use gasoline or other solvents to remove grease or tar from painted surfaces.

4. Dry the vehicle with a clean chamois rinsed frequently with clean water.

5. Wash glass with glass cleaner used in conjunction with paper towels or cloths.

6. All painted surfaces will be waxed as necessary after the vehicle is clean and dry.

7. All metal surfaces will be polished as necessary to prevent tarnish and dull surfaces.

8. Interiors are to be dusted, swept, dressed, and vacuumed. Used and discarded gloves, equipment, etc. will be removed after every call.

9. Compartments will be cleaned out and equipment maintained as frequently as necessary.

10. The engine compartment will be cleaned as necessary to aid in inspection and maintenance

II. Maintenance reports

A. Daily inspection reports.

1. Apparatus inspections must be performed daily with findings logged accurately on the Operators Inspection Guide and Trouble Report maintained for the vehicle.

   a. The driver's initial on this form confirms that they have conducted a thorough inspection of this vehicle, to the best of their ability, and in accordance with department policies, on this day.

   b. The officer must sign the form on the first and last day of the month.

   c. The form provides a basic but not all-inclusive listing of items to be checked. It is the responsibility of the driver to check the entire vehicle thoroughly on a daily basis and to identify and report any potential problems or new damage, etc.

2. Any problems found with the vehicle are noted on the reverse side of the Operators Inspection Guide and Trouble Report in the section titled Vehicle/Equipment Discrepancy and Maintenance Report. The report includes the following information.

   a. Item number

   b. Brief description of the problem

c. Date it was discovered

d. Date it was reported to maintenance

e. Initials and personnel number of the person reporting

f. Example entry for an oil leak:

"Item #3, leaking motor oil from between engine and transmission, found 5-7-05, reported 5-7-05, initials, ID #."

3. Fleet Maintenance should be notified immediately of items that will affect the safe operation of the vehicle.

4. Any vehicle damage or missing equipment must be reported immediately to the officer and a written report will be forwarded to the Division/Battalion Commander by noon of the same day.

B. Monthly reporting

1. A new Operators Inspection Guide and Trouble Report is started on the first day of each month for each apparatus.

a. Any unresolved repair items from the previous month's Vehicle/Equipment Discrepancy and Maintenance Report should be copied to the current month's report.

b. Completed forms, signed off on by company officer, will be forwarded to Fleet Management by no later than the 1st Friday of the following month. For example, the completed form for January will be forwarded by the 1st Friday of February.

III. Inspecting the apparatus

A. Performing inspections in a systematic manner ensures that all important items are checked each time the inspection is conducted.

1. Each driver is free to develop their own system or sequence but a driver should utilize the same system or sequence every time they inspect a vehicle.

2. It does not take a mechanic to recognize a problem. A driver who looks at and puts hands on the equipment every day will become familiar with normal operating conditions and will observe deterioration or malfunction if it occurs.

    a. Recognizing a potential problem, the driver can then contact Fleet Management for advice.

IV. Requirements of a complete vehicle inspection

A. Engine compartment.

1. Before lifting cab, secure loose items in the cab and ensure the vehicle is on a flat surface and brake is engaged.

2. After lifting cab, make sure cab tilt lock is in place and functioning properly before going beneath cab to access engine compartment.

3. Inspection items.

    a. Engine - Always check engine oil with the oil dipstick when the engine has been off for at least 15 minutes. Check level and for froth indicating water in the oil. Add oil as needed. Never overfill. Record any amount added in Vehicle/Equipment Discrepancy and Maintenance Report.

    b. Radiator - Coolant should be visible in the sight glass on the radiator. If a sight glass is not provided the coolant should be visible above the radiator core. The coolant should never be manually checked if the engine is hot. Allow engine to cool before opening the pressure cap to avoid risk of burns. Look for oil or oily froth in the radiator and check for any signs of coolant leaks in hoses and around the radiator. If adding distilled water or antifreeze, record information on the Trouble Report. Do not fill overheated systems with cold water as this can damage the engine.

c. Power steering - Power steering fluid reservoir should be kept full at all times with automatic transmission type fluid. Check power steering systems by looking for missing nuts, bolts, or other parts, and bent, loose, or broken parts, such as steering column, steering gear box, or tie rods. Check power steering hoses, pumps and fittings for leaks.

d. Transmission - Use the dipstick to check transmission fluid at normal operating temperatures with the engine running and the transmission in neutral. This is normally above 170 degrees. The transmission must be run through all the gears before checking. Add fluid as needed. Never overfill. Record any amount added on the Vehicle/Equipment Discrepancy and Maintenance Report.

e. Batteries – Batteries should be secured against movement and should not be broken or leaking. Check cables for breaks in insulation, damage and looseness that may effect the operation or the charging system.

f. Hydraulic fluid – Levels should be checked against manufacturers specifications. This includes hydraulic brake systems, cab tilts and aerial systems.

g. Leaks – Check for leaks of oil, fuel, coolant, power steering fluid, hydraulic fluid, air, battery, etc.

h. Drive belts - Check for unusual wear, cracks, cuts, frays and missing belts. Belts should flex ½ inch to 3/4 inch under moderate thumb pressure (25 pounds).

i. Hoses - Check hoses for soft spots, bulges, and cracks.

j. Loose or missing items - Check to make sure all bolts, screws, wiring, rubber protectors and any other items required for effective and safe operation are not missing or loose.

B. Air brake operation.

1. Check gauge to ensure at least 90 psi.

2. Chock wheels.

3. Release parking brake.

4. Bleed all air reservoirs.

5. Check if parking brake auto applied and will not release .

6. Start truck.

   a.. Listen for audible and visual low air alarm when less than 60 psi. The air pressure should increase enough to release the parking brake in one minute.

   b. If there is no alarm, the system does not increase pressure at a sufficient rate, or the parking brake does not auto apply this is a sign of serious brake system problems and should be taken out of service until a qualified mechanic has ensured proper operation

C. Cab interior

1. Ensure parking brake is set and start engine

2. Adjust the seat and mirrors

3. Become familiar with location of all controls, gauges and accessories in the cab so there is no need to take eyes from the road to make adjustments while driving.

4. Listen for unusual noises or knocks coming from the engine or engine compartment.

5. Check fuel level. Refueling is required at ½ tank.

6. Check windows, windshield and mirrors for cracks, scratches and cleanliness.

7. Check upholstery of seats, cushions, dash and headliners for wear or tearing.

8. Check functional controls for looseness, sticking, damage or improper setting.

a. Steering wheel – Ensure that play on the wheel is no more than 10 degrees or approximately 2 inches in movement at the rim of a 20-inch steering wheel.

b. Accelerator.

c. Brake controls.

d. Parking brake.

e. Retarder controls.

f. Transmission controls.

g. Interaxle differential lock (if equipped).

h. Horns and siren - Vehicle horn and air horn and siren.

i. Windshield wiper/washer.

j. Lights - Headlights, turn signals, running lights, hazards, back up lights, emergency lights.

9. Check that all gauges inside cab are working properly as required.

a. Temperatures – Temperatures take time to reach normal operating levels and may need to be checked after the pump test or after the first run the of day.

i. Engine temperature - 170 to 200 degrees.

ii. Transmission temp - 150 to 220 (250 degrees maximum).

iii. Oil pressure - 5 to 70 psi.

iv. Voltage - 13 to 14 volts.

b. Safety devices and warning buzzers should be inspected daily and confirmed working properly.

c. Heater / defroster and air conditioner.

10. Check all seatbelts for proper function. Ensure that seatbelts are free of cuts and frays.

11. Confirm all in-cab equipment is accounted for/functioning properly.

    a. Computer.

    a. Portable radios and EZ-Com.

    b. ERG, blank reports, officer clipboard, pens, district maps, running cards..

    c. Flashlights, gloves, traffic vests, triage kits.

    d. SCBA.

        i. Confirm all SCBAs are properly located and mounted.

        ii. Perform inspection and complete the proper check sheets.

D. Perform a 360 degree assessment of apparatus.

1. Check body of apparatus for dents, scratches and chips, as well as signs of stress or cracks.

2. Check exhaust system for loose, broken or missing mufflers, tailpipes, mounting brackets and clamps or parts that are leaking.

3. Tires.

    a. Confirm tire pressure is that recommended by manufacturer (stamped on sidewall).

    b. Check for at least 4/32 tread depth in every major groove.

    c. Examine for sidewalls for cuts or damage.

    d. Confirm that dual tires do not touch one another or have debris in between them.

    e. Check for cut or cracked valve stems.

    f. Check hub oil level in the sight glass (if provided).

4. Check wheels and rims.

    a. Check for damage and dents.

    b. Rust around wheel nuts may indicate loose lug nuts.

5. Suspension system.

    a. Visually inspect spring hangers that allow movement of axle from proper position for cracks or breaks.

    b. Look for missing or broken leaves in any leaf spring.

    c. Look for leaking shock absorbers.

    d. Look for torque rods or arms, U-bolts or other axle positioning parts that are cracked, damaged, or missing.

    e. Visually inspect air suspension systems for damage or leaks.

    f. Look for breaks or damage to torsion bars.

6. Braking system.

    a. Look for cracked drums or rotors.

    b. Check for loose or missing parts including shoes or pads worn dangerously thin or broken.

7. Check compartment hinges, lights, latches, equipment mounts and cleanliness.

8. Check hosereels for any defects or damage to the motor or gears including damaged gear chains.

E. Equipment check.

1. Handtools and other equipment.

    a. Check equipment for proper location, quantity, function/operation and condition.

b. Make sure all equipment is mounted properly, secure and ready for immediate use.

c. Equipment must be clean, free of rust/corrosion and all moving parts properly lubricated.

2. Power equipment.

a. Battery powered equipment will be checked daily and batteries replaced at a minimum of every cycle.

b. Gas equipment.

i. Gas equipment must be run for 3-5 minutes every cycle.

ii. Check to see that air filters are clean and dry.

iii. Check fluid levels and add fluids as necessary. Ensure that gas and oil containers are full, contain the proper mix and/or grade and are clearly marked.

iv. Check equipment for proper location and condition.

v. Make sure all equipment is mounted properly, secure and ready for immediate use.

vi. Equipment must be clean, free of rust/corrosion and all moving parts properly lubricated.

3. EMS equipment.

a. Check equipment for proper location, proper quantity, function/operation, and condition.

b. Make sure all equipment is mounted properly, secure and ready for immediate use, inside the cab of the apparatus if a compartment is provided.

c. EMS supplies are to be restocked after every call.

4. Ladders.

   a. Confirm halyards, locks, beams, rungs and hooks are free-moving, clean and undamaged (e.g., no bent beams or rungs).

   b. At least weekly raise the ladders and conduct an operational check.

5. Foam equipment.

   a. Check foam reservoir level.

   b. Confirm extra foam solution is on apparatus.

   c. Never mix different types or brands of foam.

   d. Periodically check operation of foam system, cleaning and flushing system in accordance with manufacturer instructions.

F. Pumping operations check.

1. Confirm water and foam tanks are full. Tanks must be full at all times.

   a. Visually check the actual level of water and foam in the respective tanks.

   b. Check the tank level indicator lights and compare with actual levels. Report any gauge malfunction.

2. Check functioning of caps, plugs and valves.

   a. Remove and replace all caps and plugs to ensure proper operation and prevent sticking.

   b. Open and close all discharge, intake, and drain valves. Check for smooth, easy operation. Save the “tank to pump” valve for last and leave it open.

c. Engage the pump. Listen for unusual noises or knocks coming from the pump and look for all visual indicators of pump engagement.

d. Confirm “tank to pump” is open.

e. Open the tank fill/recirculate valve to flow water.

f. Throttle up to increase engine RPM until the pump builds up at least 150 psi. If equipped with a pressure governor the throttle should be operated in the pressure control mode only.

g. Set the pressure relief valve (if equipped).

   i. Slowly bring the pressure to below 100 psi (take it as far down as it will go) using the relief valve.

   ii. Increase the pressure back up to 150 psi until relief valve closes.

   iii. Increase throttle to check that pressure relief valve activates within 10 psi of working pressure.

   iv. The relief valve can be stored at any setting the driver wishes as long as it is checked every day and the driver always knows where it is set.

h. On pressure governor-equipped units.

   i. Ensure governor is in pressure mode.

   ii. Check operation by closing the tank fill/recirculate valve and listening for a decrease in engine RPM.

   iii. Reopen the tank fill/recirculate valve and look/listen for an increase in engine RPM

i. Transfer valve-equipped units.

   i. Lower the pressure to 75 psi or less and operate the transfer valve.

ii. Confirm that the pump transfers completely to both volume/parallel and pressure/series settings

j. Confirm operation of pressure gauges.

i. Open discharge valves one at a time and check the individual gauges for operation.

ii. Do not open pre-connected lines. These must be checked during drills or on fires.

k. Make sure all engine gauges on the pump panel are working properly.

l. Operate the priming pump daily.

m. Check for water leaks.

n. Pump packing should only leak when the pump is engaged and then it should only drip and not flow in a steady stream.

G. Aerial operations check.

1. Review load charts to ensure familiarity with safe operating ranges and loads.

2. Engage PTO and confirm smooth operation with no unusual noises.

3. Engage high idle and confirm proper operation.

4. Operate stabilizers.

a. Confirm full range of operation with smooth action (NFPA requires that stabilizers are set up in 90 seconds).

b. Check for leaks, cracks, cracking welds, loose parts or bolts and cleanliness.

5. Interlocks should be functioning according to specification.

a. Interlocks prevent certain functions from initiating until others are complete (e.g., interlocks may prevent raising or rotating a ladder until the stabilizers are set.)

6. Aerial operation.

   a. Operate the aerial through its full range of operation from each set of controls (turntable and tip).

   b. The aerial should be able to rise to its highest angle, rotate 90 degrees, and extend fully in 120 seconds (NFPA). Action should be smooth and quick with no jerking or unusual vibration or noise.

7. Hydraulic pressure should be match manufacturer specifications.

   a. Check hydraulic lines and seals for leaks.

   b. Do not run your hands over hydraulic lines under pressure.

8. Check the turntable to tip communications systems.

9. Check all tracking and flood lights.

10. On the turntable, check all safety devices and controls that operate your ladder and accessories.

11. Visually inspect the bed section and flies for straightness, cracks, loose parts, damage and signs of stress or heat.

12. Assess aerial locks and stops, turntable bolts, turntable gears (for missing teeth), welds, rivets, bolts, hydraulic lines, hinges/pivot points, ends of hydraulic cylinders, cylinders (for pitting), rollers, cables (for looseness, frays, broken strands, damaged shivs or pulleys or other signs of stress or damage) and drums.

13. Aerial maintenance also includes:

   a. Keeping hydraulic rams and retracting waterways clean.

   b. Never mixing hydraulic fluids.

14. Engage generator and run all auxiliary lighting and connections.

H. Operating guidelines to aid in more efficient operation and better maintenance of any vehicle.

1. When not responding to emergencies, treat the engine gently until it has reached normal operating temperature. Slow, gentle starts are always better for the engine and are more fuel-efficient.

2. Anticipating and preparing in advance for stops saves the brakes, drive train and fuel. This can be done by gently backing off from the throttle, allowing auxiliary braking devices to work, and gently applying the brakes. Look and plan well ahead for stops and turns.

3. The engine must always be allowed to sit and idle for 30 to 60 seconds before it is shut down. Quick shut down may allow the turbo to spin without oil and the temperature to rise (100 degrees or more), potentially damaging the bearings and oil seals.

    a. If possible, idle for 3 to 5 minutes before shuting down the engine when returning to the station. A reasonable alternative to doing this is to keep the engine RPM low for the last few blocks to the station. Apply no more throttle than is necessary to move the vehicle and maintain this low RPM as you enter the station.

4. Never turn off battery switch before engine is completely stopped.

5. Never switch batteries while the engine is still running.

6. Always park in “neutral” with the brake set.

7. Additional information can be found in “Pumping Apparatus Driver/Operator Handbook” and “Aerial Apparatus Driver/Operator Handbook” by IFSTA.

Safe Driving

Purpose

The purpose of this guideline is to define safe and appropriate driving behavior for all Albuquerque Fire Department personnel for the operation of both emergency apparatus and non-emergency vehicles.

Guideline

It is the responsibility of the operator of each Fire Department vehicle to drive safely and prudently at all times. Vehicles shall be operated in compliance with the New Mexico Motor Vehicle Code. This code provides specific legal exceptions to regular traffic regulations which apply to fire department vehicles only when responding to an emergency incident or when transporting a patient to a medical facility.

Emergency response (lights and siren) does not absolve the driver of any responsibility to drive with due caution. The driver of the emergency vehicle is responsible for its safe operation at all times.

It is the responsibility of all personnel to learn and understand these safe driving guidelines. It is the responsibility of all command and company officers to ensure their subordinate personnel comply with these guidelines, with the safe driving policy established by the City of Albuquerque, and with the Motor Vehicle Code as defined by State of New Mexico regulations.

Operational Guidance

I. General driving considerations

A. When responding “code 3” (with lights and sirens), warning lights must be on and sirens must be sounded to warn drivers of other vehicles, as required by the New Mexico Motor Vehicle Code.

1. The use of sirens and warning lights does not give the right-of-way to the emergency vehicle. These devices simply request the right-of-way from other drivers, based on their awareness of the emergency vehicle presence.

2. Emergency vehicle drivers must make every possible effort to make their presence and intended actions known to other drivers, and must drive defensively to be prepared for the unexpected inappropriate actions of others.

B. Fire department vehicles are authorized to exceed posted speed limits only when responding “code 3,” under favorable conditions.

1. This applies only with light traffic, good roads, good visibility, and dry pavement.

2. Under these conditions a maximum of 10 mph over the posted speed limit is authorized.

C. Under less than favorable conditions, the posted speed limit is the maximum permissible.

D. Since intersections present the greatest potential danger to emergency vehicles, drivers shall not exceed the posted speed limit when approaching and crossing an intersection with the right-of-way.

E. When approaching an intersection, with red light or stop sign, the vehicle shall come to a complete stop, and may proceed only when the driver can account for all oncoming traffic in all lanes yielding the right-of-way.

II. Operational considerations

A. A “code 3” response is authorized only in conjunction with emergency incidents. Unnecessary emergency responses shall be avoided. In order to avoid any unnecessary emergency response:

1. When the first unit reports on the scene with “nothing showing” or an equivalent report, any additional units shall continue “code 3,” but shall not exceed the posted speed limit.

2. The first-arriving unit will advise additional units to respond “code 1” (no lights or siren) whenever appropriate.

3. Drivers shall avoid backing whenever possible.

a. In situations where backing is unavoidable, spotters shall be used.

b. If a spotter is unavailable, the driver shall dismount and walk completely around apparatus to determine if obstructions are present before backing.

c. All fire apparatus staffed with three or more members (including the unit officer) will provide two personnel to act as spotters while the unit is being backed up.

d. All fire apparatus that are staffed with two members will be spotted by the passenger (who may be the unit officer), while the unit is being backed up.

4. All City of Albuquerque employees are required to use seat belts at all times when operating a City vehicle equipped with seat belts.

a. Selt belt usage is required of anyone riding as a passenger/attendant in a City vehicle including: ambulance, engine, ladder, utility service van, staff vehicle, etc.

b. The company officer and/or driver of the vehicle will confirm that all personnel and riders are inboard, properly attired, and seated with seat belts on, before the vehicle is permitted to move.

c. All personnel shall ride only in regular seats provided with seat belts. Riding on tailboards or other exposed positions is not permitted on any vehicle at any time.

5. During an emergency response, fire vehicles should avoid passing other emergency vehicles. If passing is necessary, permission must be obtained through radio communications, using accepted radio communications.

III. Emergency operations

A. The unique hazards of driving on or adjacent to the fire ground requires the driver to use extreme caution and to be alert and prepared to react to the unexpected. Drivers must consider the dangers their moving vehicle poses to fire ground personnel and spectators who may be preoccupied with the emergency, and who may inadvertently step in front of or behind a moving vehicle.

B. When stopped at the scene of an incident, vehicles should be placed to protect personnel who may be working in the street.

1. Warning lights shall be used to make approaching traffic aware of the incident.

2. At night, vehicle-mounted floodlights and any other available lighting shall be used to illuminate the scene.

C. If it is not necessary to park vehicles in or near traffic lanes, the vehicle should be pulled off the road to parking lots or curbs whenever possible.

D. The officer-in-charge and the driver of the vehicle are responsible for the safety of all vehicle operations and managing compliance of this procedure.

IV. Emergency response guidelines

A. Albuquerque Fire Department vehicles shall be operated in a manner that provides for the safety of all persons and property. Safe arrival shall always have priority over unnecessary speed and reckless driving en-route to an emergency incident.

B. A prompt and safe response shall be attained by strict adherence to responsible driving behavior.

1. Leave the station in a standardized manner.

2. Quickly mount the apparatus.

3. Before leaving the station, all personnel should be on board, and seated, with seatbelts on.

4. The station doors should be fully open.

5. The apparatus driver should drive defensively and professionally at reasonable speeds.

6. The driver and officer should know where they are going.

7. The driver should use warning devices to move around traffic and to request the right-of-way in a safe and predictable manner.

C. A fast response shall not be obtained by inappropriate or irresponsible driving. Examples of inappropriate driving include:

1. Leaving quarters before the crew has mounted safely or before the apparatus doors are fully open.

2. Driving too fast for weather or road conditions.

3. Driving recklessly or without regard for safety.

4. Taking unnecessary risks at intersections with red lights and/or stop signs.

5. Using the apparatus to intimidate or scare other drivers.

D. Other emergency response criteria.

1. Emergency apparatus are allowed to travel a maximum of 10 mph over the posted speed limit.

2. Emergency apparatus are allowed to travel only at the posted speed limit when entering intersections with green light.

3. Emergency apparatus must come to a complete stop at all red lights and/or stop signs.

Driver Training

Purpose

The purpose of this guideline is to define accepted methods, training regimens, and certification requirements as they apply to vehicle/apparatus operators. Because certifications may be required, this guideline uses terminology that is specific to rules, procedure, and policy.

Guideline

AFD Standard Operating Guidelines apply to all vehicle operators, including those who have achieved the rank of Driver/Engineer and those who upgrade to that rank. Drivers in the fire service have a tremendous responsibility to drive the apparatus safely. They must also posses the knowledge and training to efficiently operate the apparatus and equipment to which they are assigned.

Two AFD Driver Academies will be available at the Training Academy. One will focus on suppression apparatus, and the other will focus on rescue apparatus. Successful completion of the Drivers Academy and the Drivers Certification Process will result in a Firefighter being capable of acting at the Drivers rank for the apparatus on which they certify.

Operational Guidance

I. Drivers Academy rules and procedures

A. Selection.

1. A memo will be sent out to all personnel at least thirty days before the start of a Drivers Academy.

2. All interested non-probationary firefighters must contact an Academy Driver to sign up for the Drivers Academy.

3. Firefighters will be ranked by seniority, and a roster will then be finalized seven days before the start of the Academy.

4. Firefighters who have not attended a Drivers Academy will have preference over those members who are repeating the course.

B. Attendance.

1. Class will be from 0800-1700 every day of the Drivers Academy (unless otherwise noted by the Academy Instructors.)

a. Firefighters will have a one-hour lunch, with periodic breaks before and after lunch.

b. Attendance at all classroom and drill sessions is mandatory. A sign-up roster will be completed for every day of class.

c. If a firefighter is absent for any portion of the Academy, they will be required to make up the lost portion in the next Drivers Academy.

d. No firefighter will be allowed to begin the Driver Certification Process until the Drivers Academy is completed in its entirety.

C. Uniforms and equipment.

1. All firefighters are required to wear an approved AFD uniform to class.

2. Firefighters will, each day, be required to bring their AFD issued structural firefighting and wild land personal protective equipment.

3. A structural helmet, leather gloves, bunker pants, and steel-toe boots are the minimum PPE required for all evolutions on the drill field.

D. Testing and certificate of completion.

1. There may be several exams during the course.

2. A Drivers Academy certificate of completion is dependent on passing all of these exams.

E. Timeframe.

1. Firefighters must complete the entire Driver Certification Process within three months of completing the Drivers Academy.

2. Those Firefighters who are not certified after the three months will be required to retake the entire Drivers Academy, on their own time, before being allowed to complete the Driver Certification Process.

II. Suppression Drivers Academy and certification process

A. Suppression Drivers Academy pre-requisites.

1. Prior to attending the Suppression Drivers Academy, firefighters will be required to complete the Pre-Suppression Drivers Academy worksheet.

a. Completion of this form will help ensure that the firefighter has a familiarization of the Driver position.

B. Classes.

1. The Suppression Drivers Academy will consist of two weeks of training at the Training Academy.

2. Before the Suppression Drivers Academy begins, firefighters need to contact the Training Academy for a current class syllabus and required reading material.

3. Training classes will consist of (but is not limited to) the following:

a. AFD SOGs applicable to a Driver in the Albuquerque Fire Department.

b. EVOC II Fire.

c. Pump operations and hydraulics.

d. Foam operations.

e. Fire protection systems.

f. Aerial apparatus operations.

g. Wildland apparatus and equipment operations.

h. Operation and maintenance of all equipment carried on Suppression apparatus.

i. Practical skills evolutions.

III. Suppression Drivers certification process

A Requirements.

1. All requirements of the Training Academy must be met before a firefighter will be allowed to start the certification process. These requirements include:

   a. Current State of New Mexico Drivers License (with a Class E endorsement).

   b. Current City of Albuquerque Operators Permit.

   c. Completed City of Albuquerque Driver Authorization form.

   d. AFD Suppression Drivers Academy Certificate of Completion.

   e. Completed Firefighter pre-certification check sheet for Engines and Ladders (with 10 hours minimum on Engine Apparatus and 10 hours minimum on Aerial Apparatus).

2. Tests.

   a. The Suppression Drivers certification tests must be completed while the firefighter is on duty.

   b. The firefighter will contact a Driver at the Training Academy and schedule a date for testing.

   c. A passing score of 80% is required for all tests.

3. The Suppression Drivers certification tests will consist of the following (an instruction sheet and skill sheet is provided for all of the practical skills tests):

   a. A Suppression Driver Operator written test, which will be questions covering the source documents and material presented during the Suppression Drivers Academy.

b. A Hydraulics written test, which will be questions covering a range of scenarios including: different size hand line/ nozzle combinations, master streams, and standpipe operations.

c. A Suppression cone course test.

d. A Suppression Apparatus road test.

e. An Aerial Apparatus operations test.

f. Pump operations tests, for which firefighters must know all of the pumping evolutions.

g. During the Certification Test they will only be tested on two randomly selected pumping evolutions.

i. One changeover test (2 ½" or 5").

ii. One 5" supply / dual pumping test.

4. Retest policy

a. Firefighters who do not successfully pass any portion of the Written Tests and Practical Skills Tests will not be certified.

b. A retest will be allowed a minimum of fifteen days after the previous certification test.

c. Before a firefighter will be allowed to retest, they must have their Officer sign a completed Albuquerque Fire Academy Driver Certification Retest Form. This form will document that the firefighter has prepared to pass the retest.

IV. Rescue Drivers Academy

A. Rescue Drivers Academy pre-requisites

1. Firefighters must be certified paramedics.

2. Prior to attending the Rescue Drivers Academy firefighters will be required to complete the Pre-Rescue Drivers Academy worksheet. Completion of this form will help ensure that the firefighter has a familiarization of the Rescue Driver position.

B. Classes

1. The Rescue Drivers Academy will consist of two days training at the Training Academy.

2. Before the Rescue Drivers Academy begins, firefighters need to contact the Training Academy for a current class syllabus and required reading material.

C. Training classes will consist of (but are not limited to) the following:

1. AFD SOGs applicable to a Driver in the Albuquerque Fire Department.

2. EVOC II Ambulance.

3. Operation and maintenance of all equipment carried on Rescues.

4. Practical skills evolutions.

V. Rescue Drivers certification process

A. Requirements.

1. All requirements of the Training Academy must be met before a firefighter will be allowed to start the certification process. These requirements include the following:

a. A current State of New Mexico Drivers License (with a Class E endorsement).

b. A current City of Albuquerque Operators Permit.

c. A current State of New Mexico Paramedic License.

d. Completed City of Albuquerque Driver Authorization form.

e. AFD Rescue Drivers Academy Certificate of Completion.

f. Completed Firefighter Pre-Certification Check sheet for Rescues.

g. A minimum of ten hours driving on Rescue Apparatus.

2. Tests.

   a. The Rescue Drivers certification tests must be completed while the firefighter is on duty.

   b. The firefighter will contact a Driver at the Training Academy and schedule a date for testing.

   c. A passing score of 80% is required for all tests.

3. The Rescue Drivers certification tests will consist of the following (an instruction sheet and skill sheet is provided for all of the practical skills tests).

   a. The Rescue Driver written operator test will contain questions covering the source documents and material presented during the Suppression Drivers Academy.

   b. Rescue practical skills tests.

   c. Rescue cone course test.

   d. Rescue apparatus road test.

   e. Rescue equipment operation test.

3. Re-test Policy.

   a. Firefighters who do not successfully pass any portion of the Written Test and Practical Skills Tests will not be certified.

   b. A retest will be allowed a minimum of fifteen days after the previous certification test.

   c. Before a firefighter will be allowed to retest they must have their Officer sign a completed Albuquerque Fire Academy Driver Certification re-test form. This form will document that the firefighter has prepared to pass the re-test.

VI. Certified firefighters

A. All firefighters who successfully complete the Suppression Drivers certification process will be eligible to upgrade to the Driver position on Engines and Ladders only.

B. All firefighters who successfully complete the Rescue Drivers certification process will be eligible to upgrade to the Driver position on Rescues only.

C. An Academy Driver will advise the Field Operations Center when a firefighter passes a certification test.

D. Squad Driver qualifications.

1. In order for Firefighters to be certified on AFD Squads, they must be currently certified on Engines and Ladders.

2. They must also meet the following training criteria and complete the appropriate Squad Certification practical skill test.

a. Haz-Mat Squads.

i. Certified to the Technician Level, or higher, per NFPA 472 “Professional Competence of Responders to Hazardous Materials Incidents.”

b. Heavy Technical Rescue Squad.

i. Certified to the Operations Level, or higher, per NFPA 1670 “Operations and Training for Search and Rescue Incidents.”

3. Only those certified Firefighters and promoted Drivers, who are certified to the above HAZ-MAT or HTR Level, will be allowed to Drive/Operate AFD Squads.

VII. Refreshers and training records

A. Driver refresher.

1. All Firefighters who are eligible to upgrade to the rank of Driver, promoted Drivers, Quality Improvement Officers and field Commanders will attend a Driver Refresher Class annually.

2. This class will comply with NFPA 1451 “Fire Service Vehicle Operations Training Program,” and must consist of (but is not limited to) the following:

   a. A review and analysis of nationwide emergency vehicle apparatus accidents from the previous year.

   b. A review of AFD SOGs applicable to a Driver in the Albuquerque Fire Department.

   c. A review and participation in any practical skills evolutions chosen by the instructor.

VIII. Driver training records

A. Records of all AFD Drivers Training will be kept at the Training Academy.

B. It will be the responsibility of each member to provide the Training Academy with a copy of any additional Drivers Training they receive from outside the department.

Driving Policies and Guidelines

Purpose

The purpose of this guideline is to define safe and appropriate driving behavior for all Albuquerque Fire Department personnel for the operation of both emergency apparatus and non-emergency vehicles.

Guideline

All Drivers, acting Drivers and personnel in training to drive must be familiar with the rules, regulations and measures that apply to emergency vehicle operations. These rules, regulations and measures include State Law and the Albuquerque Fire Department Operating Guidelines.

These rules, regulations, and measures do not relieve the driver of an authorized emergency vehicle from the duty to drive with due regard for the safety of all persons nor does it protect the driver from the consequences of his/her reckless disregard for the safety of others.

Operational Guidance

I. State regulations and department guidelines

A. State Laws

1. The New Mexico Motor Vehicle Code (New Mexico Criminal and Traffic Law Manual (66-7-6) gives only four privileges to emergency vehicle drivers and it gives conditions to the use of these privileges. An emergency vehicle driver may

   a. Exceed the maximum speed limits so long as doing so does not endanger life or property

   b. Park or stand irrespective of the provisions of the Motor Vehicle Code

   c. Proceed past a red or stop signal or stop sign, but only after slowing down as necessary for safe operation

   d. Disregard regulations governing direction of movement or turning in specified directions

2. These privileges are further restricted by AFD.

   a. The exemptions granted to an authorized emergency vehicle apply only when the driver of the vehicle, while in motion, sounds an audible signal by bell, siren or exhaust whistle as reasonably necessary and when the vehicle is equipped with at least one lighted lamp displaying a red light visible under normal atmospheric conditions from a distance of five hundred feet to the front of the vehicle.

3. All other laws apply.

4. The use of sirens and warning lights does not automatically give the right-of-way to the emergency vehicle. These devices simply request the right-of-way from other drivers, based on their awareness of the emergency vehicle presence. Emergency vehicle drivers must make every possible effort to make their presence and intended actions known to other drivers, and must drive defensively to be prepared for the unexpected inappropriate actions of others.

5. Examples of other laws that apply to emergency vehicle operators

   a. Emergency vehicle operators must comply with any awful order or direction of any police officer invested by law with the authority to direct, control or regulate traffic.

   b. Emergency vehicle operators may not pass school busses that are loading or unloading passengers.

   c. Emergency vehicle operators may not leave the scene of an accident that the apparatus is involved in.

6. This section does not relieve the driver of an authorized emergency vehicle from the duty to drive with due regard for the safety of all persons nor does it protect the driver from the consequences of his reckless disregard for the safety of others.

B. AFD response guidelines.

1. The Albuquerque Fire Department has chosen to further clarify, restrict, and regulate the privileges granted by the Motor Vehicle Code by adoption of these Standard Operating Guidelines.

2. All AFD members will use seatbelts while riding in any city vehicle. No members' safety will be compromised by allowing them to don personal protective equipment at the expense of wearing a seatbelt. The Company Officer and Driver of the vehicle will confirm that all members are inside the cab, properly attired, seated with seat belts on before the vehicle is permitted to move. Riding on the apparatus tailboard or other exposed positions is not permitted on any vehicle at any time.

3. No firefighter will be allowed to drive any engine, ladder, squad or rescue Code 3 until they are certified by the Albuquerque Fire Academy.

4. During a Code 3 response emergency lights and sirens will be used, and the apparatus will drive in the far left lane only. Passing a vehicle on the right is not allowed.

5. Emergency vehicle operators must always watch out for other motorists and be cautious about anticipating reactions by other drivers, who may be startled by the experience of an apparatus bearing down on them Code 3.

6. Drivers must not exceed posted speed limits by more than 10 mph during Code 3 responses and may do so only in light traffic and good weather conditions.

   a. Intersections present the greatest potential danger to emergency vehicles.

   b. When approaching and crossing an intersection with the right-of-way, drivers should not exceed the posted speed limit.

9. A "Hot Response" is authorized only in conjunction with emergency incidents. Unnecessary emergency response should be avoided. In order to avoid any unnecessary emergency response, the following conventions should apply:

   a. When the first-arriving unit on the scene reports "nothing showing" or an equivalent report, any additional units should continue "Hot", but should not exceed the posted speed limit.

   b. The first-arriving unit will advise additional units to respond Cold (Code 1, no lights or siren) whenever appropriate.

10. The following will apply when approaching an intersection while responding to an emergency:

    a. At all intersections with green lights or where the apparatus has the right-of-way, the emergency driver will slow down as necessary to ensure safe operation by removing the throttle and covering the brake pedal.

    b. When approaching an intersection where all lanes are blocked, turn off all sirens and horns at least 200 ft. before the stopped traffic is reached. Leave emergency lights on and bring apparatus to a stop at least 100 ft. from nearest vehicle(s). Never encourage or force (in any way) traffic to proceed against red lights or to advance into dangerous traffic conditions.

    c. Stop for all uncontrolled intersections, stop signs, yellow lights, and red lights. Proceed only after ensuring that it is safe to do so.

11. "Bucking traffic," or going against the flow of traffic during the course of an emergency response, is strictly prohibited. Moves against the normal flow of traffic may only be made within one block of an incident, and then only for the purpose of positioning vehicles or equipment.

12. Stop for all school buses when they are delivering or receiving children. Buses must have stop markers and alternating flashers on during this process. If no markers or flashers are being used, exercise great caution and reduce your speed in these areas.

13. Due to the tremendous danger posed to children and pedestrian traffic by emergency vehicles while responding to calls through residential neighborhoods, this practice is restricted. Travel through neighborhoods should be made only when it is necessary to do so in order to reach an emergency scene.

14. Emergency vehicles will not exceed posted speed limits in school zones, without exception! Turn off sirens and horns when passing through school zones. Emergency lights only will be used while going through a school zone.

15. Do not follow closer than 500 feet behind other emergency vehicles.

16. Do not pass other responding emergency vehicles. The only exception will be when an emergency vehicle is disabled or delayed. If passing is necessary, permission must be obtained through radio communications.

17. Caution should be observed at all intersections since other AFD units may be responding from other locations (such as, quarters, drills, or building inspections) and emergency units from other agencies may also be responding.

18. Apparatus should not be driven faster than existing conditions permit or at a speed greater than can be maintained with safety.

19. On freeways and in hospital zones, sirens will be turned off and only be used as necessary to clear traffic.

20. Racing apparatus is strictly prohibited.

21. Wheel chocks on engines, ladders and squads will be used any time the apparatus is parked on a slope. Wheel chocks will be used any time an engine is in pump or a ladder is set up for aerial deployment, with both wheel chocks will be used on the same apparatus tire.

22. Use of emergency lighting should be minimized once on an emergency scene. Excessive numbers of flashing lights may attract unnecessary attention, spectators, and create other hazards.

23. Use the directional light on the rear of the truck to help direct traffic around when firefighters are working in the street.

24. Apparatus will be set to “high-idle” while emergency lights are used and the vehicle is parked.

25. Officers or other members in command of apparatus which are canceled during an emergency response should have their Driver shift from an emergency to non-emergency operation in a controlled and safe manner to avoid confusion by the public.

26. During emergency response, the Driver must use common sense and good judgment. A speedy response is gained through a safe and efficient means of operation, not by taking unnecessary risks. Never endanger life or property under any circumstances.

C. Driver accountability for documentation, and reporting.

1. Valid driver's license and city vehicle operator's card must be on person at all times while operating an AFD vehicle or apparatus.

a. No person except a designated city employee may operate a city vehicle and no one will be transported in a city vehicle except when city business requires.

b. All personnel who operate city vehicles will have a current class “E” or higher driver’s license and a current City of Albuquerque Vehicle/Equipment Operators Permit.

c. Upon expiration of a city vehicle driver’s New Mexico Drivers License, the driver will be responsible to provide a copy of the new issued license to the Fire Academy so that a current City Operator's Permit can be obtained.

2. Vehicle accident reporting.

a. Any driver of a City vehicle involved in an accident must summon his/her supervisor, their respective Battalion Commander and the Police Department immediately to the scene of ALL accidents.

b. The driver will not leave the scene before the Police have completed their investigation. The driver and his/her supervisor will prepare a “GREEN” colored City of Albuquerque vehicle accident report jointly and forward it to the Safety Division within 48 hours.

c. The Driver will discuss the accident only with the Police, supervisor, authorized City official, or legal counsel.

d. Any individual who directly contacts AFD personnel (either by phone or mail) claiming to represent a party connected to an accident involving the fire department and requesting a statement should be instructed to direct any and all correspondence to the Fire Department Safety Officer immediately.

i. No additional information should be provided.

3. Specific accident reporting instructions.

a. The city of Albuquerque Accident Report form must be completed by the employee and supervisor for all vehicle accidents.

b. Only one original copy is necessary.

c. The report may be typed or handwritten. If a typewriter is not available, print in black ink only.

d. The signature lines on the Automobile Accident report will be completed in the following order:

i. Prepared by: The individual preparing the form.

ii. Supervisors Signature: Officer in the vehicle at the time of the accident.

iii. Activity Supervisor: Field Commander of that District investigating the accident.

iv. Department Head's Signature: Chief of the Department.

e. Once the accident report has been completed, with all required signatures from field personnel, the original report must be submitted to the Safety Officer who will obtain the Fire Chief's signature.

i. The Fire Department payroll clerk will make the necessary copies (1 original plus 4 copies) for distribution and filing.

3. Reporting damage to a vehicle.

   a. In the case of damage to a city vehicle, it is the vehicle driver's duty to report in writing to their immediate supervisor all details of any theft of equipment, scratches, dents, vandalism, etc., which occurs to the vehicle while the driver is responsible for it.

      i. All of these cases will also require a report from the police department and forwarded to the City of Albuquerque's Risk Management Division.

4. Maintenance reporting.

   a. The driver of a city vehicle is responsible to see that the vehicle is in safe operating condition at all times.

      i. Check the vehicle in accordance with manufacturer's recommendations.

      ii. Report all flats, vehicle breakdowns, mechanical or safety failures to their immediate supervisor and the fire department mechanic.

      iii. If neither a supervisor or mechanic is available, they should notify the nearest Battalion Commander in charge.

II. General driving considerations

A. Every time the vehicle is moved, the driver will observe specific conventions.

1. If leaving the station, ensure that the apparatus bay door is all the way open.

2. Glance under the vehicle to ensure it is clear of obstructions.

3. Walk completely around the unit ensuring that compartment doors are closed, equipment is secure, the running boards and steps are free of loose equipment (such as, coffee cups, tools, etc.) and the vehicle is free of obstructions.

4. The Driver must check to ensure all extractor and power connections are released before leaving the station.

5. Ensure all personnel are using seatbelts.

6. Confirm items are secured in the cab of the apparatus and that interior compartment doors remain closed any time the vehicle is in motion.

7. Check and memorize the position of instruments and controls before moving vehicle. It should never be necessary for a Driver to search for instruments or controls while the apparatus is in motion.

8. Place the transmission shift lever in DRIVE position with the engine at idle speed, take up the slack on the drive train, then accelerate smoothly. Jackrabbit starts are costly and hard on the apparatus.

B. Other considerations for Drivers:

1. Both hands must be kept on the steering wheel (do not “palm” the wheel or cross arms when turning the steering wheel).

2. Do not pump the brakes.

3. Drivers should know the gross vehicle weight (GVW) and total height of the unit they are driving.

4. Do not use auxiliary braking devices (retarders, TELMA) when roads are wet or slick.

5. Do not allow personnel to stand on moving vehicles.

6. Driving with the headlights on is recommended at all times. Turn off headlights before the engine is turned off.

7. Drive in one lane. Many Drivers have problems judging the distance from their right fender to a parked car or curb and consequently drive with the left side over the centerline of the street. Training and familiarity with the specific unit can remedy this.

8. Safe driving habits are acquired not inherited. Everyone must acquire these habits by concentration, study and practice. Confidence builds faster than skills; do not overestimate abilities.

9. The eyes of the public are on the operators of city vehicles. Members of the public often report discourteous actions and transgressions of traffic laws. Operate all city vehicles in a safe and courteous manner.

10. No cell phones are to be used during any type of emergency response (Code 1 or Code 3).

11. Be aware of traffic conditions around you at all times. Recheck traffic frequently and never make turns or lane changes before you check traffic.

12. Anticipate stops and turns and start slowing the apparatus down by using the proper method of gearing down in conjunction with the braking system.

13. Use turn signals but be aware that other drivers may not be able to distinguish a turn signal from other emergency lights.

14. When stopping behind other vehicles, remain far enough back that you can see the rear tires of the vehicle in front of you.

15. Stop behind the crosswalk line when stopped for a red light or stop sign. This will allow safe movement of pedestrian traffic.

16. When stopped at intersections, keep the front wheels straight. If turning, don't turn the wheels until the apparatus starts to move.

17. Jumping a light (starting when the light in the other direction of travel turns yellow) is as dangerous as going through an intersection on a yellow or red light. After getting a green light, before proceeding into an intersection, check side traffic for that driver who may not have seen the light change.

18. When approaching a yellow light, most Drivers tend to ask, "Can I make it?" The safe question to ask is "Can I stop?" If stopping is feasible, do it. A Driver must be familiar with the braking characteristics of the vehicle.

19. Railroad crossings must be treated with the same caution as any other intersection. With the siren on, it may be difficult to hear a train horn or crossing bells. Never proceed between the crossbars of a railroad crossing.

20. Use city vehicles are for city business, not personal or private use.

21. Vehicle parking

    a. Park only in designated parking spaces.

    b. Do not park in private parking spaces or private property unless you have express permission to do so.

    c. When attending to business at City Hall, with larger vehicles, the crew may be dropped off and the unit driven to a suitable parking area. When the crew has completed their business, the Driver can be contacted via portable radio.

    d. Bus stops will only be used for parking in emergency situations.

    e. Fire lanes are designed to provide access to buildings in case of emergencies and should only be used for vehicle parking when responding on calls.

    f. Do not park in handicapped parking spaces except in emergency situations and then only if other spaces or fire lanes are unavailable.

22. No emergency apparatus is to be left unattended. The only exception will be on emergency scenes which require the entire crew to be away from the unit.

23. In any fire vehicle in which there is a radio, the radio should be on at all times during operation of the vehicle.

    a. It is the driver's responsibility to turn the radio off when exiting the vehicle. This prevents drain on the vehicle battery(ies).

b. Should you need to contact the AFD Dispatch or another AFD unit, use your unit ID to identify yourself unless you have been assigned a fire department radio call number.

c. Always answer radio communications from AFD Dispatch promptly.

24. The Public Address system is to be used appropriately, and not for yelling at other drivers or pedestrians.

25. Refuel apparatus as necessary.

a. Apparatus will not be operated with a fuel level below ½ tank.

b. The vehicle fuel cards carried in each vehicle will be used to obtain fuel from the computerized fuel pumps at the City Yards or contracted vendors.

III. Specific driving situations

A. Backing apparatus.

1. Emergency lights will be turned on and the driver will use a spotter any time an emergency vehicle is backed up. The spotter will be in full view of the driver at all times.

2. No vehicle should be backed into an intersection, around a corner, or in traffic unless emergency lighting is used and is preceded by an observer to safely direct such movement.

3. Never hesitate to use more than one person to assist with backing maneuvers if the situation warrants.

4. It is the Drivers' responsibility to ensure that all spotters know in advance what is expected, where they intend to back, and what signals he/she expects to be used.

5. Before backing the apparatus the driver will roll down the windows and turn off any apparatus mounted stereo equipment. This is done to ensure any orders to stop the apparatus are clearly heard by the driver.

6. Following are recommendations for spotters.

   a. The rear spotter must stay behind and to the left of the apparatus. This spotter should position their body as a landmark for the driver to line up on.

   b. Any spotter can give a loud “STOP” order directly to the driver when it is deemed necessary.

   c. One spotter must be radio equipped to inform the driver to stop during high noise conditions

   d. All verbal signals must be loud enough and clear enough to be heard by the driver.

   e. All hand signals must be in “large” movements, and as simple as possible. Signals given in front of the body can be difficult to see. Following are the suggested hand signals to be used

      i. “Come back” - Both hands moving, repeatedly, from above and to the sides of the body, towards the centerline of the body.

      ii. “Come back to the left/right” -One hand moving, repeatedly, from above and to the side of the body, towards the center line of the body while the other hand is extended in the direction that the driver must turn the vehicle

      iii. “Stop” - Both wrists crossed above the head accompanied by a loud, verbal “STOP” command.

   f. The spotter must understand that in most circumstances the driver is able to back the vehicle without direction. In these cases it is the spotters’ responsibility to ensure the Driver does not hit anything or anyone.

   g. Regardless of the number of spotters that are utilized, the driver should only receive direction from ONE spotter in the rear of the vehicle and, if utilized, one spotter to the front of the vehicle.

h. If there is no one available to be a spotter during an emergency situation, the driver will park the vehicle and walk completely around the vehicle to ensure it is safe to back up.

B. Safe operations at opticom-controlled intersections.

1. The primary function of an opticom at an intersection is to allow emergency response vehicles to secure the right of way through an intersection in as safe and efficient a manner as possible. A benefit of this is reduced scene response times. Opticom-controlled intersections require a heightened level of awareness and understanding on the part of the emergency vehicle operator.

2. Drivers must recognize that for a member of the public, an encounter with an emergency response vehicle in route to an emergency is not a normal everyday occurrence.

a. This is clearly evident by the confusion frequently evidenced by the erratic behavior of drivers in the area of apparatus responding Code 3 to calls.

b. Because opticoms alter the normal cycling of the signal at a traffic light, this confusion can be heightened, and emergency vehicle drivers must be accordingly alert.

3. The following additional precautions must be taken when proceeding through opticom-controlled intersections on emergency responses with with lights and sirens on.

a. While the opticom system cycles the light through the normal sequence of yellow and then red, an approaching apparatus is unable to determine how long the light was green for cross traffic. An unusually short green light for cross traffic may appear to cross traffic as a malfunctioning light, and encourage drivers to run a stale yellow light.

b. Proceed only after ensuring that it is safe to do so. A green light given as a result of opticom activation should not be assumed to be safe until verified visually, in all directions.

c. When a green light is triggered by an opticom activation well in advance of the arrival of the apparatus, the emergency vehicle driver must slow down as necessary to ensure safe passage through the intersection.

d. If the opticom has not granted a green light within 300 feet (approximately), on approach the emergency driver will come to a complete stop at the intersection, without exception. This delay will give time for the intersection to clear completely, and give those who are either inattentive or prone to running stale yellow lights a chance to clear through.

e. When approaching an opticom-controlled intersection where all lanes are blocked, turn off all sirens and horns but leave emergency lights on. When the opticom activation grants the green light, the emergency vehicle driver will delay activation of sirens and horns for three seconds to give the intersection time to clear completely.

IV. Fireground apparatus placement

A. Apparatus function should regulate placement on the fireground. Poor apparatus placement can limit tactical options or negate a unit's function. The natural inclination to drive apparatus as close to the fire as possible often results in positioning of apparatus that is both dysfunctional and dangerous.

B. The placement of all apparatus on the fireground should be based on specific criteria.

1. Standard Operating Guidelines.

2. Tactical objectives and priorities.

3. Staging conventions.

4. A direct order from the Incident Commander.

5. A conscious decision on the part of the Company Officer and/or Driver, based on existing or predictable conditions.

C. Effective apparatus placement must begin with the arrival of first-arriving units. The placement of the first-arriving engine, ladder, and rescue should be based upon initial size-up and general conditions upon arrival.

1. First-arriving companies should place themselves to maximum advantage and go to work. Later-arriving units should be placed in a manner that builds on the initial plan and allows for expansion of the operation.

2. Ladder apparatus will have priority when positioning on the fireground. All other apparatus will provide access for the placement of ladder apparatus.

3. Avoid "bumper-to-bumper" placement on the fireground**.** Not all fire apparatus should proceed directly to the incident. Later arriving companies should stage a minimum of one block short of the immediate fire area, and remain uncommitted until ordered into action by Command. Company officers should select staging positions with a maximum of tactical options.

4. In large, complex, and lengthy fireground operations additional alarm companies should be staged consistent with Level II Staging and Command communicates directly with the Staging Officer for any additional resources required on the fireground.

5. Command must maintain an awareness of site access that provides the best tactical options ensure that the immediate fire area does not become congested with apparatus.

6. The officer must regard apparatus on the fireground in two categories.

   a. Apparatus that is working.

   b. Apparatus that is parked.

7. Park out of the way. Apparatus that is not working should be left in the Staging Area or parked where it will not compromise access. Maintain an access lane down the center of streets wherever possible.

8. Think of fire apparatus as expensive exposures and position working apparatus in a manner that considers the extent and location of the fire and a pessimistic evaluation of fire spread and building failure.

   a. Anticipate the heat which may be released with structural collapse.

   b. Attempt to predict the direction of the fire and whether the apparatus is in a secure location.

   c. Apparatus should generally be positioned at least 30 feet away from involved buildings, even with nothing showing. Greater distances are indicated in many situations.

9. Beware of putting fire apparatus in locations where they cannot be repositioned easily and quickly.

   a. Be particularly cautious in operating positions with only one way in and out (e.g., yards, alleys, driveways, etc.) In these situations it is advisable to back the apparatus into position.

   b. Beware of overhead power lines when positioning apparatus. Do not park where lines may fall.

10. If an apparatus becomes endangered, operate hoselines between it and the fire while repositioning it to a safe position. It is counter-productive and inefficient to move apparatus several times throughout the progress of a fire.

11. Take maximum advantage of good operating positions and build upon the capability of units assigned to these effective positions.

   a. Initial-arriving engines should be placed in key positions offering maximum fire attack access to the fire area and a quickly accessible water supply via large diameter supply lines.

   b. Subsequent arriving companies can operate the hoselines from this apparatus. Place these “key” companies first - before access is blocked by later arriving units.

c. Ladder apparatus will have priority when positioning on the fireground.

12. Key tactical positions should be identified and engines placed in those locations with a strong water supply.

    a. The water supply should be at least one 2 ½" line from an engine on a hydrant.

    b. When high volume is indicated, a 5" supply line should be provided. The forward engine can distribute this water supply to a variety of hand lines, master streams or devices.

13. Take full advantage of hydrants close to the fire before laying additional supply lines to distant hydrants. Consider a dual pumping operation when appropriate. Secondary hydrants should be used to obtain additional supply if the demand exceeds the capability of the closest hydrants.

14. Take advantage of the equipment on apparatus already in the fire area instead of bringing in more apparatus. Connect extra lines to engines which already have a good supply line.

15. Do not hook up to hydrants so close to the fire building that structural failure or fire extension will jeopardize the apparatus.

16. Deployed fire hose soon limits the general access as the fireground operation progresses. Command or Sector Officers must direct apparatus to important positions as early as possible. Lines should be laid with consideration given to issues of access to the fireground. Crews should try to lay lines on the same side of street as the hydrant and cross over near the fire.

17. Command vehicles should be positioned at a location that will allow maximum visibility of the fire building and surrounding area and the general effect of the companies operating on the fire. Command vehicle position should be easy and logical to find and should not restrict the movement of other apparatus.

18. Rescue units should be spotted in a safe position that will provide the most effective treatment and transportation of fire victims and firefighting personnel, while not blocking movement of other apparatus or interfering with firefighting operations. Transport-capable vehicles should be parked facing toward a clear route of egress.

19. Staff vehicle placement should go to Level II staging unless that staff person has a predetermined accountability (e.g., Safety Officer). The Staging Officer will advise Command of staff personnel available for assignment.

20. The unique hazards of driving on or near the fireground requires the driver to use extreme caution and to be alert and prepared to react to the unexpected. Drivers must consider the dangers their moving vehicle poses to fireground personnel and spectators who may be preoccupied with the emergency, and may inadvertently step in front of or behind a moving vehicle.

21. When stopped at the scene of an incident, vehicles should be placed to protect personnel who may be working in the street. Warning lights should be used to make approaching traffic aware of the incident. At night, vehicle mounted floodlights and any other lighting available should be used to illuminate the scene.

22. If it is not necessary to park in or near traffic lanes, the apparatus should be pulled off the road to parking lots, curbs, etc., whenever possible.

V. Safe parking at incidents with hazardous traffic conditions

A. Position apparatus at the scene of emergencies in a manner that best protects the work area and personnel from vehicle traffic and other hazards.

B. All personnel should understand and appreciate the high risk firefighters are exposed to when operating in or near moving vehicle traffic and all crewmembers must always operate from a defensive posture (e.g., always consider moving vehicles as a threat to your safety).

C. Human factor considerations.

1. Emergency personnel are exposed to motorists of varying abilities, with or without licenses, with or without legal restrictions, some driving at creeping speeds and others exceeding speed limits.

2. Some of these motorists have impaired vision, others are impaired by alcohol and/or drugs.

3. Many motorists will often be looking at the scene and not the road.

D. Nighttime operations are particularly hazardous. Visibility is reduced and the flashing of emergency lights tends to confuse motorists. Studies have shown that multiple headlights of emergency apparatus (coming from different angles at the scene) tend to blind civilian drivers as they approach.

E. Listed below are benchmarks for safe performance when operating in or near moving vehicle traffic.

1. Always maintain an acute awareness of the high risk of working in or around moving traffic. Never trust moving traffic. Always keep an eye on the traffic.

2. Always position apparatus to protect the scene, patients, and emergency personnel, and to provide a protected work area.

a. Whenever possible, angle apparatus at 45 degrees away from curbside to direct motorists around the scene (See Figure 1).

b. Apparatus positioning must also allow for adequate parking space for other fire apparatus (if needed).

c. Allow enough distance to prevent a moving vehicle from knocking fire apparatus into the work areas.

3. At intersections, or where the incident may be near the middle of the street, two or more sides of the incident may need to be protected. Block all exposed sides. Where apparatus is available in limited numbers, prioritize the blocking from the most critical to the least critical (See Figures 2, 3 and 4).

Figure #1

Where possible angle apparatus at a 45 angle from the curb

Figure #3

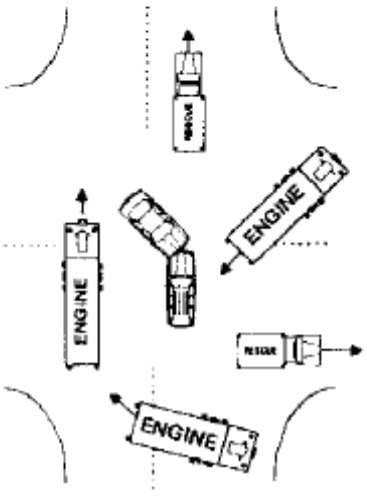


Figure #2

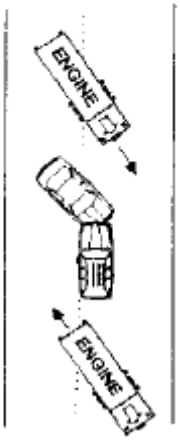
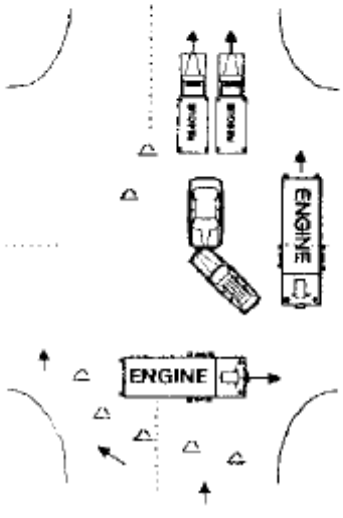
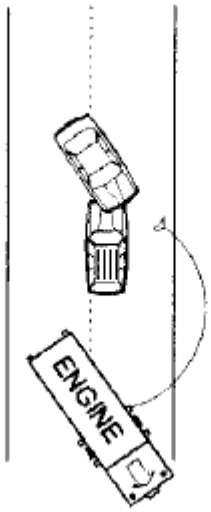


Figure #4



4. For first-arriving engine companies where a charged hoseline may be needed, angle the engine so that the pump panel is “down stream,” on the opposite side of on-coming traffic. This will protect the pump operator (See Figure 5).

Figure 5



5. The initial-arriving Company Officer or Command must assess the parking needs of later arriving fire apparatus and specifically direct the parking and placement of these vehicles as they arrive to provide protective blocking of the scene. This officer must operate as an initial Safety Officer.

6. During daytime operations, leave all emergency lights on to provide warning to drivers.

7. For nighttime operations, turn off fire apparatus headlights. This will help reduce the blinding effect to approaching vehicle traffic. Other emergency lighting should be reduced to emergency flashers where possible.

8. Crews should exit the curbside or non-traffic side of the vehicle whenever possible.

9. Always look before stepping out of apparatus, or into any traffic areas. When walking around fire apparatus parked adjacent to moving traffic, keep an eye on traffic and walk as close to fire apparatus as possible.

10. When parking apparatus to protect the scene, be sure to protect the work area also. The area must be protected so that patients can be extricated, treated, moved about the scene, and loaded into rescues safely. Do not position the apparatus exhaust in the direction of patients who are entrapped in motor vehicles.

11. Wear orange, high visibility reflective safety vest or structural turnout gear at night scenes.

12. Once enough fire apparatus have “blocked” the scene, park or stage unneeded vehicles off the street whenever possible. Bring in rescue companies one or two at a time and park them in safe locations at the scene. This may be “downstream” from other parked apparatus, or the rescue maybe backed at an angle into a protected loading area to prevent working in or near passing traffic.

13. At residential medical emergencies, park rescues in driveways for safe loading if possible. If driveways are inaccessible, park rescues and other apparatus to best protect patient loading areas. (See Figures 6 and 7)

Figure 6

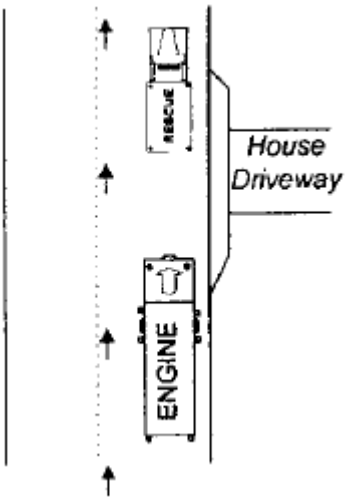
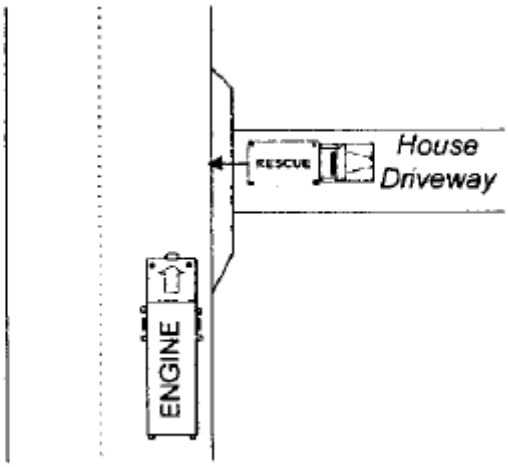


Figure 7



14. APD can be dispatched to assist with traffic at incidents involving or located in major intersections. Provide specific direction to the police officer as to exactly what your traffic control needs are. Ensure the police are parking to protect themselves and the scene. Position rescues to protect patient loading areas. (See Figure 8)

Figure 8

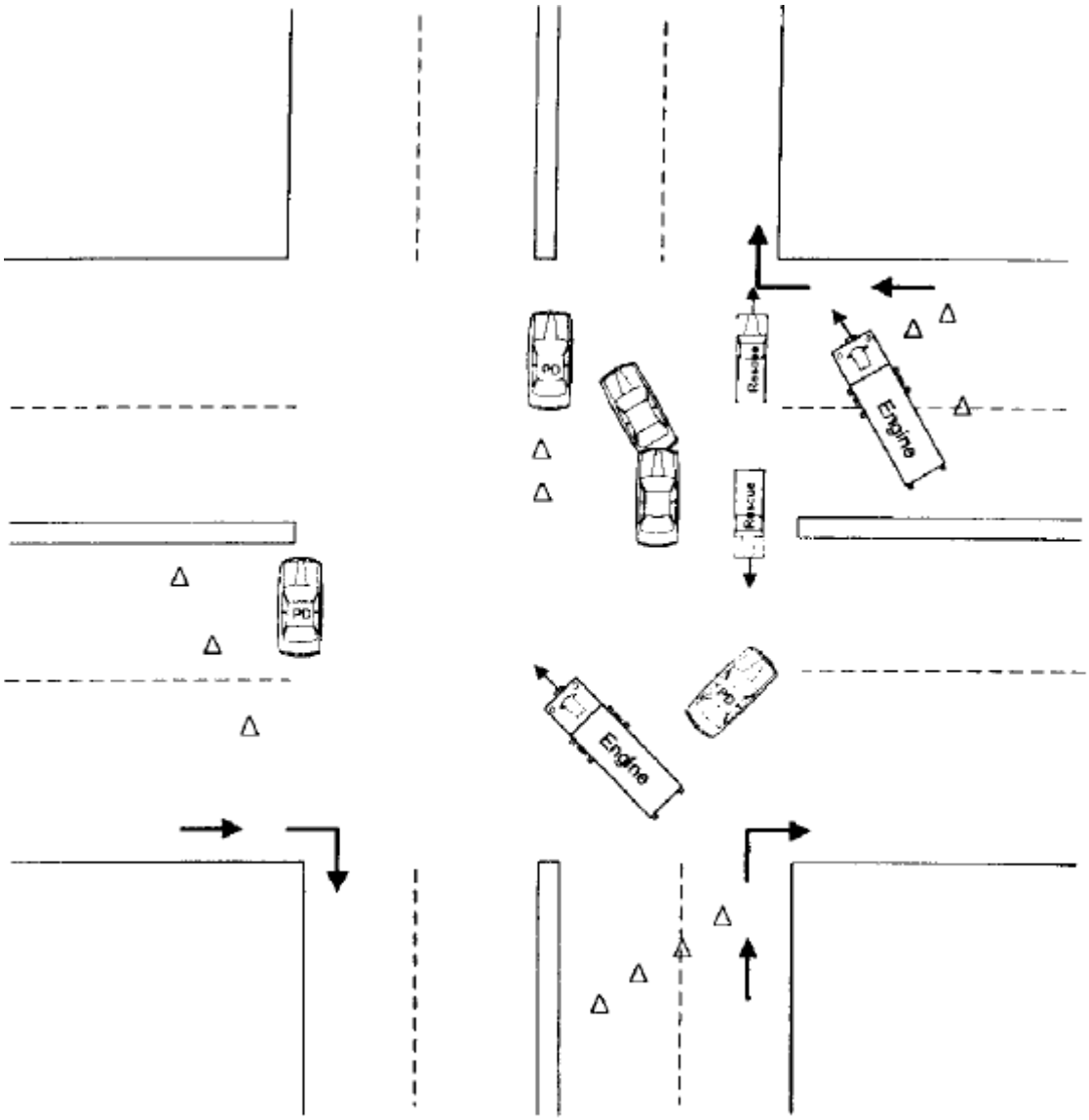


Figure #8 Provide specific direction to police as to what traffic control needs you have. Position ambulances and rescues to protect patient loading areas.

F. Interstate operations

1. Interstate emergencies pose a particular high risk to emergency personnel. Speeds are higher, traffic volume is significant, and civilian motorists have little opportunity to slow, stop or change lanes.

2. The New Mexico State Police will also have a desire to keep the interstate flowing. Where need be the interstate can be completely shut down, although this rarely occurs.

3. For incidents located on interstates block the scene with the first apparatus on the scene to provide a safe work area. Other companies may be used to provide additional blocking if needed.

4. The initial company officer, or Command, must thoroughly assess the need for apparatus on the interstate and their specific positions.

5. Companies should be directed to specific parking locations to protect the work area, patients, and emergency personnel.

6. Other apparatus should be parked downstream when possible. This provides a safe parking area.

7. Staging of ambulance companies off the interstate may be required. Ambulances should be brought into the scene one or two at a time. A safe loading area must be established.

8. Command should establish a liaison with the New Mexico State Police or other law enforcement agency as soon as possible to jointly provide a safe parking and work area and to quickly resolve the incident.

9. The termination of the incident must be managed with the same aggressiveness as initial actions. Crews, apparatus, and equipment must be removed from the interstate promptly to reduce exposure to the hazard of moving traffic. Frequently two or more sides may need to be protected.

10. Where possible angle apparatus at a 45 degree angle from the curb.

11. Prioritize placement of the Apparatus by blocking from the most critical to the least critical side.

12. To protect the pump operator, position the apparatus with the pump panel on the side opposite of on coming traffic

Ordering EMS Equipment and Supplies

Purpose

The purpose of this guideline is to establish a method by which all Albuquerque Fire Department response units are provided with sufficient and appropriate EMS equipment and supplies to effectively and efficiently deliver EMS services to the citizens of the Albuquerque community.

Guideline

It is the goal of the Albuquerque Fire Department to provide all necessary equipment and supplies to all members operating on the fireground and at emergency scenes. It is the responsibility of each company officer to ensure that those under their command are provided with equipment and supplies appropriate to their respective response capabilities. It is also incumbent upon each member to ensure their own safety by the full and appropriate use of equipment and supplies that has been provided to them.

Fire Station personnel should conduct an EMS Equipment and Supply inventory review of all assigned station EMS response units at least bi-weekly. Whenever EMS equipment and supplies are needed, they should be ordered using the “EMS Order Form” and should be based on their EMS Equipment and Supply inventory review. Fire station personnel should maintain a minimum EMS station inventory level quota at all times.

Operational Guidance

I. The directions for inventory, ordering, and maintenance of effective inventory stores are detailed as follows:

A. Step One.

1. All Fire Department Stations will conduct a bi-weekly inventory of their EMS supplies on the Monday following each pay period detailing the equipment and supplies needed to support EMS response capabilities.

2. Upon determining their EMS inventory replenishment requirements, station personnel should fill out the online “EMS Order Form,” that can be found in Microsoft Office Outlook.

3. The station member should fill in all contact information on the form, including the date, name, man #, battalion, shift, and station.

B. Step Two.

1. Using Microsoft Office Outlook (via email), the stations should submit the "EMS Order Form" to the EMS Field Supply Coordinator, by no later than noon on the first Tuesday following each pay period.

2. The EMS Order Form will be addressed to AFD EMS (EMS Supply Field Coordinator Office).

C. Step Three.

1. The EMS Supply Field Coordinator will conduct a quality control assessment of the submitted inventory.

2. If the EMS Supply Field Coordinator finds any discrepancies or has any concerns with the request the EMS Supply Field Coordinator has the latitude to alter the request to comply with AFD requirements.

D. Step Four.

1. Once the order is approved, the EMS Supply Field Coordinator will forward the "EMS Order Form" to Logistics for processing.

2. Logistics will process the submitted inventory request and deliver the request to the appropriate station.

E. Step Five.

1. Upon reception of the EMS equipment and supply delivery, stations should inventory the distribution to ensure that all items are accounted for.

2. The receiving station officer will sign the accompanying paper work to show that the station has received the correct allocation.

F. Step Six.

1. The EMS Supply Field Coordinator will conduct a monthly review to determine the EMS equipment and supply requirements for the restocking of the AFD equipment and supplies issued.

2. Once the review has been completed, the EMS Supply Field Coordinator will fill out a Monthly EMS Order Form and submit the request to Logistics for review.

G. Step Six.

1. After an appraisal of the monthly application, Logistics will forward the request to the contracted EMS vendor(s) to complete the monthly ordering process.

H. Step Seven.

1. Once the request has been processed and completed by the contract vendor, and the supplies are received, Logistics will notify the EMS Supply Field Coordinator.

2. A monthly inventory of the product will be conducted by Logistics and the EMS Supply Field Coordinator to maintain quality control and accountability.