

Firefighter **A**ssist and **S**earch **T**eam

Student Manual

Fire Suppression
01-05-0018 (Rev. 10/01)



STATE OF NEW YORK
DIVISION OF HOMELAND SECURITY AND EMERGENCY SERVICES
OFFICE OF FIRE PREVENTION AND CONTROL



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ELCOME TO THE NEW YORK STATE FIRE TRAINING PROGRAM

Firefighter Assist and Search Team

The Division of Homeland Security and Emergency Services recognizes that providing training for paid and volunteer firefighters and related officials is an important part of the services it makes available. Our Office of Fire Prevention and Control (OFPC) places a very high priority on training because we believe it is essential for the men and women of the fire and emergency services in New York State.

The Office of Fire Prevention and Control's programs include the most complete progression of training available today – beginning with probationary firefighters and extending the full length of a firefighter's career with the fire service. While our training programs address specific fire and arson prevention and control issues, we also encourage expansion and improvement of local training facilities and programs in cooperation with fire companies, municipal corporation and districts.

The firefighter as a member of a Firefighter Assist and Search Team (FAST) will identify the tools and staffing requirements for a FAST operation, develop a rescue plan for a missing, lost or trapped firefighter; demonstrate rope search techniques, and demonstrate removing a firefighter/victim up a stairwell, up or down through a hole in a floor/roof, moving a downed firefighter out a window, and lowering a firefighter down a ladder. This course requires students to perform a number of practical evolutions with self-contained breathing apparatus (SCBA).

Your comments and suggestions about this student manual, our training classes or any OFPC program are always welcome. Your input will help us build on our successes and make needed changes, when appropriate.

On behalf of the citizens you serve, we want you to know that your participation and commitment are greatly appreciated.



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Dedication

"We have an emergency. Command, we are two floors down from the roof. This is the Rescue Company. Come now, two floors down from the roof. Guy's not the top floor, one floor down"

Firefighter Rescue Company 1
Worcester Fire Department
December 3, 1999



Firefighter Assist and Search Team – FAST

UNIT 1 – Course Introduction

Introduction:

Each year firefighters across the Nation become lost, trapped and die tragically in “Routine” fires. Many of those who perished did so because they could not get out of the fire building or area where they were working. While most Fire Departments attempts to negate accidents by use of Safety Officers, catastrophic and unforeseen events often do and will continue to occur. This course Firefighter Assist and Search Team Operations, along with Firefighter Survival, have been designed to meet the needs of departments in New York State who are considering establishing a FAST/RIT.

While in theory most departments have the potential to develop a FAST, it should not be without much consideration from the department’s administration. Departments considering a FAST, must realize the vast amount of time and effort that is required to properly start and maintain a team. From the planning stages to operational, training can take months depending upon the aptitude and attitude of the department. Departments need to take a close look at themselves and be self critical at their personnel’s ability to provide a FAST.

Once properly trained, a FAST can be highly effective in the following;

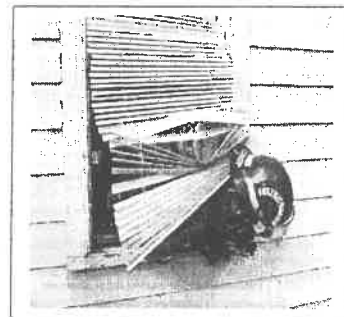
- A Eliminating or reducing hazards that may trap or hinder a firefighters escape.

Example: removing blinds or shades in windows

- B Immediately locate and assist a firefighter

- C Protect a located firefighter from further harm such as providing fire streams, building stabilization or Ventilation

- D Stabilize and removed firefighters from an “Emergency” and “Non-Emergency” situation



Course Requirements:

This course requires students to perform a number of practical evolutions with Self Contained Breathing Apparatus. All students must have medical clearance from their departments to use SCBA.

Students participating in this course shall also have completed the New York State Office of Fire Prevention and Controls, Firefighting Essentials and Initial Fire Attack courses or equivalent, and Firefighter Survival. Nationally recognized Firefighter Level I certification may also be substituted for the course prerequisites. Students not possessing these prerequisites will not be allowed to participate for their own safety.

Course Objectives:

1. The firefighter will describe and list the requirements for FAST,
 - ◆ training
 - ◆ equipment
 - ◆ organization
2. The firefighter will list the duties and actions of a Firefighter Assist and Search Team at emergency incidents.
3. The firefighter will list elements of building construction that affect a FAST operation.
4. The firefighter will develop an SOP/SOG for FAST operations.
5. The firefighter will list tactical actions for a Lost, Missing or Trapped firefighter.
6. The firefighter, as part of a team, will conduct a large area search.
7. The firefighter will demonstrate the skills necessary to conduct a FAST operation during a practical training session.

The need for a FAST Operation:

Warehouse Fire Claims the Life of a Battalion Chief – Missouri

SUMMARY

On December 18, 1999, a 47-year-old male Battalion Chief (the victim) was fatally injured during a paper warehouse fire. Fire fighters were dispatched to the fire and upon arrival they immediately ordered all employees to evacuate the approximately 300,000-square-foot warehouse. The fire was located in the paper-bale section and was causing the structure to fill with a haze of white smoke. The Incident Commander (IC) assumed overall command and ordered an interior fire attack. He also ordered the Battalion Chief (the victim) from Car 106 to take command of interior operations. The fire fighters battled the fire for approximately 52 minutes before the IC and the victim decided conditions were deteriorating and they should go to a defensive attack. The IC ordered all fire fighters to evacuate the structure, however, several fire fighters' radios malfunctioned and they did not receive the evacuation order. Some of the fire fighters with the malfunctioning radios eventually ran out of air, became disoriented, and needed assistance to exit. The victim also became disoriented and did not exit. After learning that all the fire fighters except for the victim had exited, the IC ordered the two initial Rapid Intervention Teams (RITs) (RIT #1 and #2) to enter and search for the victim. Both teams entered but eventually ran low on air and were forced to exit without the victim. Additional RITs were formed and found the victim approximately 1½ hour after the initial dispatch. He was transported to a nearby hospital where he was pronounced dead.

Six Career Fire Fighters Killed in Cold Storage and Warehouse Building Fire - Massachusetts

SUMMARY

On December 3, 1999, six career fire fighters died after they became lost in a six-floor, maze-like, cold storage and warehouse building while searching for two homeless people and fire extension. It is presumed that the homeless people had accidentally started the fire on the second floor sometime between 1630 and 1745 hours and then left the building. An off-duty police officer that was driving by called Central Dispatch and reported that smoke was coming from the top of the building. When the first alarm was struck at 1815 hours, the fire had been in progress for about 30 to 90 minutes. Beginning with the first alarm, a total of five alarms were struck over a span of 1 hour and 13 minutes, with the fifth called in at 1928 hours. Responding were 16 apparatus, including 11 engines, 3 ladders, 1 rescue, and 1 aerial scope, and a total of 73 fire fighters. Two incident commanders (IC#1 and IC#2) in two separate cars also responded.

Fire fighters from the apparatus responding on the first alarm were ordered to search the building for homeless people and fire extension. During the search efforts, two fire fighters (Victims 1 and 2) became lost, and at 1847 hours, one of them sounded an emergency message. A head count ordered by Interior Command confirmed which fire fighters were missing.

Fire fighters who had responded on the first and third alarms were then ordered to conduct search-and-rescue operations for Victims 1 and 2 and the homeless people. During these efforts, four more fire fighters became lost. Two fire fighters (Victims 3 and 4) became disoriented and could not locate their way out of the building. At 1910 hours, one of the fire fighters radioed Command that they needed help finding their way out and that they were running out of air. Four minutes later he radioed again for help. Two other fire fighters (Victims 5 and 6) did not make initial contact with command nor anyone at the scene, and were not seen entering the building. However, according to the Central Dispatch transcripts, they may have joined Victims 3 and 4 on the fifth floor. At 1924 hours, IC#2 called for a head count and determined that six fire fighters were now missing. At 1949 hours, the crew from Engine 8 radioed that they were on the fourth floor and that the structural integrity of the building had been compromised. At 1952 hours, a member from the Fire Investigations Unit reported to the Chief that heavy fire had just vented through the roof on the C side. At 2000 hours, Interior Command ordered all companies out of the building, and a series of short horn blasts were sounded to signal the evacuation. Fire fighting operations changed from an offensive attack, including search and rescue, to a defensive attack with the use of heavy-stream appliances. After the fire had been knocked down, search-and-recovery operations commenced until recall of the box alarm 8 days later on December 11, 1999, at 2227 hours, when all six fire fighters' bodies had been recovered.

Single-Family Dwelling Fire Claims the Lives of Two Volunteer Fire Fighters--Ohio

SUMMARY

On February 5, 1998, two male volunteer fire fighters (Victim #1 and Victim #2) died of smoke inhalation while trying to exit the basement of a single-family dwelling after a back draft occurred. A volunteer Engine company composed of four fire fighters and one driver/operator were the first responders to a structure fire at a single-family dwelling 3 miles from the fire department. When the Engine Company arrived, one fire fighter on board reported light smoke showing from the roof.

The four fire fighters (including Victim #1) entered the dwelling through the kitchen door and proceeded down the basement stairs to determine the fire's origin. The four fire fighters searched the basement, which was filled with a light to moderate smoke. A few minutes later, a fifth fire fighter from Rescue 211 (Victim #2) joined the group. After extinguishing a small fire in the ceiling area, Victim #2 raised a ceiling panel and a back draft occurred in the concealed ceiling space. The pressure and fire from the back draft knocked ceiling tiles onto the fire fighters, who became disoriented and lost contact with each other and their hose line. Two fire fighters located on the basement staircase exited the dwelling with assistance from two fire fighters who were attempting rescue. One fire fighter was rescued through an exterior basement door and the two victims' SCBAs ran out of air while they were trying to escape. Both fire fighters died of smoke inhalation and other injuries. Additional rescue attempts were made by other fire fighters but failed due to excessive heat and smoke and lack of an established water supply.

Two Firefighters died while fighting a fire in an auto parts store. - Virginia

SUMMARY

On March 18, 1996, at 1129 hours, a call came into the fire/police dispatcher from an auto parts store in a strip shopping mall, reporting sparking and popping from an inside "fuse box". Engine 3, Engine 1, Ladder 2, and Battalion 2 were ordered to respond. Engine 3 was the first on the scene (1135 hours) and assumed command. When Engine 3 pulled up in front of the auto parts store, no smoke or fire was visible.

It was not known to the fire fighters arriving on the scene, that the reported sparking in the fuse box was caused when the boom of a power company truck had accidentally broken the neutral line on the 208/120 volt three-phase service drop to the auto parts store. An investigation conducted by the power company revealed the panel box in the auto parts store was improperly grounded; therefore, when the neutral was broken, the power surge did not go to ground at the panel box; it traveled throughout the electrical circuitry causing electrical fires at each circuit connection. For example, the electric hot water tank caught fire and the wiring in electrical junction boxes of the HVAC units on the roof of the store were fused together from the extreme heat created by the short-circuit.

The Acting Lieutenant and a fire fighter specialist entered the front door of the store to investigate, while the driver of Engine 3 went to the side door. Although the lights were off in the store, the large plate glass windows in the front provided enough light in the store to see there was not any smoke inside the store, and that "it looked clear."

At 1137 hours, the driver of Engine 3 heard the Acting Lieutenant calling on the radio (Portable 3), so he went back to the Engine, and received instructions from Portable 3 to reposition the Engine to the rear of the building. While driving the Engine to the rear of the building, the driver noticed a little smoke coming from the edge of the roof, and also heard the transmission from Portable 3 to Battalion 2 (1138 hours), that Engine 3 and Ladder 2 could handle the situation. When the driver of Engine 3 arrived at the rear of the auto parts store, the Acting Lieutenant and the fire fighter specialist were coming out the rear door. Battalion 2 now ordered Engine 1 back into service. Engine 3 driver asked if they had noticed the smoke, which was now more intense and noticeable, coming from the roof, and they stated, yes. At this point, the fire fighters from Engine 3 pulled off the first 1 3/4-inch hose. The Acting Lieutenant took the charged line and went back inside the store, returning shortly to pull a second line.

New York State Office of Fire Prevention and Control

While the fire fighter specialist was donning his self-contained breathing apparatus (SCBA), the Acting Lieutenant was using the second line to knock down the fire that was coming through the edge of the roof. When the fire fighter specialist donned his SCBA, he and the Acting Lieutenant entered the back door with the second charged line.

At 1140 hours, Battalion 2 was now on the fire scene and received a transmission from Engine 3 (Portable 3) to strike a second alarm. Battalion 2 also requested police assistance from dispatch to help evacuate the adjoining buildings.

At 1141 hours, dispatch ordered Engine 14 and Engine 2 to respond to the second alarm.

At 1142 hours, Engine 3 (Portable 3--inside the auto part store) requested pike poles and assistance in removing the ceiling. Meanwhile, Engine 3 at the rear of the store was calling for an Engine to lay a supply line, as he would be out of water shortly.

At 1145 hours two fire fighters from Ladder 2 positioned their unit facing the auto parts store. They walked up to the front door and observed a brisk wind (approximately 30 miles per hour) blowing through the thick black smoke in the store. They could not see any fire, but the blowing wind, and the heavy smoke made it apparent that there was a heavy fire somewhere, so they decided not to enter the building.

At 1149 hours, Portable 3, inside the auto parts store, radioed that they were in trouble and could not get out. However, due to the heavy radio traffic, Battalion 2 (positioned in front of the store) did not understand the transmission. Battalion 1, en route to the fire scene had picked up the radio transmission and radioed Battalion 2 that the transmission sounded like someone was trapped inside the building.

At 1150 hours, without warning, the fire accelerated rapidly, and the entire roof collapsed into the auto parts store.

The building was now totally engulfed in fire and conditions were changing rapidly: a fire fighter from Engine 1 noticed that the hose line leading into the rear door of the building had burned through, allowing water to flow freely; numerous explosions were heard inside the store (overheating pressurized cans); and Engine 3 had to be moved for fear of losing the Engine due to the extreme heat as the fire was being whipped over the Engine.

At 1208 hours, Battalion 2 stated he may have two fire fighters down inside the burning building. Fire suppression operations continued, using multiple streams to contain and extinguish the fire. The two fire fighters (Acting Lieutenant and fire fighter specialist) inside the building were unable to escape as the roof collapsed and died in the fire.

Lessons Learned:

The review of these detailed reports and other incidents have revealed several similar contributing factors, which effected the operation.

- A **Command**
 - ◆ Establish a Incident Command System
 - ◆ Appropriate Staffing of a ICS based on incident complexity
 - ◆ Accountability with all personnel
 - ◆ Monitor time involved in firefighting operations, possibly via dispatch announcing 15 minute intervals

- B **SOP/SOG procedures or the lack of**
 - ◆ Tactical
 - ◆ Use of equipment
 - ◆ May Day and Urgent Message Policies
 - ◆ Mandatory Mask Policies
 - ◆ Mandatory PASS activation Policies

- C **Safety Officer(s)**
 - ◆ SO is a function of Command
 - ◆ NFPA 1561 paragraph 4-1.1, IC responsible for Health and Safety of personnel.
 - ◆ NFPA 1500 paragraph 6-13 assigns an Incident Safety Officer to assess the incident scene for hazards or potential hazards.
 - ◆ NFPA 1521 paragraph 2-1.4.1 Incident Safety Officer shall be appointed when activities, size or need occurs.

- D **Communications**
 - ◆ May become ineffective due to congested radio traffic
 - ◆ Inadequate radio equipment
 - ◆ Inadequate radio channels based on volume of multi alarm incidents

- E **Firefighter and Officer Training**
 - ◆ Pre Incident Planning and knowledge of building construction
 - ◆ Use of Guide Ropes for Large Area Searches
 - ◆ Marking System while searching
 - ◆ Thermal Imaging Devices
 - ◆ Incident Command Training
 - ◆ Strategy and Tactics Training
 - ◆ SCBA emergency Training
 - ◆ Self Rescue and Survival training

- F **FAST or RIT Operations or the lack of**
 - ◆ Properly trained, in position and equipped do deal with the building construction at the incident

Firefighter Assist and Search Team - FAST

UNIT II: FAST Organization, Training & Equipment

Objectives:

By the completion of this lesson, the student Firefighter shall be able to:

1. List the duties of a Firefighter Assist and Search Team
2. List the applicable Standards & Regulations requiring a FAST operation
3. List personnel requirements for FAST operation
4. List building construction elements that affect FAST operations
5. List the training required for FAST personnel
6. List the tools required for FAST operations
7. List initial FAST fire scene operations

Duties of a Firefighter Assist and Search Team:

By definition, RIT/FAST NFPA 1-3.16 - Two or more firefighters assigned outside the hazard area at an interior structure fire to assist or rescue at an emergency operation as required by 6-4.4 of NFPA 1500.

Simply stated, a FAST is a group of two or more firefighters, positioned outside of the hazard area of an interior attack structural fire, who's sole purpose is to rescue missing, lost or trapped firefighters. The FAST need also be immediately available to assist a firefighter in need of help, and to "Proactively" eliminate or reduce any hazard, which may trap or hinder the escape of firefighters. The removal of curtains or blinds in windows that may stop a firefighter exiting via the window. The FAST may also be called upon to protect a located firefighter from further harm by using hose streams, stabilization the building (shoring and cribbing) or ventilation operations.

FAST members must understand the difference between an emergency and non-emergency removal from the structure. Such is the case when a firefighter may fall through a floor, break his leg but is in no immediate danger. This firefighter may be better served if the FAST were to properly package and stabilize him/her before they were moved. Conversely, the same firefighter would need to be removed if due to fire conditions the area was not tenable. In this instance, his life would take precedence over stabilizing his leg. It may be possible to simply relocate the victim to another area, which is safe, package and stabilize the leg and then remove them from the structure.

Standards required of a FAST:

While several standards and requirements are in place, which oversee FAST, they provide little specific guidance for team organization and duty assignments. Primarily, the United States Department of Labor, Occupational Safety and Health Administration (OSHA) sub part L cover firefighting operations. In New York State, the Federal OSHA Laws are enforced by the Department of Labor, Office of Public Employee Safety and Health (PESH). Several rulings that impact upon the fire service are;

1. OSHA
 - ◆ 1910.134 Respiratory Protection
 - ◆ 1910.146, 1910.156 Structural Firefighting Equipment
 - ◆ 1910.130 2 in 2 out rule
2. NFPA
 - ◆ 1500 Fire Department Occupational Safety and Health
 - ◆ 1521 Fire Department Safety Officer
 - ◆ 1561 Fire Department Incident Management

The OSHA Standards state that interior structural firefighting is an atmosphere that is immediately dangerous to life and health (IDLH) and as such, they require all interior firefighters to use PPE and SCBA. Also, communications between firefighters must be established by either voice or sight and at least two firefighters are to be located outside the hazard area as a firefighter rescue team. This OFPC course exceeds the minimum required training for the OSHA standards for firefighter rescue.

The National Fire Protection Associations standards 1500 and 1561 contain requirements regarding FAST. Chapter 6 of 1500, states specifically the Rapid Intervention for Rescue of Members;

- ◆ Fire Departments shall provide personnel for the rescue of members operating at emergency incidents.
- ◆ Rapid Intervention Crews shall consist of at least two members.
- ◆ Rapid Intervention Crews shall be fully equipped with PPE, SCBA and Specialized Tools.
- ◆ When only two RIT members are present, one may perform Proactively as long as communications with the other member is maintained.

The NFPA also allows for the composition and structure of a RIT to be flexible based on the type of incident. The Incident Commander shall provide teams as needed and as the incident expands. Rescue teams shall be either on scene and designated as FAST, an on scene company, rapid re-deployment or FAST or a FAST as required for usual situations.

Staffing Requirements:

The locating stabilizing and extrication of a downed firefighter is both time consuming and laborious. As indicated in the OSHA and NFPA Standards, only two firefighters need be assigned. However, the purpose of the team is to rapidly, effectively and efficiently remove firefighters. The minimum staffing of two is both inadequate and ineffective.

Based on both past experience and through training, a minimum of six firefighters is recommended to properly conduct a FAST Operation. The successful FAST Operation is multi functioned. Team members are assigned specific duties such as;

1. Search and Rescue
2. Forcible Entry
3. Firefighter Rescue
4. Ladder Operations
5. Removal of Barriers
6. Scene Survey
7. Rope Search

A team assignment of two or three firefighters allows for a more rapidly deployable unit. While the Search and Rescue Team locates the victim, the Rescue Team assembles the required equipment for extrication and the Ladder Team provided a means of escape and extrication on above ground floors. Forcible Entry Team should force exterior doors, remove bars from windows and cut locks off back yard gates, which may delay firefighting or escape.

Training:

Proper selection of personnel for the FAST is very important. To be considered, as a member of the Team, a firefighter must be in good physical condition, show good mental judgement in stressful situations and possess a positive “can do” attitude. FAST members need to be trained in multiple aspects of firefighting operations. The basic training for firefighters should be acquired prior to application or appointment. FAST needs to perform at a higher level than basic firefighting. NFPA 1670 A-9-3.3(m) states that Rapid Intervention Team (RIT) members should be at or above the capability level at which the incident is operating. FAST members must understand that they may be called upon to operate in areas that may be nearly un-tenable and at 100% efficiency. Basic training for firefighters should include;

- ◆ Basic Firemanship – NYS/OFPC
- ◆ Mask Confidence – NYS/OFPC
- ◆ Ropes and Systems – NYS/OFPC
- ◆ Pump Operations – NYS/OFPC
- ◆ Engine Company Operations in support of FAST – Andrew Fredricks
- ◆ Ladder Company Operations – NYS/OFPC
- ◆ Aerial Devices – NYS/OFPC

After the basic training and appointment to the FAST, firefighters need to be indoctrinated to the departments FAST operation program. It is preferable that this training takes place prior to the member or unit "Going on line". Such training may include;

- ◆ Orientation – Local Program
- ◆ PPE/SCBA familiarization – NYS/OPFC
- ◆ Residential Search – NYS/OFPC
- ◆ Rope Search – FDIC 1998
- ◆ CPR/AED
- ◆ Uncommon Uses for Common Ladders – FDIC 1999
- ◆ Forcible Entry – NYS/OFPC
- ◆ Live Fire Training – NFPA 1403
- ◆ Scene Communications – Local Program
- ◆ Thermal Imaging Devices – Local Program

Firefighters assigned to FAST Operations must be able to perform their duties at all times, including;

- ◆ Size Up of fire scene conditions
- ◆ Recognize and "Proactively" eliminates or reduce hazards and anticipate conditions that may trap a firefighter or hinder their escape.
- ◆ Force windows, doors, locks, bars or gates.
- ◆ Create a second means of egress from buildings and off the roof
- ◆ Monitor radio traffic for fire conditions, unit assignments and firefighters in distress
- ◆ Utilize emergency radio procedures
- ◆ Develop a firefighter rescue plan (Strategy)
- ◆ Implement procedures to rescue a missing, lost or trapped firefighter (Tactics)
- ◆ Use specialized search procedures
- ◆ Use specialized techniques or equipment
- ◆ Firefighter Removal Techniques

Training of firefighters to be assigned FAST duties is above all else the most important function on the fire ground we can provide to ourselves. FAST personnel need to perform their function right the first time; there may be no second chances.

"The fire ground will never in my life time be a place where a trapped firefighter is going to get out of trouble simply by saying "Beam me up Scotty", somebody is going to have to go in and get him out, hopefully alive. If you don't have the personnel to effect the rescue, the trapped firefighter will die. It's as simple as that" (John Norman, Fire Officers Handbook of Tactics, Second Edition)

Equipment:

Each Team member must be equipped to handle any assignment to which they may be called out for. Every incident and every building type may require different types of tools and techniques to enable the FAST to operate quickly and efficiently. Operations at a private dwelling incident would not require the same tools as with a large Fire Resistant Structure. The minimum tool list is a recommendation based on training and experience. While no list can be all-inclusive, emphasis must be placed in hand tools and basic tools for the structure type.

Minimum Team Equipment for Construction Type	
<p style="text-align: center;">Wood Frame, Heavy Timber & Ordinary Construction</p> <hr/> <ul style="list-style-type: none"> ◆ Axes <ul style="list-style-type: none"> Pickhead Flat ◆ Pike Poles (Steel) ◆ Circular Saw (Wood Blades) ◆ Chain Saw ◆ Halligan Bar (No Imitations) ◆ 10lb Maul ◆ Ropes <ul style="list-style-type: none"> 150' x 1/4" Search 100' x 1/2" Life Safety (6) Large Gate Carabiners (2) Large Hooks (2) Knot passing split pulleys ◆ SCBA w/ extra cylinder and mask ◆ Charged Hoseline of adequate size ◆ Ladders <ul style="list-style-type: none"> Ground Collapsible ◆ Large Hand Lights 	<p style="text-align: center;">Noncombustible and Fire Resistant Construction</p> <hr/> <ul style="list-style-type: none"> ◆ Axes 8 Lb. Flat ◆ Halligan Bar (No Imitations) ◆ 10/15lb Maul ◆ Circular Saw (Metal and Concrete Blades) ◆ Metal Cutting Torches ◆ Ropes <ul style="list-style-type: none"> 150' x 1/4" Search 100' x 1/2" Life Safety (6) Large Gate Carabiners (2) Large Hooks (2) Knot passing split pulleys ◆ SCBA w/ extra cylinder and mask ◆ Charged Hoseline of adequate size ◆ Ladders <ul style="list-style-type: none"> Ground Collapsible ◆ Large Hand Lights

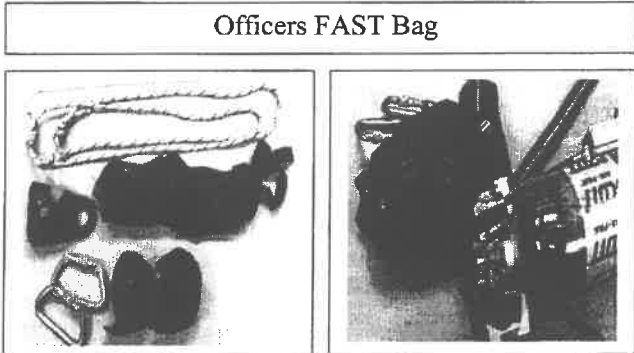
Minimum Tools for FAST Operations:

The basic list of tools for the FAST must be both available and accessible. Tools need to be staged along with the team to prevent any possibility of delay during deployment. The FAST should also be prepared to respond to structural collapse incidents, which may require them to extricate entrapped firefighters.

Minimum Team Equipment	Minimum Personal Equipment
<ul style="list-style-type: none"> ◆ 2 Sets of forcible entry tools (Halligan/Ax) ◆ 1 Hydraulic Tool (If available) ◆ 2 six foot hooks (Steel Handles) ◆ 2 Search Ropes 150' x 1/4" ◆ 1 Power Saw (w/ wood and metal blades) ◆ 1 Sawzall (battery operated) ◆ 1 Stokes Basket ◆ 1 Thermal Imaging Device ◆ Spare SCBA Cylinders ◆ Spare SCBA ◆ 1 Rescue Rope 150' x 1/2" (Life Safety) ◆ 6 pieces 24' x 1" webbing ◆ (2)-2" and (2)-4" Split Pulleys ◆ 6 Large Gate Carabiners ◆ BLS Equipment (Neck Collars, Oxygen, Automated External Defibrillator AED) ◆ Charged Hoseline of adequate size 	<ul style="list-style-type: none"> ◆ Full PPE ◆ SCBA ◆ PASS Device ◆ Portable Radio ◆ Personal Light (Hands Free) ◆ Personal Rope 35' x 5/8" ◆ (1) Large Gate Carabiner ◆ Knife ◆ Wire Cutters ◆ Door Chocks ◆ Forcible Entry Tool

Additional Tools and Equipment will be based on construction type and availability. Should the FAST not possess the needed equipment, arrangements must be made with other Departments or Teams for assistance. Such equipment may include;

1. Air Bags
2. Hydraulic Extrication Tools (Cutters, Rams, Jacks etc...)
3. Cutting and Exothermic Torches
4. Officers FAST Bag (1) 24' x 1" and (2) 10' x 2" tube webbing, 2 Large Gate Carabiners, (1) 2" knot passing split pulley, (2) prusik cords)
5. Shoring



Building Construction:

What is the predominate construction type in your jurisdiction? Ordinary, Wood Frame? Do you even know? Building construction classification is based upon combustibility and fire resistance. Under the National Fire Prevention Association 220, 5 types of construction have been identified.

Type I – (Fire Resistive), Steel or concrete structural elements that are protected on surface with a thin noncombustible covering. The danger of fire, is when the surface is covering is compromised.

Type II – (Non-Combustible), Structural elements are entirely of noncombustible or limited combustible materials. Noncombustible construction is valuable because it prevents fire from spreading through concealed spaces or involving the structure itself.

Type III – (Ordinary), Exterior walls are non-combustible or limited combustible. Interior structural members may be made from wood with a 1-hour rrating.

Type IV – (Heavy Timber), Exterior walls non-combustible or limited combustion with a minimum rrating of 2 hours. Interior structural elements may be of wood with a minimum rrating of 1 to 2 hours.

Type V – (Wood Frame), Generally built in one of five methods of Log, Post and Beam, Balloon, Platform or Plank and Beam construction. All structural elements may be made entirely or partially of wood or other approved combustible materials with a 1-hour rrating.

Unfortunately, the building code is designed to prevent fire but once a fire has occurred, it is not designed to withstand the effects of fire. This means, “When the building burns, it wants to fall down” This is due in part to the fact that the construction elements that hold the building up are compromised. In basic construction, each component is dependent on another to due its job properly and without interference. Knowledge of fire behavior and building construction gives the firefighters the edge they need to out maneuver and out flank the fire. Fire is a predictable enemy. A basic understanding about how fire will act within a given building based on construction type, occupancy and fire load. Firefighters face hazards from conditions within the structure that lead to building collapse and unanticipated fire spread from such things as a change in building occupancy, as well as, design errors, construction mistake or alterations.

Stability of the structure is dependent on structural elements. All weight of structural elements is defying gravity and needs to be transferred to the foundation. Designed or Engineered loads are distributed throught the buildings components. Dead and Live Loads, Impact and Suspended Loads, Static and Transferred Loads must be evaluated. Construction materials and connection devices are critical to the support of all Loads within the building. Addition of water, Ladders being placed against walls and deterioration from fire diminish the buildings ability to support its own weight. The fire process affects all structural components such as steel, wood and concrete. . Masonry has little lateral stability, and may be pushed out by other structural element and large caliber streams. Structural steel may loose up to 50% of its tensile strength at 1100 degrees F. Cold Rolled Steel looses 50% of its tensile strength at 800 to 900 degrees f. Wood elements ad fuel to the fire but may hold up in fire better than some engineered materials.

When a large expanse must be column free, trusses are used in place of joists or rafters. Engineered truss roofs are designed for maximum strength with minimum materials. Each cord and web of a truss system carries a predetermined load. When that truss is compromised, the entire system may fail. Trusses are manufactured in three ways, Transfer Truss which creates open spaces, Staggered Truss, intended for high rise residential buildings and Interstitial Truss which creates an open area between floors in order to house machines and equipment. Truss collapse is an always-present danger and needs to be given a high priority by the IC.

Each construction type presents its own unique problems for firefighters based on occupancy; dimensions of the building, as well as, the location of windows and doors, HVAC escape routes etc. Also, the strategy and tactics being deployed by the Incident Commander during burn time and Engine/Truck Operations will have a dramatic effect upon the outcome of a fire.

Building Collapse:

Once a structure is subjected to fire, it begins to weaken and lose stability. Structures, which are exposed to prolonged burning, flashover and, backdrafts, may begin to experience fatigue. FAST Operations need to assess the structure integrity by observing the following:

Collapse by fire warning signs	
<ul style="list-style-type: none">◆ Lack of water run off◆ Construction type◆ Bulging walls◆ Cracks in walls◆ Sliding plaster dust◆ Unusual sounds	<ul style="list-style-type: none">◆ Separating walls◆ Columns out of plumb◆ Swinging doors◆ Doors or windows out of rack◆ Vibrations◆ Sagging floors or roofs

Once the IC has an appreciation for the building construction, they can begin to see the inherent dangers of each construction type. Because we know that the building, by its nature, is attempting to fall down, prudence would dictate that the IC establishes a realistic collapse zone. The term realistic is used to insure that the IC is practical in the perimeters of the collapse zone. When FDNY responded to the World Trade Center, the traditional collapse zone theory would have placed the fire crews somewhere in New Jersey. For the majority of fires, the collapse zone will be one and one half the height of the building. This distance allows for falling debris, and the bouncing of building materials as they strike the ground.

Standard Operating Procedures:

Fire Departments must establish Standard Operating Procedures (SOP) or Standard Operations Guides (SOG) for daily management of department operations. SOP's will establish and explain the departments Organization, Equipment, Training, Operations and specialized operations like FAST. When SOP's are being written for a FAST, it is important to remember that the objective is to be a guideline and not a hard and fast rule. Many of the situations a FAST may be assigned to will take a great deal of personal initiative and ingenuity. The FAST Leaders should not attempt to restrict the firefighters, but to simply set a course of ground rules for team operations. Several components of the SOP should be;

- ◆ Purpose (Why do we exist)
- ◆ Personnel qualifications and training (Who Do You Want Coming To Get You?)
- ◆ Team Leader qualifications and training
- ◆ Dispatch protocol
- ◆ Duties and restrictions
- ◆ Initial fire scene operations
- ◆ Procedures for Lost, Missing or Trapped firefighter operations
- ◆ Firefighter removal procedures (emergency vs. non-emergency)

As with most operations, the Dispatch Center will play a major role in the success of the FAST Operation. Dispatch may also be the weak link that breaks, thus creating more confusion and chaos. Dispatch procedures need to be based on local need and procedures as to who should be called as a FAST, who is the next appropriate and available unit to act as a FAST and notification to the Incident Commander the identity, Unit or Company acting as the FAST. Further, is there a need for multiple FAST at a large incident, and dose the responding unit have six firefighters or less to operate. The Dispatch must also have the ability to replace a FAST that has been assigned to a firefighter rescue operation. All Dispatchers need to be trained in FAST Operational terms and when to dispatch the team. Remember, FAST is for US, when determining when to dispatch the FAST, consider the following;

- ◆ Immediately upon notification of an incident
- ◆ Upon notification of a working fire
- ◆ Upon request of the Incident Commander
- ◆ Any time a firefighter is at risk
- ◆ As determined by Local SOP

FAST Duties and Restrictions:

Firefighters assigned to perform, as a FAST must be multifaceted and good solid firemen. FAST Operations can be a dirty bull work in places and under conditions that most firefighters don't care to think about. FAST is a function of Command, and answer to the Incident Commander. The primary task is to bring knowledge and expertise to the IC. A good team is "Proactive" in that they look for trouble spots and act so that firefighters won't get hurt or trapped. The FAST should be allowed to perform duties that will eliminate or reduce that possibility of injury to firefighters. This may entail moving hoseline to cut off a fast moving fire which would endanger personnel or unlocking a gate which delay firefighters from moving lines or ladders into rear yards. However, the team must be immediately deployable to assist any firefighter at the incident scene. The FAST should never be used as a relief crew unless another team has replaced them. The IC must anticipate the need for additional personnel and call for it accordingly. As stated above, the only exception to this would be when the team is acting "Proactively" to prevent conditions from worsening and possibly trapping firefighters.

In the case of a large incident, i.e. multiple buildings or large structures, the need for more than one team may arise. Should this occur, they should be assigned a specific designation such as FAST 1, FAST 2, and FAST 3. Teams may be assigned to cover a particular building or quadrant of large structures based on need. Furthermore, unit assignments such as Search Team, Rescue Team, Ladder Team and Team Leader need to be established. These variations are, of course, dependent on the number of team members on location at any particular incident.

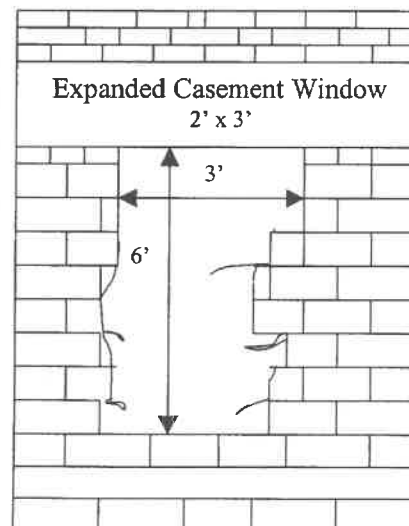
Upon arrival at an incident, the FAST Leader should report to the Incident Commander for instructions and briefing. The Team Leader will ascertain what frequencies the incident is operating on and assign a second frequency to the FAST. A Team member will be assigned as a "Radio Firefighter" to monitor radio traffic and to track the fire incident. The Radio Firefighter will stay with the Team Leader and be cognizant for,

- ◆ Sounds of Firefighter's in trouble
- ◆ Progress of companies, or the lack of progress
- ◆ Unheard transmissions due to units transmitting at the same time
- ◆ Overly excited tone of voice
- ◆ PASS or SCBA low air alarm sounding
- ◆ Emergency radio transmissions "Mayday"
- ◆ Location of Units operating within the building
- ◆ Location of units operating outside the building such as the Roof Team or Outside Vent Team

The Team Leader will perform a "Sizeup" of the building and incident including all potential exposures where companies may be deployed. If the building has a preplan, is it accessible and from whom. Is a knowledgeable person available such as maintenance to describe the building layout? Often in larger structures, "You are here" signs can be found giving the firefighters a "Land Mark" to go by. In some structures such as apartments and tenements, a survey of the floor below the fire floor will give the layout. In newer Sub-Divisions, homes are built similarly, and with consent of a homeowner next door to the fire structure, the building layout may be obtained

FAST Fire Scene Sizeup Information		
FIRE	COMPANIES	ACCOUNTIBILITY
<ul style="list-style-type: none"> ◆ Location ◆ Volume ◆ Expected path of travel ◆ Color, smell and movement of smoke ◆ Extension in structure or exposures ◆ Access to the fire ◆ Second rout off the roof ◆ Number of stories in the front and rear of the structure 	<ul style="list-style-type: none"> ◆ Which companies are operating and where ◆ How long have they been operating ◆ Are they making progress ◆ Are sufficient companies available for the situation 	<ul style="list-style-type: none"> ◆ What type of system is in place ◆ Who is responsible ◆ If no system, advise the Incident Commander

As the incident progresses, and the FAST is positioned, Sizeup will continue until the incident has been concluded. The FAST Leader should consider having two-man team walk around the building, if possible, to allow them to better study the building and fire progress. As each team returns, another team is deployed. This procedure allows for a continual evaluation of the building and incident. Also, teams can locate and force doors, identify locations of emergency egress points and remove bars, gates, wired glass or air conditioners from windows as needed. Also remove shades and blinds from vented windows and ensure access to all sides of the building for firefighting operations. In larger commercial structures, the team may need to expand a window into a door for an emergency egress point. Caution must be used due the re-enforcing wire in the wall.



Staging of tools, equipment and personnel is based on the structure and the incident location. A two story wood frame with a fire in the rear would necessitate a different approach than a large fire resistive commercial with a fire in an unknown location. The FAST Leader needs to accumulate as much information as possible to determine the "Most Probable Point" where a firefighter may become trapped or in trouble. Not every incident or emergency can be foreseen, however, the FAST Leader should be concerned with the rapid deployment of the unit and where to stage. The initial staging point may be with or near the Incident Commander. This would allow the team to get as much information as quickly as possible as the IC briefs the Team Leaders. Later, the Team would relocate to the most advantageous location, which may be the rear of the structure, and away from the IC. FAST's need to realize that where the potential for a problem exists, that's where the team needs to assemble.

FAST Firefighters realize the advantages of having ground ladders about the fire building. Ladders placed to the fire room, fire floor and the floor above gives not only the firefighters a second way out, but also saves time in an emergency for the FAST. Ground ladders should be removed from apparatus and placed on all floor and all sides of the fire building.

Firefighter Assist and Search Team - FAST

UNIT III: Lost/Missing Firefighters

Objectives:

By the completion of this lesson, the student Firefighter shall be able to:

1. Define Lost or Missing Firefighter
2. List procedures for locating a Lost or Missing Firefighter
3. Develop a rescue plan for a Lost or Missing

Introduction:

As the Fire Service has progressed, so has the ability to protect fire personnel. Due to an ever-changing environment, the structural fires of today are hotter, faster and more vicious than fire of decades ago. This is in part to the construction materials and contents within a structure. Polymer and synthetic materials which burn at 700 degrees, 800 degrees or even higher, have taken the place of common natural materials such as wood (Douglas Fir 500 degrees), cotton (Batting 446 degrees) or wool (401 degrees). The preferred method of rescuing a firefighter is to help him rescue himself. This can be accomplished in any of several ways. First, teach them about fire behavior, building construction and survival skills. With these techniques, lost or missing personnel can assist with their own rescue by helping themselves. When we teach firefighters to instinctively begin to move to an exit or escape rout, this reduces the rescue and exposure time for the FAST. One of the main objectives of a FAST is to never be deployed. Teaching our Brothers and Sisters in basic survival skills should be the job of every FAST. However, unforeseen and catastrophic events do occur and firefighters need to be rescued.

Definitions:

A Lost Firefighter is an individual who can be communicated with, but does not know his location and may assist with there own rescue.

A Missing Firefighter is an individual who can not be accounted for, and whom we have no communications with or a known location.

Lost or Missing Firefighter Procedures:

All incidents involving a lost or missing firefighter will be unique. FAST can not possibly have a plan for every conceivable emergency that may occur at a fire scene. The specific tactics used are adapted to the existing conditions and situation at hand. Not all incidents the FAST is deployed to simply require them to assist someone out a structure.

FAST needs to be adaptable and resourceful at all incidents and have a positive “Can Do” attitude.

Procedures for locating a Lost or Missing Firefighter:

As stated before, all incidents will be unique. When a firefighter is reported to be lost or missing, the Incident Commander should take the following actions quickly and decisively,

1. Confirm the report
2. Establish control of the fire scene radio transmissions
 - ◆ Direct all non-essential communications to stop
 - ◆ Switch fire activities to a second channel
3. Gather pertinent information about the Lost/Missing Firefighter
 - ◆ Firefighters name
 - ◆ Firefighters unit or assignment
 - ◆ Last known location
 - ◆ Does the Firefighter have a radio
4. Conduct a roll call to ensure the number of Lost/Missing Firefighters
5. Monitor fire conditions in last known location
 - ◆ Deploy handlines as needed
 - ◆ Provided ventilation's in the search area as needed
6. Deploy the FAST to search and rescue
 - ◆ Consider using additional companies to search and rescue
 - ◆ Consider using additional FAST
 - ◆ Replace companies assigned to search and rescue (the fire fight must continue)
7. Request Emergency Medical Services to respond
8. Direct lighting onto the search area

Gathering Information:

The gathering of all pertinent information on a Lost or Missing Firefighter will be similar. All information needs to be gathered by any personnel who may be of assistance. The Incident Commander or FAST Leader needs to be firm and “In Control” at all times. Should the fire personnel or victim Firefighter hear the IC or Team Leader loose their composure, which will surely create panic on the scene.

First, initiate communications with the Firefighter if possible. Gather information on their location and physical condition. Determine the last known location and identify where to begin the search and rescue operation. Simple questions of the Firefighter should be asked in a firm, commanding and understanding voice remember they want help, and they want you to give it to them.

1. Where is your partner or unit
 - ◆ Where did you see them last
2. Where were you operating
 - ◆ What floor
 - ◆ What was your last known bearing
 - ◆ What area, front middle or rear
 - ◆ What side 2/B or side 4/D
3. How did you get there
 - ◆ Front, side or rear door
 - ◆ Interior stairwell or exterior stairs
 - ◆ Fire escape
 - ◆ Portable ladder or Aerial
4. Can you hear anything around you
 - ◆ Saws cutting the roof
 - ◆ Firefighters forcing doors
 - ◆ Operating hoselines
 - ◆ Fire apparatus
5. Can you feel anything around you
 - ◆ Residential building
 - a furniture of the room i.e. big bed (master), small bed or bunk beds (child), crib (nursery) over stuffed couch (den/living room), high table w/ thin legs (dinning room)
 - b floor of the room i.e. raised tile (bathroom), linoleum, wood, carpet
 - ◆ Commercial building
 - a stock selves in storeroom
 - b wide aisles in show room
 - c office
 - d loading dock
6. Is your low air alarm sounding
7. What are the fire conditions around you

With this information, the FAST Leaders now need to formulate a rescue plan. Regardless of how well thought out the plan may be, always have multiple contingency plans in place.

Lost Firefighter FAST Tactics:

Always deploy a two-pronged search and rescue effort to ensure reaching the lost firefighter in the shortest amount of time. This procedure will also safeguard and exit for the FAST and lost firefighter should fire or collapse compromise the primary escape route. The Rescue Team must attempt to maintain constant communications with the lost firefighter. Through communications, information on conditions in the area, injuries and location can be monitored. The Rescue Team will also be reassuring the lost firefighter of their progress and that they are "Coming to get you out" and to remain calm.

Other operations in assistance to the FAST will also need to be performed. Protection of the lost firefighter by ventilating the last known area, providing handlines to keep fires at-bay, and lighting the search area from within and without the structure are all operations which can be performed by other companies to assist the FAST.

As the FAST approaches the suspected area of the lost firefighter, they should begin to call out to him/her, and have them activate their PASS device for 5 seconds to home in on their location. Once the firefighter is located, they must be assessed for physical condition, entrapments to escape, cylinder duration and any specialized equipment that may be needed to extricate the firefighter. Consideration must be given to an Emergency vs. Non-Emergency removal based on fire conditions and structural integrity. All information must then be relayed to the Incident Commander.

NOTE*

If at any point communications are lost with the victim firefighter and sufficient information to locate them is not obtained, the FAST must now operate according to procedure for locating a Missing Firefighter.

Missing Firefighter FAST Tactics:

A firefighter is considered missing after repeated attempts to locate or establish radio contact have failed. This may be due in-part to radio failure, firefighter inattention, they are otherwise occupied or they are in-fact missing. As with Lost Firefighters, each incident will be unique to the existing situation and conditions. Therefore, the tactics that will be employed by FAST, will be adapted specifically for that incident. FAST assigned to search and rescue for a missing firefighter must determine that they are in fact missing. When a report is received of a missing firefighter, the Incident Commander should take the following actions quickly and decisively,

1. Confirm the report

2. Establish control of the fire scene radio transmissions
 - ◆ Direct all non-essential communications to stop
 - ◆ Switch fire activities to a second channel
3. Gather pertinent information about the Lost/Missing Firefighter
 - ◆ Firefighters name
 - ◆ Firefighters unit or assignment
 - ◆ Last known location
 - ◆ Does the Firefighter have a radio
4. Announce that Firefighter Smith is not with his assigned unit, anyone seeing Firefighter Smith have him report to the Incident Commander immediately
5. Conduct a roll call to ensure the number of Lost/Missing Firefighters
6. Monitor fire conditions in last known location
 - ◆ Deploy handlines as needed
 - ◆ Provided ventilation's in search area as needed
7. Deploy the FAST to search and rescue
 - ◆ Consider using additional companies to search and rescue
 - ◆ Consider using additional FAST
 - ◆ Replace companies assigned to search and rescue (the fire fight must continue)
8. Request Emergency Medical Services to respond
9. Direct lighting onto the search area

As with Lost Firefighter FAST Tactics, a two-pronged attack must be considered by the FAST Leader for a Missing Firefighter. Any and all information must be gathered and evaluated by the Search Team and the FAST Leader;

1. Tracing the hoseline
2. Sounds from the Missing Firefighter
 - ◆ Shouts for help
 - ◆ Sounds from portable radio transmissions Feedback Assisted Rescue (FAR) or Pager Assisted Rescue (PAR)
 - ◆ Banging noise
 - ◆ Activated PASS Device
 - ◆ SCBA low air alarm
 - ◆ Moaning or coughing
 - ◆ Finding tools

3. FAR is a procedure that takes advantage of an inherent problem of Portable Radio (P.R.) feedback noise to assist in homing in on the location of members (equipped with P.R.'s) that are either missing or trapped as encountered in a collapse situation.
 - ◆ PROCEDURE - After determination is made that the missing firefighter IS P.R. EQUIPPED, this procedure may be initiated to assist in locating said member.
 - a Officer in Command announces over P.R. that a "Feedback Assist Rescue" is to be implemented and designates a primary tactical channel . This channel shall not be the same one on which missing member was operating on.
 - b All members wearing P.R.'s are to operate on designated primary tactical channel.
 - c One member, designated to produce feedback, is assigned two (2) P.R.'s.
 - d Designated member should be located remote from such and to avoid confusion among searchers.
 - f Feedback is created by the designated member as follows:
 - i Both P.R.'s are turned on.
 - ii P.R.'s are placed on channel which missing member was operating on.
 - g. Transmitting button of one P.R. is depressed.
 - h. The P.R. speakers are held one to two inches apart. This distance will produce the loudest high pitch feedback tone. (The feedback created by these two P.R.'s will be transmitted to other P.R.'s on the same frequency as far as a mile away).
 - I Feedback will be transmitted from the missing members' P.R. permitting searchers to home in.

Search is conducted with as much ambient noise eliminated as possible (shutting down of department radios, apparatus, etc.). Searchers listen for feedback emanating from trapped members' P.R. When feedback tone has been detected, searchers home in on location by use of this feedback. When the definite location of member has been determined, the feedback signal should be discontinued to lessen the discomfort of missing member and to enable communication between said member and searchers.

4. PAR, much as the FAR, is executed by placing the PASS next to the open mic of a P.R. Another option is to use the radio alerting tones

Once the firefighter is located, they must be assessed for physical condition, entrapments to escape, cylinder duration and any specialized equipment that may be needed to extricate the firefighter. Consideration must be given to an Emergency vs. Non-Emergency removal based on fire conditions and structural integrity. All information must then be relayed to the Incident Commander.

Firefighter Assist and Search Team - FAST

UNIT IV: Trapped Firefighter Procedures

Objectives:

By the completion of this lesson, the student Firefighter shall be able to:

1. List the most common situations a trapped firefighter will need to be rescued from
2. List the procedures for rescuing trapped firefighters
3. Develop a rescue plan for a trapped firefighter operation

Introduction:

As long as fire occurs in buildings, firefighters will need to enter, locate and extinguish them. With this, of course, comes risk to fire personnel from the fire, heat, smoke, gases and catastrophic building collapse which can trap them. While not every incident involving a trapped firefighter can be planned for, several of the more common situations can be addressed and trained for. FAST should operate on the basic primes of "What have I got (the problem) and what do I have with me (tools and equipment) to begin to effect a rescue. FAST should not rely on other units or personnel, but be independent and resourceful. Many operations can be accomplished with minimal equipment and a lot of muscle power, before assistance arrives. Such common operations may include;

- ◆ Firefighter has fallen through a hole in the floor or roof
- ◆ Firefighter trapped under a collapse debris or heavy object
- ◆ Firefighters exit is blocked by fire or a physical barrier
- ◆ Firefighter entanglement with an object, cable or ceiling materials

Situation #1 Firefighter fallen in a hole

When a firefighter has fallen through a hole in either a floor or roof, the FAST needs to determine the reason. Was there an existing opening such as a trap door, scuttle or hatch? Was it due to structural collapse, or was it fire or non-fire related. With this information, a determination on the stability of the floor or roof around the hole can begin. Caution must be used so as not to cause a secondary collapse and endangering the victim firefighter or the FAST. Only essential personnel should be allowed to work in the area of the hole. Communications with the firefighter must be established in an attempt to determine their condition.

Should the victim be unable to assist in their own rescue, and if conditions allow, a FAST member should make entry into the hole by use of a rope or ladder to determine their condition. Remember to formulate a two-pronged attack on the rescue with one team working at the hole while a second makes entry to the victim from inside (using stairs) or from outside the structure (breaching walls).

Should the floor or roof around the hole be unstable, conduct rescue operation from below. Consider supporting the floor from below with materials at hand, or fabricated supports such as "Rakers" and "T" Shores. If the floor or roof is too unstable to conduct the rescue leave one firefighter positioned safely near the hole to provide direction to the other firefighters searching below. Contact must be maintained with the search and rescue firefighters as well as the victim at all times.

If the floor or roof is stable for a rescue operation, determine if the hole is large enough to lower and raise a firefighter through. If the hole is too small, widen the hole with available tools while saws are called for.

Be observant for fire conditions at all times. Call for hoselines to protect the victim firefighter, the opening and the FAST. Assess the victim firefighter injuries; provide necessary first aid and package according to extent and fire conditions.

Determine the victim firefighters

- ◆ consciousness
- ◆ extent of injuries
- ◆ Amount of air in SCBA
- ◆ entrapment or entanglements

A determination needs to be made on the best route for removal of the firefighter and the method to be used. If the firefighter is conscious, it may be possible to assist them out of the hole they fell through. Removal of the firefighter via a ladder may be accomplished by;

1. Using a Ladder

- ◆ Small 16' extension or folding ladder is placed into the hole. The conscious firefighter can climb out, however, if unconscious the firefighter can be lashed to the ladder, either in a stokes or directly to the ladder, and the ladder withdrawn from the hole.

- ◆ Construct an “A” Frame with 16’ ladders over the hole and use a simple mechanical advantage to lift the firefighter out. Or in a small room, the butt of the ladder is placed against the base of the wall/floor while the tip is extended to the apex of the wall/ceiling, over the hole. Again a simple mechanical advantage is used to lift the firefighter out.
- 2. Using ropes
 - ◆ Lift the firefighter using a handcuff knot. If using one rope, the knot should go around the wrists. If two ropes and four firefighters are available, the first knot goes onto the firefighters biceps and the second on the wrists. As the victim firefighter is hauled up and approaches the top of the hole, the rescuers will walk away from the hole in the direction the victim is facing. This will allow the victim to pivot at the waist and make it easier to remove them from the hole.
 - ◆ Use of a simple mechanical advantage can be accomplished by using a steel pike or folding ladder as the high point. As two firefighters are placed on either side of the hole, the pike or ladder is placed onto their shoulder. One end of the rope is secured to the pike or ladder, as the running part with a pulley and Carabiners is secured to the victim firefighter and passed back up to the top of the hole. As the victim firefighter is hauled up and approaches the top of the hole, the two rescuers holding the pike/ladder will walk away from the hole in the direction the victim is facing. This will allow the victim to pivot at the waist and make it easier to remove them from the hole.
 - ◆ Breaching the ceiling or high on a wall and inserting a hand tool, using the joist or rafter or using substantial pipes, can establish an anchor. The rope and mechanical advantage can then be secured as above, and the victim firefighter raised out of the hole.

Situation #2 Firefighter trapped under a collapse or heavy object

Survey the area and attempt to determine the number of firefighters possibly involved in the collapse. Observe the collapsed structure being cognizant of the type of building construction and the extent and type of collapse such as;

- ◆ Localized, floor or roofs deck, small area
- ◆ Extensive, bearing wall, columns, large area
- ◆ Secondary collapse hazard, noise, creaking, cracking or rumbling. Sagging doors or window frames
- ◆ Unsupported, or leaning floor, roof or walls

The FAST needs to be aware of the possibility of danger from the fire conditions, as well as, utilities such as water, gas and electric.

Should a collapse occur, determine the number of missing firefighters by conducting a roll call. Determine the possible locations of firefighters by knowing their last known location and determining the collapse type. Once contact has been made, attempt to ascertain if the firefighters are buried, crushed, pinned or impaled, and by what. Evaluate the possibility of a secondary collapse and provide additional support for the rescue operation. Attempt to communicate with lost firefighters via radio or voice.

The rescue of firefighter(s) trapped on the surface of a collapse will be the quickest and easiest to remove. Search all accessible voids and open spaces in the collapsed area for any possible trapped firefighters. The selective debris removal of the area to gain access to firefighters is allowed, so long as, the integrity of the area is not compromised. Rescuers need to be aware that removing the wrong piece of debris may endanger the victim firefighter and the FAST. Firefighters may need to be protected while their extrication occurs. Handlines or master devices may be deployed to control fires as needed, however, run off or accumulating water may jeopardize victims in lower elevations on the collapse. Ventilate the area as best as possible remembering that Positive Ventilation Fans induce Carbon Monoxide (Co) and should be avoided. The rescue area must be well lighted, as will the open voids and confined spaces. FAST or Incident Commander must recognize the need to call specialized Rescue Teams and equipment as expeditiously as possible.

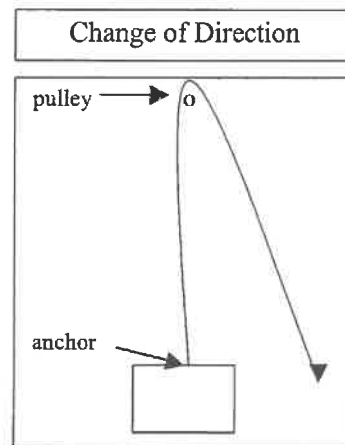
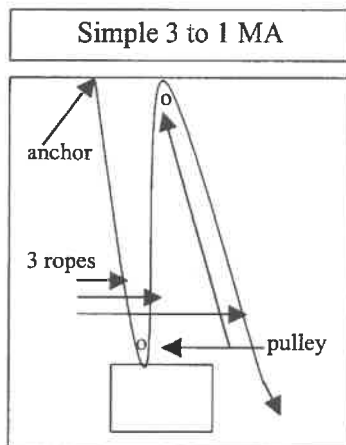
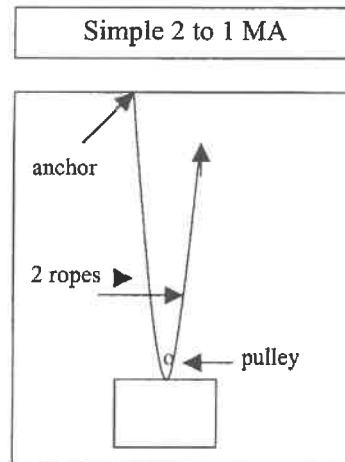
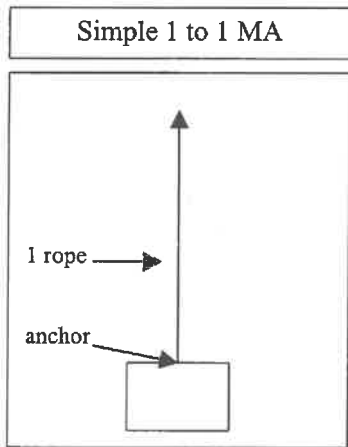
A rescue plan to extricate a firefighter who is trapped by debris will be dependent upon several factors including;

- ◆ Weight and type of material i.e., wood, concrete, metal etc. which is trapping the victim
- ◆ Space available to work near the trapped firefighter
- ◆ Tools immediately available
- ◆ Fire condition in the rescue area
- ◆ General debris removal if necessary to reach all areas if firefighters cannot be reached using selected debris removal

Once the firefighter is located, they must be assessed for physical condition, entrapments to escape, cylinder duration and any specialized equipment that may be needed to extricate the firefighter. Consideration must be given to an Emergency vs. Non-Emergency removal based on fire conditions and structural integrity. All information must then be relayed to the Incident Commander.

Mechanical Advantage:

Mechanical Advantage systems use pulleys (perferred) or other means such as carabiners to amplify the FAST ability to raise the weight of a Firefighter. In a simple 2 to 1 system, the anchor supports half to weight while the FAST support the other half. With any raise in force as the FAST pulls, the victim Firefighter will lift. If a Firefighters weight is 400 pounds, the FAST needs a force of just over 200 pounds to move him/her. If the FAST were to use a 3 to 1 system, they would only need lift 1/3 the weight or 133 pounds



Firefighter Assist and Search Team – FAST

UNIT V – FAST Techniques

Introduction:

All Firefighter emergencies are unique, they are both physically and emotionally exhausting. Much of what the FAST will be expected to perform will be in an “Emergency” situation. This means that the downed Firefighter(s) world is coming down around them and they need to be extricated now! FAST training, as with fire training, should be as realistic as possible. FAST Instructors and Officers must first provide the team with the required information “Training” and then work with them on the “Drill Field”. Rescue techniques need to become second nature to the FAST; there may be no time for a mistake or the luxury of trying it again.

Train for the worst-case scenario. Assume that a Firefighter in full gear may weigh in excess of 300 pounds, and that a “Mayday” on the fireground will occur at the worst possible time – when the Incident Commander has changed from an offensive to a defensive mode, when members air supplies are depleted and their strength is exhausted. Unfortunately, most of the practical evolutions were developed due to a Firefighters death. What appears to be common sense to some departments may have not been taught to others. Training should take place under the guise of “If my partner fell in a hole, collapse etc... what do I have with me to start the rescue?” What tools can I get immediately before the FAST reaches us?

Roman War Games were called “Bloodless Battles” while their Battles were “Bloody Training’s”, they trained as they fought and fought as they trained.

The preceding training tips have been provided to help you enhance your team’s ability. Remember that there are no points for style; the only thing that counts is extrication of the Firefighter(s) and the team itself.

1. Rapid Intervention BAG

The objective of the RIT Rope Bag is to be able to perform the rescue as quickly as possible under adverse conditions. The equipment needed;

- ◆ (1) Life Safety Rope 150 feet of half inch kernmantel
- ◆ (2) Large hooks from old Atlas Life Belt or Large Gate Carabiners
- ◆ (1) Split Pulley w/ carabiner

Several presumptions are made while performing this evolution;

- ◆ Expect the downed Firefighter to be wearing an SCBA
- ◆ The Rescue Firefighters must be able to access the downed Firefighters SCBA shoulder straps

2. SCBA Harness

- ◆ Loosen the downed Firefighters shoulder and waist straps, especially if the Firefighter is large
- ◆ Place the waist strap through the legs, secure the buckle, tighten the straps and secure with a hitch
- ◆ Tighten the shoulder straps and secure with a hitch
- ◆ Secure the Firefighter to the rope with a large hook through both shoulder straps or frame of the S.C.B.A.

3. Suitable Anchors

- ◆ A suitable anchor point would be one that is static and capable of withstanding the intended applied force. Simply stated, "Make it Big", use two wall studs instead of one. Breach the void space of the wall, move down approximately 3' and breach the wall again. Pass the rope around the studs and tie off
- ◆ Breach the wall, place the hand tool in and turn it horizontally along the floor. Attach a carabiner or a rope to the hand tool
- ◆ Cast Iron Radiators
- ◆ Around a door jam
- ◆ Breach a ceiling and wrap the joists

4. Firefighter Removal

Before a victim Firefighter is moved, care should be taken to ensure that any and all possible injuries have been identified. The FAST should first attempt to determine;

- ◆ Entrapment, entanglement or impalement
- ◆ Consciousness
- ◆ Amount of remaining air in the S.C.B.A.
- ◆ Present fire conditions
- ◆ Medical condition
- ◆ Estimated time of extrication

With these factors in mind, the FAST will determine whether the Firefighter needs to be removed in an "Emergency" or "Non-Emergency" mode. If conditions are untenable, it may be feasible to re-locate an Emergency Firefighter to another part of the structure which is relatively safe to repackage.

5. Thermal Imaging Devices

The Thermal Imaging Devices (TID) is a highly durable infrared imaging camera that can provide vision enhancement in firefighting and similar emergency response activities. Use of the TID should be used only as part of a complete firefighting and emergency rescue operation, and not depended upon as the only tool.

The Team Leader uses the TID as a navigational aide to search the area. Starting from the room or area entrance, he scans the area to get an overall picture of the area. The Team Leader keeps behind or alongside of the Search Team, this prevents the TID Firefighter from "Running" ahead of the crew. As the team advances into the search area, contact with the wall must be maintained at all times. Should the TID malfunction; the team will still be able to exit the area.

At a point where the Team Leader determines, he will make periodic scans of the search area to search for victims and to familiarize him with the building layout. As the Search Team Leader advances into the area, he will determine which hidden areas need to be physically searched by the Search Team. He will direct the Search Team using the TID to the area or object that he wants searched. The TID firefighter needs to remember that the victim may only look like a "Hot Object" due to objects obscuring the image.

The Search Team begins their search always in voice contact with each other and the Team Leader. The Search Team will search in a pattern as directed by the TID member. Once the Search Team returns to the Team Leader, they shall then advance.

Firefighter Assist and Search Team - FAST

UNIT VI: Large Area Search Procedures

Objectives:

By the completion of this lesson, the student Firefighter shall be able to:

1. Firefighters will recognize the need for a search rope operation when the building layout and fire conditions dictates it's necessity
2. List the equipment required for a search rope operation
3. List the procedures for a search rope operation
4. Conduct a rope search of an area in the quickest time, in a safe and controlled manner
5. Conduct a hoseline search of an area in the quickest time, in a safe and controlled manner

The information and skills that the student should acquire will serve only as a foundation for a team search operation. Team search requires a great amount of individual and team discipline. With these basics and much practice the team search can be an effective tool in the following situations and others;

- ◆ The search of a large open area such as, gymnasiums, ballrooms, convention centers, commercial garages, cellars, etc.
- ◆ The search of complex areas such as schools, banks, office areas, churches, industrial buildings etc.
- ◆ Buildings that may be under construction or demolition, or contain open shafts, missing floors and/or stairs.

The student will be able to recognize the need for a team search in any situation where an effective and safe search for life and fire cannot be accomplished via ordinary search techniques due to building construction or heavy smoke conditions.

Equipment:

Searches conducted in the situations previously listed are both laborious and equipment intensive. Certain equipment will be required for the team to operate, as well as, additional or (nice to have) equipment.

Personal Firefighter Equipment:

Personal Protective Equipment (PPE) to include - Coat, pants, boots, helmet, hood and gloves.

SCBA - With a 1 hour rating if available is the preferable unit. This would allow the Search Teams to perform 20-minute search, 20-minute exit with a 20 minute buffer. Should a 30-minute cylinder be used, the formula would then be a 10-minute search, 10-minute exit with a 10-minute buffer.

PASS Device - Used in operating condition and active. Search personnel will be entering hazardous areas and should not hesitate to call for help should the need arise.

Flashlight - Carried by every member of the team, the personal light is used in assisting to search and while attaching and detaching to the Guide Line.

Radios - If possible each team member should have a radio. If this is not possible, the Team Leader and Control man must be in radio contact. The next radio should go to the member of the Two Man Search Team. Most situations will require the use of a secondary channel.

Forcible entry tools - Each member of the team must carry a tool, preferably one of the following types: halligan, axe or maul. This will enable them to probe or sweep ahead as they search, as well as, force entry and breaching operations that they may encounter.

Door Chocks - Several should be carried so that doors may be secured open as the search progresses. Firefighters must not allow doors to close and possibly lock behind them. Chocks placed as high in the door jam as possible, will keep it from being "kicked out" and allowing the door to close. Search personnel should not use their hand tool to hold a door, which would result in not having the tool to search or force entry or exit.

Team Equipment:

Guide Line - 200 feet of rope that is large enough in diameter to manage while wearing gloves and still tie knots in with ease, minimum of 3/8. Rope should be carried in a bag with a sling or strap for hands free deployment. The rope should be equipped with snap hooks on each end, which would be large enough to clip on the Guide Line. Also, if more line is needed to reach a large area, then two guidelines can be secured together. One end should be fastened to the rope bag to alert members when 200 feet has been deployed and prevents loss of contact with the rope. The other end is used to secure to a substantial object, which must be outside the building where the search team will start, and tied high enough from the ground (chest high) so as not to be obscured by smoke.

Personal Rope - 20 feet minimum, of a rope smaller in diameter than the Guide Line for distinction between the two and for manageability. The personal rope should have at least one snap hook on one end large enough to fasten to the Guide Line. The other end should have a snap hook or eye splice. These lines allow the searchers to search away from the Guide Line and still have contact. If the firefighter has a personal rope longer than 15 feet, tie a figure eight on a bight at the 15-foot mark and fasten it to the waist strap of your SCBA. The remaining rope can be kept in the rope bag or Turn out pants pocket.

Air Supply - Spare air cylinders, preferably one hour in duration, for team members kept at the entrance to the search area.

Marker Light or Audible Marker - A high-powered light should be placed at the entrance of the doorway and pointed inward towards the search team to act as a beacon for the exit. Two lights are preferred with the first "strobe type" placed at the entrance and the second kept illuminating the Guide Line. Audible Markers are also a viable option and should be considered. The Audible Marker can be placed at the entrance and used in conjunction with the high-powered lights. These become a homing beacon for the retreating firefighters and victims. A light attached to a portable generator can also be placed at the entrance to mark the exit for firefighters conducting a search operation.

Method of Marking Time - Marking Time (see Control Board) could be as simple as a wristwatch on the scene or radio communications with a dispatcher. It is most preferable that the time be kept on location. The importance of accurate, uninterrupted time keeping is essential to the safety of the members conducting the search operation by marking entry, operations time, and exit time. These times will be relevant to SCBA cylinder size and the operational/exit times calculated for them (see time board operation).

Optional Equipment

Thermal Imaging Devices - Thermal Cameras (see TID Operations) serve as a tremendous aid in coordinating search operations. The TID will help determine the shortest and safest route of travel and helps eliminate the need to make "Blind Sweeps" during search team operations. Also, it will allow firefighters to virtually see through smoke and view the following;

- ◆ Room layout
- ◆ Holes in floors
- ◆ Open stairs or shafts
- ◆ The seat of the fire and any fire extension
- ◆ Changing fire conditions
- ◆ Accountability of searching firefighters
- ◆ But most importantly, trapped/missing firefighters

Stokes Basket - For removal of a victim.

Spare SCBA - A spare mask should be located by the entrance to the search area for firefighter emergencies. As the Search Team locates the victim firefighter, the Rescue Team can be deployed with the mask to assist.

Cable as Guide Line - Although it may be slightly more difficult to deploy and work with than rope, it does offer the advantage of not burning or melting which should be a consideration when searching areas above the fire as in piers or open industrial cat walks etc.

Marking Guide Lines - The purpose of marking a Guide Line is to mark the knots, or by other means such as tape, at intervals on the Guide Line to indicate the distance traveled such as 20 feet or 25 feet. These Guide Lines work well for straight deployments, but do not work when turns need to be made.

Charged Hose Line - (See Searching with a hoseline) With adequate personnel to properly advance, a charged hose line is a safer but more time consuming option.

Support or Backup - Personnel should be utilized as needed, under the direction of the Control Man. Back up personnel need to be assembled much as a FAST Unit. Fully donned with PPE and SCBA, they need to stand by for instant deployment and should also monitor the radio for signs of problems the Search Team may encounter.

The Search Team:

The most obvious and important part of the Search Team is the team members themselves. There has been much debate and discussion about firefighters and training. The Incident Commander should realize that Team Search is an operation that requires the firefighter to be well prepared both mentally and physically. Firefighters who have yet to experience heavy smoke, heat and fire, and who are not physically fit, may not be the first choice for this operation.

The team should consist of a MINIMUM of FOUR (4) and ideally six (6) firefighters. Ideally, they should be experienced with the discipline to carry out the tedious operation. If a Thermal Camera is used, a seventh firefighter could be added.

Positions:

1. Team Leader (Officer) - responsible for overall team operations including but not limited to, informing members of search objectives (search for life of fire), special hazards, control and deployment of Guide Lines, safety, communications and search termination.

* NOTE - The Team Leader must be radio equipped.

2. Search Team (2 firefighters) - Acting as a team, these members follow the Team Leader and perform search and rescue operations off the Guide Line with personal rope as directed by the Team Leader.
3. Control Man - (See Control Board/Entry Point) Responsible for outside monitoring of Team Leaders, Search Teams and Rescue Teams, from a position at or near where the search begins. Responsibilities include:
 - ◆ amount of firefighters entering to search and rescue
 - ◆ maintain radio contact at all times with Team Leader
 - ◆ identification of search and rescue personnel
 - ◆ entry and exit SCBA air time
 - ◆ communicates entry and exit times to members along with other pertinent information that may be received from the Incident Commander, etc.
 - ◆ any equipment that may be called for or needed for the operation
 - ◆ if the area is IDLH under OSHA 1910.139, the control must know where the team's area operating at all times.

* NOTE - The Control Man can be any dependable firefighter due to the fact that they will not be entering the hazardous area. The Control man must always maintain the position or ensure that the position is continually staffed.

4. Rescue Team (2 firefighters) - Responsible for maintaining a standby position near the Control Man to assist the members in the search area if such assistance is required such as bringing equipment to the search team. In prolonged operations, they would also be the relief team.

* NOTE - If the Rescue Team enters an area, which is IDLH under OSHA 1910.139, another Rescue Team must be established in their place.

5. Thermal Imaging Device Man (Optional) - If a Thermal Camera is available, it should be dedicated to a trained operator who will lead the Search Team and act as partner for the Team Leader. The Camera shall be utilized as a navigational aide, monitoring the safety of the Search Team and changing atmospheric conditions in the search area. By leading the Search Team with the Team Leader, he can "scan" the entire area determining the shortest and safest rout of travel. Using this tool, the need for blind sweep searching in areas can be reduced as the Camera Man can "scan" the area and quicken the search. Search personnel should remember their basics in search techniques and stay in contact with the Guide Line. Firefighters should not give their entire faith in the Thermal Camera as it may malfunction or be damaged.

Operations:

Once the Team Leader is informed of the situation by the Incident Commander, the Entry Team is informed of the objectives (search for life or fire). The Team Leader assigns specific Team positions and briefs them of any known hazards or conditions (haz/mat, collapse) etc. All required equipment is assembled at the entrance to the search area. A strobe light(s) and or a portable light and or an Audible Marker should be set up at the entrance to the search area. This will assist in the identification of the exit for the Team.

The beginning of the Guide Line should be secured to a substantial object between knee and chest high and outside the hazard area. If Conditions worsen as the search progresses, team members will be able to follow the Guide Line to the outside. A substantial object would include a phone pole, street sign or other high object. It is not preferable to tie off to fire apparatus due to the fact that this would restrict the apparatus from being moved if necessary. Also, the tied off Guide Line will make a stand-by position for the Rescue Team and most importantly, the Control Man.

The Control Man marks the entrance time on the air. Communications between the Team Leader and the Control Man should be frequent. Information regarding search advancement/progress, conditions and control of the fire, change of directions and amount of time expended, should be constantly relayed. As the team grows close to its allotted time, the Control Man must advise the Team Leader to begin to look for a "Tie Off Point" or "Terminating Point". The safety of the Team is the PRIMARY responsibility of the Control Man. The Rescue Team assumes a position near the Control Man ready to enter the search area immediately should they be needed. In a prolonged operation they may be used as a relief crew but not until another Rescue Team is in place.

1) Searching without a TID:

The Team Leader advances into the search area being alert to keep the Guide Line taut and aware of proper line management. The Team Leader should deploy the Guide Line bag in front of him, this way should the floor in front give way; only the rope bag will be lost.

The Search Team now clips one end of their personal rope to the Guide Line and the other end clipped or ties to their SCBA waist strap, and keeping the remaining rope coiled in their hand. Should the clip be too small for the Guide Line, simply loop the personal rope around the Guide Line and clip it back onto the personal rope. Should no clip be available, the firefighter can make a figure eight on a bite, and secure it to the SCBA harness. They follow several feet behind the Team Leader allowing for him to maintain tension or change direction without bunching up.

At a point where the Team Leader determines the search should begin. He will make an overhand knot in the Guide Line large enough for the Search Team Firefighters to clip into. He then advances a few feet more, turns to face the knot and pulls the rope taut.

The Search Team then advances along the Guide Line to the knot. They clip into the knot with their personal rope maintaining contact with the Guide Line. The Search Team carefully begins their search by being alert to line management and always in voice contact with each other and the Team Leader. The Search Team will search in a pattern, which is reflective of the layout of the search area (Office Building, Department store etc.).

Once the Search Team completes their first sweep, they return to the knot and the Team Leader then advance several feet further (15 - 20) with the rope bag, depending on the type of search being performed (open area sweep, or complex area). The Team Leader will then turn, face the rope, and pull it taut. The Search Team un-clips from the knot, clip onto the Guide Line and advance to the next knot or a point the Team Leader deems appropriate.

* NOTE - Overhand knots are left in the Guide Line as reference points for members exiting or entering.

As the search progresses it may become necessary due to an open pits, shafts, stairs or other such hazards, to "Change Direction" of the search. At this point, the Team Leader must find a substantial object such as a desk, file cabinet or other fixed object, before and after the hazard. This is to prevent the Guide Line from being pulled taut over the hazard in the event that a rapid exit must be made. The Team Leader must advise the Control Man that he is making a change of direction and to which way (right or left). It is important to remember that the slack be taken out of the line before the tie off.

The Team Leader maintains communications with the Control Man informing him of;

- ◆ team progress or problems encountered
- ◆ fire conditions and if a hose line is needed
- ◆ needed assistance or tools and equipment

When the Team Leader is advised by the Control Man that it is time to locate a tie off point, or any time when he determines that it is time to exit, he must look for a substantial object to tie off to. This is done to keep the next in coming Search Team from pulling the Guide Line off its course.

The search continues until such time as;

- ◆ the objective is located, (victim or fire)
- ◆ time runs out and all members must exit the area together
- ◆ when this occurs the Team Leader should get the guide line taut as possible and secures it to a substantial object.
- ◆ this allows the relief team to return to the last area searched and gives them a starting point.
- ◆ The Team has searched the maximum in that direction and another approach is necessary.
- ◆ Conditions dictate that the search be canceled.

* NOTE - At no time will team members break off the Guide Line or Personal Rope and go off on their own. However, a firefighter at the end of his Personal Rope may have the second firefighter attach his rope and himself to the first firefighter and effectively gaining an additional 15 feet of search rope.

2) Searching with a TID:

The Team Leader uses the TID as a navigational aide to search the area. Starting from the room or area entrance, he scans the area to get an overall picture of the area. The Team Leader keeps the Guide Line taut as he advances into the search area. The Search Team clip their personal ropes onto the Guide Line keeping the remaining rope coiled in one hand while the other end is connected to the SCBA harness. The team then follows several feet behind the Team Leader on the Guide Line.

At a point where the Team Leader determines the search should begin. He will make an overhand knot in the Guide Line large enough for the Search Team Firefighters to clip into. He then advances a few feet more, turns to face the knot and pulls the rope taut. The Search Team then advances along the Guide Line to the knot. They clip into the knot with their personal rope maintaining contact with the Guide Line.

As the Team Leader advances into the area, he will determine which hidden areas need to be physically searched by the Search Team. He will direct the Search Team using the TID to the area or object that he wants searched. The TID firefighter needs to remember that the victim may only look like a "Hot Object" due to objects obscuring the image.

The Search Team carefully begins their search by being alert to line management and always in voice contact with each other and the Team Leader. The Search Team will search in a pattern as directed by the TID member. Once the Search Team returns to the Guide Line, they shall un-clip from the knot, and clip onto the Guide Line. The Team Leader shall then advance with the rope bag, depending on the type of search being performed (open area, or complex area).

3) Searching with a hoseline:

It is commonly believed that more lives have been saved by a properly positioned and operating handline than by all other firefighting actions combined. When fire control is vital to successful firefighter rescue and removal, the IC must consider deploying an Engine crew to assist the FAST (Engine Support of RIT/FAST Operations by A. Fredericks Fire House). In lieu of a FAST Engine to support the operation the conditions may dictate the search off the initial attack line.

As Firefighters advance, they can hook to the hose line much in the same way as they would with the Guideline. The Team progresses, as they would and stop at intervals as determined by the Team Leader. They would then loop the personal rope under the hose and secure it upon itself. This will prevent the rope from sliding out of place. This also affords the Team the added benefit of fire protection should it be needed. The Team Leader or other firefighter will need to control the nozzle for protection of the crew.

The Incident Commander informs the Team Leader of the situation. The Team Leader assembles the Team and informs them of the objectives (search for life or fire). He assigns specific Team positions and briefs them of any known hazards or conditions (haz/mat, collapse) etc. The hose is played out and stretched to the entrance. Conditions may worsen as the search progresses, therefore, in order to assure complete exit of all members, the line needs to be pressurized and bleed off. If an automatic nozzle is used, set the pattern for straight stream.

The Team enters the structure and advances the line. At a point where the Team Leader determines the search should begin he will inform the firefighters to loop their personal rope around the hose, and clip it back upon itself. The Team Leader will then observe the ambient conditions and observe fire progression maintaining verbal contact with the crew.

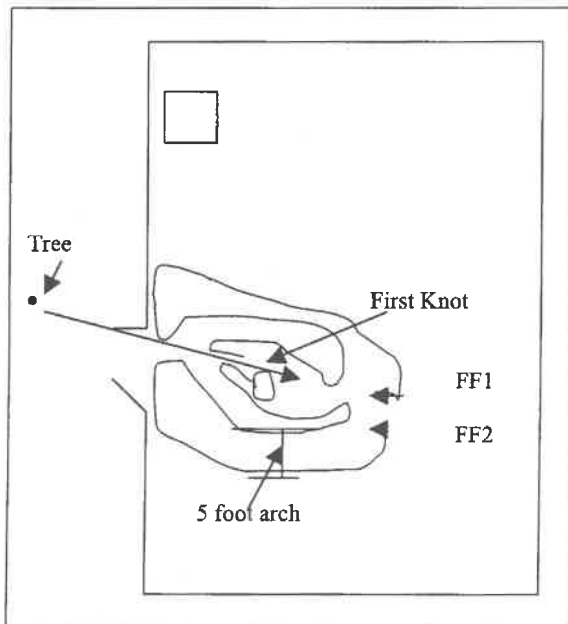
Control Board/Entry Point:

One of the main tasks of the Control Man is to control and coordinate the efforts of the Search Team, by controlling the available air resources for optimum advantage. As stated previously, the Control Man is responsible for outside monitoring of Team Leaders, Search Teams and Rescue Teams, from a position at or near where the search begins. The Control Man can be any dependable firefighter due to the fact that they will not be entering the hazardous area. The Control Man must always maintain the position or ensure that the position is continually staffed.

The Control Man coordinates efforts and information such as, plans the entry, results, and hazards, from one team to the next with all tactical efforts fixed on the Strategic Goal of the Search Operation. As one team is searching, the Control is preparing the Stand By Team to rapidly take up the search where the proceeding team ended. The time the Control will allow a team to search is based upon the rating of the SCBA. Maximum use of the available air is calculated by thirds and allocated (1/3) for search, (1/3) for egress and a (1/3) safety factor. This formula will work for all SCBA cylinders be they (30), (45) or (60) minute. The Control insures that all team members have the same rated SCBA cylinder, and if not, the formula shall be figured using the lowest rated cylinder.

The Control Device or Board should be as simplistic as possible with the emphasis on team safety. Besides the basic P.P.E. for the Control man, a portable radio with a separate channel for the search operation, paper, pencil and a stopwatch or egg timer could suffice. Commercial Control Boards are available but the Control Man must be able to understand and use it with no confusion or hesitation.

Search Pattern:



Search Firefighters should release no more than 5 foot of Search Rope with each arch.

Geometrically, the arch's will appear to overlap, however, this ensures that all reachable areas are searched and overlap is minimal.