

DECEMBER 2022

PENSACOLA BEACH, FL

CET FIRE OPS

HIGH RISE OPERATIONS EDITION

FIREFIGHTING

**THE HOSE STRETCH
MINDSET & PREP
FORCING ENTRY**

**BUILDING
SYSTEMS
HAZARDS
CODES**

COUNTY FIRE TACTICS



FUTURE EVENTS



CFT 100 Club 2023

- ALL Four 2023 Conferences \$1,000



Urban To Suburban Fire Conference

- Aug 22nd - 24th, 2023



The Fire Conference

- Jan 30th - Feb 3rd, 2023



Battalion Chief Boot Camp

- Oct 23rd - 27th, 2023



Command Officer Boot Camp

- May 16th - 18th, 2023



Beyond Minimum Standards

- Dec 5th - 7th, 2023



WELCOME TO THE 2022 HIGH RISE OPERATIONS CONFERENCE

BY CHIEF CURT ISAKSON

Welcome Firefighters,

I am incredibly excited to have you here on beautiful Pensacola Beach to attend the last annual High Rise Operations Conference. HROC 2022 will continue to focus on giving firefighters and fire officers the knowledge, skills, and abilities to take on fires in high-rise and standpipe-equipped buildings in their hometowns. Ten years ago, we had a theory that High Rise fires would increase in number and complexity. Since we started offering this conference in 2012, several significant high-rise fires in the United States and overseas have occurred over the last ten years and many over the previous five.

- 2015 The Cosmopolitan Hotel, Las Vegas, NV
- 2017 Marco Polo Apt Fire in Honolulu, HI
- 2017 Grenfell Tower Fire in London, 72 Dead, 74 Injured
- 2022 Twin Parks Fire in Bronx, NY, 17 Dead, 63 Injured
- 2022 E 52nd St Fire, Manhattan, NY,, 38 Injured

This year we are grateful to have Chief Frank Leeb, FDNY, open HROC with a keynote presentation followed by additional high-rise operations instruction throughout Tuesday morning. Chief Leeb served as the City Wide Tour Commander and Command Chief at both high-rise fires in NYC noted above.

We thank all speakers and instructors for giving their time and commitment to making this a great educational experience. We have brought back our highly experienced and knowledgeable high-rise operations instructors and added new ones who also share a passion for making our profession as safe as possible while being as aggressive as possible.

According to a recent report from the NFPA, 3800 civilians got killed by fire in 2021; less than 1% of that number is the number of firefighters killed performing interior firefighting and/or search and rescue operations. We want to send a clear message from County Fire Tactics. The Fire Service is here for the people we swore to serve, and we understand the hazards associated with firefighting before taking the oath to protect others.

The first two days of HROC will include a very skilled and diverse group of fire service leaders speaking on various topics regarding operations in high-rise buildings. On day 3, you will attend the workshop or HOT Track you chose during registration. Whether a repeat attendee or a first-timer, you will have a great experience.

At some point this week, you may ask why this is important. When responding and operating at high rises with minimal staffing, you must be prepared and able to deliver and apply significant amounts of water to the fire. You must make the most of your personnel and equipment to the public we swore to protect. Nearly 50% of all high rises today do not have fire sprinklers. When fire sprinklers are present, they fail at 1 in 14 fires. FIRE SPRINKLER SYSTEMS ARE NOT A GUARANTEE! When they fail, will you and your crew be READY?

In closing, our conferences would not be possible without our great sponsors and the support they give to help keep the costs down and the quality of training up. This includes fire equipment vendors and local businesses across Pensacola Beach offering discounted specials for our attendees. Please make an effort to attend the nightly planned social events each evening. While networking, you will continue to learn, make new friends, and share in the bonds of brotherhood and sisterhood that make our profession the greatest job in the world.

Thank you for attending and supporting training to make a difference for them. Keep up with the latest fire training and events by signing up for the CFT Box Alarm notifications on CountyFireTactics.com and follow/like us on Facebook at [CFTFireOps](https://www.facebook.com/CFTFireOps). If you need anything while you are here, don't hesitate to stop a CFT Team Member in the green shirts or get in touch with me via phone or text at (850) 982-5364.

Remember,

TACTICS PUT OUT FIRES & IT'S WORTH THE RISK !!!

MORE ABOUT CURT ISAKSON



BRONX TWIN PARKS FIRE JANUARY '22

BY CHIEF FRANK LEEB, FDNY

“Today, we pause and reflect on the tragic fire yesterday in the Bronx. We reflect on the value of our members and their dedication. We also reflect on their training – the foundational cornerstone which prepares and positions our members to perform under even the most demanding of conditions. There were many heroic and amazing actions inside and outside the fire building by both fire and EMS members.”

“Outside our members were removing victims from the tip of a 35-foot ladder in the rear, they had perfectly positioned aerial ladders enabling multiple rescues in the front, all while many others were rendering patient care and performing CPR on an unimaginable number of children and adults.”

“Inside, our members overcame several obstacles while locating and extinguishing the fire and searching for occupants. Immediately, our members encountered multiple victims in need of removal. Simultaneously, we searched the numerous apartments with only one elevator for most of the time. Despite our Herculean effort, sometimes the results don’t match the intensity, dedication, training, and absolute effort of our members.”

“This day – at this fire – was one of those occasions. We are the FDNY – we play to win. This winning mindset entails many small tactical nuances executed proficiently to position us to achieve the greatest possible outcome.”

This includes the following which were executed and evident with great skill in the Bronx

- Exceptional apparatus positioning in front of the building.
- Proactive and timely request for additional resources.
- Proper use of our PPE.
- The FAST truck being ready to go to work with proper tools.
- Efficient, effective and proper use of portable ladders.
- Employing lifesaving vent enter isolate and search (VEIS) tactics even under extreme conditions.
- Units promptly reporting into the command post.
- Fire CFR units and EMS units working together to save lives.

Deputy Assistant Chief Frank Leeb – Chief of the Fire Academy – Command Chief 1/9/2022.



**MORE ABOUT
FRANK LEEB**



HIGH RISE THOUGHTS

BY LIEUTENANT RAY MCCORMACK, FDNY (RET.)



PAINTING THE MIDPOINT

Each length of your high-rise hose pack should have its midpoint painted. This allows for rapid identification of the halfway point in the length which can be used to help deploy the line and as a guide for how much hose has been used and how deep we are in an area. Adding a directional marker to the midpoint mark by placing an additional stripe adjacent to it in the direction of the female coupling can help guide firefighters to safety by giving them a directional reference point.



RECOVERY OUTLET

Suppose you cannot hook up to a standpipe outlet due to dissimilar metal bonding between cap and outlet, damaged threads, or some issue that severely delays the hookup or renders that outlet out of service. In that case, you need to move on to another outlet. Inside a half-landing return stairway, your recovery outlet is on the floor below. If your outlet is inside a scissor stairway, then your best recovery location is two floors

below in the same stairway. Estimate one length for the scissor stair recovery and at least half a length for the half landing return stairway. This is one reason to pair up engines, to supply recovery hose if needed.

WET IT ALL

When you stretch from a standpipe you should stretch your full complement of hose. Most engine companies bring 150' of hose for standpipe response and deployment. If you carry too much hose, say 250' then editing it down for a shorter stretch is appropriate. The 150' should be fully stretched and wet except for the special circumstances. Use the failsafe of stretching what you bring unless the officer calls for less. It's better to have more and just drain the additional piece or pieces than to be wrong and stretch short. Little effort is required to drain the additional hose.



DRAINING THE LINE

Drain any hose that remains in the stairway within the stairway. Drain the nozzle length and its support length as one piece back toward the stair enclosure. By keeping the two lengths together, we end up close, if not in the stairway reducing water from entering adjoining apartments. Keep the nozzle on the lead length closed as you drain the hose; this will restrict air entry.

RULE OF 100

If you stretch 150' of hose using three lengths, one length is dedicated to the fire area. That leaves 100' remaining. That remaining hose must be enough to cover the stairs and the distance down the hall to the fire apartment. If those two distances are more than 100' combined, then you will need more hose. Make sure you do the math!

PAIRED & INSYNC

If you are the second to arrive engine and assigned to assist the first engine, you must support their stretch choice. The first due could have chosen to do a hand stretch instead of a standpipe stretch because the fire is on a lower floor, and they felt the hand stretch would be quicker. You can always debate the stretch later, but don't do your own thing. Get the first line operational by assisting with the stretch in whatever form it takes.



BLEED THE HOSE FOR PRESSURE

Bleeding a standpipe hoseline is different from a handline where the pump operator gives you fairly accurate pressure to begin with; standpipe outlet pressure can be vastly higher than needed. Be mindful that the nozzle may be hard to handle, so get ready and keep the bale fully open as the line pressure is adjusted at the outlet. This could take a while because you're not just purging the air and observing the stream like an apparatus handline stretch. We have to allow the outlet

pressure to be set to obtain the correct operating for the hoseline. Only then should you close the bale and claim to be ready.



PLACE THE HOSE ON ITS EDGE

Hose typically lies flat during the stretch. However, it should be placed on its edge when it goes past a doorway. When a hose lays flat to the floor in a doorway, the door closes over, and the line is charged; this will cause a loss of operational water and a challenging hoseline removal. We must block the door open and place the hose on its edge so that when the line is charged, we won't have a trapped hoseline. Remember, some hose may be out of view when it gets charged, so this extra step goes a long way in avoiding a trapped hoseline. ■

MORE ABOUT RAY MCCORMACK



ENGINE COMPANY STANDPIPE OPERATIONS

“THE FIRE ATTACK PROCESS”

BY CHIEF DAVE MCGRAIL, DENVER FIRE

INTRODUCTION

An effective, efficient, and successful standpipe operation requires the teamwork of two (2) FD engine companies (named E-1 and E-2 in this), and physically and mentally prepared firefighters. The two company officers and four firefighters from the first two arriving engine companies (E-1 and E-2) to a high-rise and or standpipe equipped building, should pair up, to stretch, operate, and advance one powerful fire attack hose-line, as one fire attack team.

The two engineers (pump operators) from the first two arriving engine companies (E-1 and E-2) to a high-rise and or standpipe equipped building, should pair up and operate as one water supply team, to initiate and complete the primary and first FD water supply into the buildings standpipe system.

ESTABLISHING THE FIRE ATTACK STAIRWAY

The Fire Attack Stairway should be a stairway that ideally provides for:

1. The shortest fire attack hose-line stretch to the fire.
2. The closest stairway to the fire (usually).
3. The best access to the fire.
4. The fastest access to the fire.
5. The stairway that minimizes the risk to civilian building occupants.
6. The stairway that minimizes the risk to the fire attack team and all other operating members.
7. If possible, avoid the use of Smoke Tower Stairways, as these are designed and best for civilian evacuation.
8. Whether or not the stairway has roof access is not a primary consideration. Although it will make post control ventilation easier, we must consider wind and flow-path during pre-control operations.

TYPES OF STRETCHES

There are essentially three (3) different types of fire attack hose-line stretches for fire attack in high-rise / standpipe equipped buildings that require a standpipe operation. They are:

1. APARTMENT STRETCH

The Apartment Stretch is the most common and most frequently used fire attack hose-line stretch for standpipe operations. This is the easiest and fastest stretch to complete, and it allows for dry hose-line to be stretched all the way up to the point of entry and primary area of fire involvement. Door control is the key component that allows firefighters to complete an Apartment Stretch dry, and appropriately manage the risk.

2. STAIRWAY STRETCH (NON-GRAVITY ASSISTED)

The Stairway Stretch (Non-Gravity Assisted) is the next most common, but less frequently used hose-line stretch for standpipe operations. This is a slower, and more complicated stretch (and advance) to complete, and requires much more labor to advance the hose-line for fire attack. It is required when the fire is non-compartmentalized, and the public hallway of a residential multiple dwelling building or open floor space of a commercial building is involved with fire, or is charged with a very heavy, high heat smoke condition. Specifically, it is essential and critical to have a charged fire attack hose-line in the stairway, prior to commencing with fire attack in these situations. At the beginning, the dry fire attack hose-line is stretched up the stairs from the floor below the fire floor landing inside the stairway. The remainder of the hose in the stretch is laid out properly on the floor below. It must be fully stretched out, with no piles of hose.

3. STAIRWAY STRETCH (GRAVITY ASSISTED)

The Stairway Stretch (Gravity Assisted) is the next most common, but much less frequently used hose-line stretch for standpipe operations. This is a slower, and more complicated stretch (and advance) to complete, and requires much more labor to advance the hose-line for fire attack. However, the gravity assist will provide for approximately 25 to 50-feet of easier (gravity fed) advancement out of the stairway and onto the fire floor.

Both types of Stairway Stretch are required when the fire is non-compartmentalized, and the public hallway of a residential multiple dwelling building or open floor space of a commercial building is involved with fire, or charged with a very heavy, high heat smoke condition. Specifically, it is essential and critical to have a charged fire attack hose-line in the stairway, prior to commencing with fire attack.

At the beginning, the dry fire attack hose-line is stretched up the stairs from the floor below, past the fire floor landing inside the stairway, and up to the next landing (half landing in buildings with return stairs, the next floor landing for buildings with scissor stairs). The remainder of the hose in the stretch is laid out properly on the floor below. It must be fully stretched out, with no piles of hose.

DECIDING HOW TO CHOOSE GRAVITY OR NO GRAVITY

Is there enough room in the stairway to effectively complete this stretch? It is more applicable and appropriate in buildings with Scissor Stairs, as the full run of stairs from one floor to the next (without a half landing) usually allows for stretching a full section (50-feet) of hose above the fire floor landing, and thus a 50-foot gravity assist. In buildings with Return Stairs, it may or may not be worth the work to achieve what will only be a half section (25-foot) stretch, and thus a 25-foot gravity assist.

Most importantly, the Company Officer in charge of the fire attack must be certain that once the door from the stairway to the fire floor is open, and fire attack commences, the fire attack hose-line MUST be able to advance, and quickly move out of the stairway onto the fire floor. (This is not easy to determine with accuracy.) If fire conditions are such that the fire attack hose-line cannot immediately move out of the stairway and advance onto the fire floor, the portion of the fire attack hose-line stretched above the fire floor landing will be exposed to high heat conditions, which could damage the hose-line and cause it to fail. ■

MORE ABOUT DAVE MCGRAIL



FIRE PUMPS IN STANDPIPE EQUIPPED BUILDINGS

BY CHIEF KYLE SMITH, COBB COUNTY FIRE

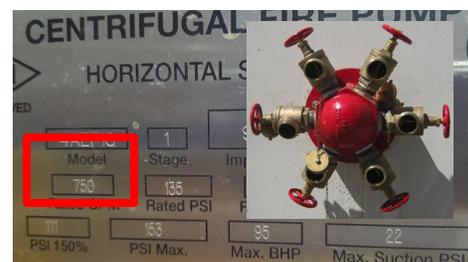
FIRE PUMP BASICS

The building fire pump is one of many fire protection features that are built into the buildings we respond to every day. During our pre-incident planning, we should be gathering as much information as possible about these pumps so that on the day of the fire, we have the best opportunity to have a successful operation. Let's look at the information that we should be gathering on the front end, what that information really means on the day of the fire and finally we will look at the steps to take on the day of the fire, in the pump room to ensure we are using the installed systems to their fullest potential.

PRE-PLAN DATA

Have you ever walked into a fire pump room and thought, what were they thinking? I think we all have...

Each pump room has been designed to meet a standard at the time of construction and yet they are all different, with seemingly no standard set-up. With some practice and time looking at different pumps, you will begin to recognize the key features and what will be important on the day of the fire. The other important part of the walk-through process is asking yourselves, "What if...?" This is what we do; we are going to respond because the "what if" has happened. What if... the pump isn't running and it needs to be, the fuel tank is running low and we need more, the FDC isn't working, pumping the FDC is not helping low pressure issues on upper floors, what else? The more scenarios we plan for the better the odds of a successful operation. Don't just have a back-up plan, have a plan B, C, D and be ready for the unexpected.



From the pump itself we want to determine its capacity, both volume and pressure. This sends us to the pump plate. From here we can easily see the rated volume of the pump. You will also want to capture the "PSI Max" pressure from the plate. This added to the pressure available from the street will give the "Churn" pressure, or the highest possible pressure the buildings fire pump can produce. This is the pressure that if exceeded will fully close the check valve and all water will be coming through the FDC.

Another seemingly obvious but important piece of information needed is what type of driver powers the pump, is it electric or diesel? Diesel pumps require more maintenance and have a few more things we need to verify during operations. If fuel is needed, how is the tank accessed? This could be critical information that needs to be obtained during the pre-planning process to allow time to identify a vendor with availability to refill during an emergency. Electric pumps are typically quieter and require the power to be maintained to the building to continue working. For high-rise buildings there should be a back-up power source that should be identified to ensure its fuel supply in the event of a long-term operation.



Additionally, determining the location of the test header is important information to gather during the pre-planning process. This is one of the better options for supplying the standpipe system in the event of an FDC failure or some other system issues. There is also typically a valve or two that will need to be opened to allow water from the test header to enter the system.

FIRE IN THE BUILDING

The day is here, you recognize the address, and it just doesn't sound like the last dozen false alarms, or the second and third alarms were just dispatched because the first due engine has reported a working fire on upper floors. From our training we know that it takes manpower and lots of it for a successful high-rise operation. One of the initial



assignments should be to get FD eyes on the fire pump. Just like we would not operate the engine at a house fire without an operator, we need to have someone in the pump room to verify the status of the pump and identify potential issues before they cause a failure. It may not be the sexiest assignment, but it is critical to fire ground operations.

First thing to verify when walking in is to ensure that the fire pump is actually running. If there is water flowing from the system, the pump should be running. If not, start it. Now this is probably a good time to mention, make sure you are at the right pump... Fire pump controllers are usually well labeled and have instructions on the front for basic operations. You cannot go wrong by pushing the green "Start" button on an electric pump or the "Crank" button on a diesel.

The next thing you will want to do is note the discharge pressure of the pump. If there is a problem with the pump later, this is the target pressure for the engine on the FDC (plus the friction loss in the hose and FDC). Any pump should have water dripping from the pump packing to keep the shaft cool. There is not much else to monitor on an electric pump. You will want to verify valve positions and keep an eye on the discharge pressure as additional lines are added on the upper floors. Diesel pumps have a few more things to monitor. Verify the fuel level and call for more well before it is needed. They should also have cooling water running to keep the engine from overheating,

if you are not sure, open the by-pass on the side of the engine, it's labeled too.

Keep in mind that the information from the pre-plan should be presented in a format that can be easily followed at 2 am by a company that has never seen the building before. How do we get that information to the pump room? Consider developing a game plan cheat sheet and placing it in the pump room for reference. The sprinkler contractor can be a great resource when developing this type of document. Calling the contractor on the tag as soon as possible on the day of the fire is always a good idea. Their technician may be able to provide invaluable help and guidance during an emergency.

Shutting down the pumps must be done only after ALL fire has been extinguished and operations are completed. If you use the big red button on either controller, the computer will still start the pump if it thinks it should be running. In this situation, we MUST ensure the pump is no longer needed before overriding the controller. Serious consequences can follow if the Fire Department shuts down these systems prematurely.

Fire pumps and other built in active fire protection systems can be complex and difficult to understand if we don't spend the time before an incident to learn as much about them as possible. This is just a quick look at some of the steps we can take as professionals to better prepare for incidents in high-rise buildings. The bottom line is this... if we plan for the un-expected, we set ourselves up for a successful operation. ■

MORE ABOUT KYLE SMITH



CONVENTIONAL FORCIBLE ENTRY INWARD SWINGING DOORS

BY CHIEF ROBERT MORRIS, STAMFORD FIRE



At most residential fires a frequent need is to gain rapid entry into the Burning Apartment, we call this the "Fire Apartment", and this need is Critical! At Multiple Dwelling occupancies, especially in the case of High Rise buildings on the upper floors, rapid entry is the only effective way to attack and extinguish these fires.

The eight-pound Forcible Entry Axe along with the Pro Bar style 30" long Halligan which we call "the Irons" is our primary means as well as the Hydra-Ram type tool. The Hydra-Ram tool is very effective on inward swinging metal framed Fire Rated Doors especially when working in low and near zero visibility conditions and especially when many doors need to be forced.



THE THREE STEPS

When using the Irons to force a locked door there are a few things to consider, GAP, SET, FORCE

GAP A couple of strong blows on and near the lock will generally loosen up most doors and this will allow easier entry of the Halligan. Many times impact and the prying action during the Gapping step may force the door or at least provide more space and a path for the next step in driving in the Fork.



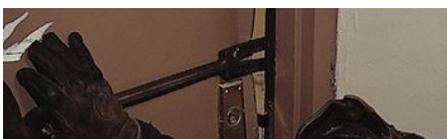
SET The Fork is driven in between the edge of the door and the door frame. The Bevel side or the more rounded side of the Halligan tool is placed near the door and as the Halligan is being hit with the Axe, the Halligan is pushed away from the door allowing it to slip past the inside edge of the door frame.



When you can see the Arch of the Halligan is even with the door stop, you have "Set the Tool." The Bevel may be placed towards the door frame if you are in a confined hallway or if the door is extremely tight.



FORCE When the Halligan tool is Set, you can now push or pull the tool towards the door, and force it open. At this point if more force is required as is the case many times on Steel Fire Doors, use the "Second Maneuver."



Insert the ADZ into the crushed space you created and wrap the ADZ all the way in and around the door frame and pull the tools towards the door, forcing the door in. When the door is opened it must be controlled immediately, to protect the members operating and prevent unwanted smoke and fire extension and to limit the ventilation. These precautions are important at all fires, especially fires in High Rise buildings.



HYDRA-RAM

Unfavorable hallway conditions at High Rise fires such as heavy smoke and high heat as well as complex hallways frequently complicate all firefighting operations. The traditional and time honored Axe and Halligan can be much more difficult under these difficult hallway conditions. The Hydra-Ram type tools can be used to advantage, but several techniques will apply. Make sure the Hydra-Ram Jaws are fully closed and in line, Failure to do this will prevent the tool from fully engaging the door stop. The Jaws must be fully Set between the doorstop and the door. Carefully tap the tool into place to make sure. The Hydra-Ram should be placed as close to the locking device as possible. This will apply the maximum force to the locks. ■



**MORE
ABOUT
ROBERT
MORRIS**

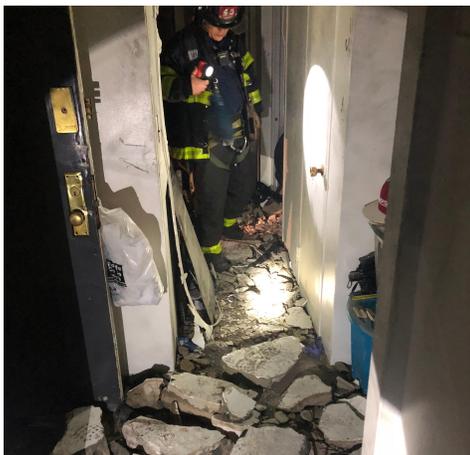


HI-RISE HORROR

BY LIEUTENANT MIKE CIAMPO, FDNV

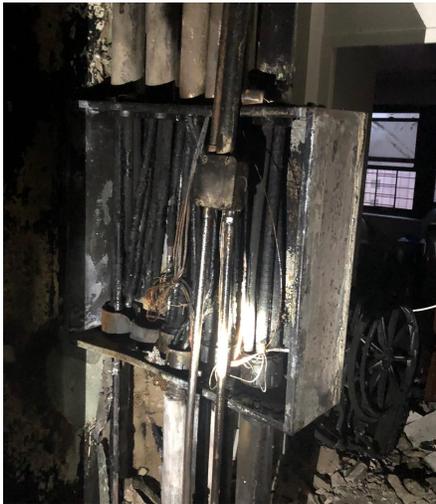
Anytime you get a run for a hi-rise and have a report of an electrical fire, you better have a good mental size-up of some of the situations you could encounter. Many times this isn't going to be your typical sparking outlet (due to a water leak from above) or hot dimmer switch that burnt out against a wood stud. Many of these buildings are built with concrete walls and floors and their partitions between rooms can be cinder/concrete block or metal studs with drywall over them.

When encountering the latter, don't be surprised if you find foam board insulation behind the wall when you're opening it up to check for extension. In some installations, wooden strips or "sleepers" have been attached to the concrete walls so the insulation sits between the boards and the drywall has something to attach too. Normally if there is any extension, it's these sleepers that are charred or smoldering.



When we respond to these buildings, we have to think that larger problems await us. Many of these buildings will have numerous elevator banks, their motors can often burn out or overheat and cause an electrical smell to permeate throughout the building. This occurs because the elevators act as a piston pump moving air to numerous floors as they go up and down in the shaft making locating the source very difficult. It's important to note the

location of the elevator machinery room, they are normally located at the bottom or top of the shaft. Just be aware that some elevator banks only serve specific floors or are high-speed elevators that operate in a blind shaft (shaft where there are no hoistway doors for numerous floors) and their power room could be located at the base of the shaft or at their termination points or a floor above.



Another problem with these monster buildings is electrical supply and distribution closets, transformers or vaults on the floors. This information should be known and pre-incident guidelines or dispatch information should be available to arriving units when responding to these types of calls. That information should also warn the companies if PCB transformers are still prevalent inside the building. As firefighters, we should be wary of when we encounter a fire in one of these areas and know water won't always win here!

260 AUDUBON AVENUE 32 STORY HIGH RISE RESIDENTIAL

Taking up from another run and responding to this address as the first due truck, the dispatcher's voice had a different tone to it. There seemed to be a little more urgency in it than normal. As we were responding, an updated report was transmitted: "Ladder 45, we're now receiving calls for an electrical fire on the 8th and 9th floors". Knowing this building

because it was our building inspection district and we've been here numerous times over the years, a quick decision was made. The can firefighter was told to bring the dry chemical extinguisher and leave the pressurized water can on the rig. As that communication was completed, the chauffeur said he'd bring up another as soon as he could if we needed it. Arriving on scene a visual size-up of the building provided no information, but the Chief informed us he just got word from the fleeing tenants that there were no elevators working in the building. That led us to believe a firefighter would be walking 32 floors up to the elevator room to report on that condition, since the inside team was headed to the floors reporting the fire.



As we made our way up the stairway, a slight nasty tasting haze was encountered and started to get heavier. Realizing the smoke was now becoming a hinderance, we masked up on the 5th floor and continued up the stairs. An engine company had arrived prior to our arrival and suddenly reported they had fire on the 7th floor in an electrical closet. We made our way to that floor and when we entered the public hallway, it was lights out conditions, yet the distinct blue, green and orange flames could be seen about 40' down the hallway. The can firefighter told me "hey Lou, let's put on our hoods" prior to moving down the hallway. He was informed not to enter the closet with the extinguisher and use the door as a shield until the bulk of the fire was knocked down. Three short blasts of the extinguisher were initially

performed, then it had to be done twice more and the fire was knocked down in this closet. A radio communication with the Chief informed him to have the utility company respond forthwith because of the severity of the fire and electrical problem.

After that transmission was made, another engine reported fire was more intense on the floor above (9th floor) and they were stretching a hoseline. Making our way to that floor, the inside team got separated because of the members advancing the hoseline off the standpipe, up the stairs and into the hallway. Reaching the engine company's nozzle team, communication was made that the dry chemical extinguisher was on the way and not to open the hoseline. While kneeling to the side of the door, under the flames, the thermal imaging camera was being used to size-up the extent of the fire and to see if it was extending to the floor above in the conduit.

Without warning there was a violent explosion, lifting us off the ground and into the ceiling and wall, with a large electrical lightning bolt off to the side. Hitting the ground violently, the entire hallway looked like a flashover chamber, fire was from the ceiling to about two feet off the floor. Telling the nozzle firefighter who was now on top of me, I said "let's go, follow me to the stairs". When I got to the stairwell, realizing not everyone followed, a Mayday message was transmitted to the Chief: "Mayday Mayday Mayday Ladder 45 we had an explosion on the 9th floor, members missing and injured", then it was repeated. Luckily the irons team dove into the other stairwell (Scissor stairs) as the fireball consumed the

hallway. Once they heard the message, they checked the hallway and were able to enter it since the flash fire had now burnt. They spotted the variety of colored flames emitting from this closet and made their way down the hallway with the extinguisher. Here, they located the engine officer who was tossed in the opposite direction.

As one firefighter tended to him the other used the dry chemical extinguisher to knock down the fire in the closet. The second dry chemical extinguisher also arrived and was used to hit the area. Once the smoke lifted and the companies began venting the building, the destruction was finally evident from this explosion. The closet's metal door was severely distorted and the rear wall of the closet blew down into the apartment. There were chunks of debris tossed around the apartment and large pieces of the block wall were scattered like marbles on the floor. In addition, four members were now being transported to the burn center for treatment.

LESSONS LEARNED & REINFORCED

Electrical fires in conduit can produce significant levels of CO and we have to remember that CO has a wide explosive range from 12.5% to 75%. Electrical arcing is a potential source for ignition, especially in wiring carrying higher wattage. Not carrying a pressurized water can in this situation was extremely wise. The dry chemical extinguisher was able to knock the electrical fire down on two floors. The electrical service was 480 in this specific building's wiring in

these closets.

Wearing and donning our equipment properly help us tremendously, the burns suffered were 2nd degree to the cheeks and ears, but could have been worse if the hoods weren't donned. The safety battalion noted the due to the force of the blast, the pressure most likely created a gap between the mask and hood while I was flying through the air in the flames, causing the burns.

Numerous companies had to operate in the structure to check the floors due to the heavy smoke conditions. It took them awhile to locate the elevators and open the hoistway doors to ensure the cars were empty. At Hi-Rise fire, elevators if not used for Firemen's Service operations, must be searched to ensure unconscious victims don't occupy them. In these situations, we have to remember that water won't always be our main extinguishing agent. We'll have to rely on other ways to extinguish large scale electrical fires. The FDNY has Purple K units which are outfitted with hoselines on a reel and can be used inside a structure to battle large electrical fires in hi-rise buildings.

Remember as the saying goes- "Big Buildings Have Big Problems". ▪

MORE ABOUT MIKE CIAMPO



Fire departments throughout the country must wake up to the reality that it is very likely that there are high-rise condominiums in their jurisdiction that have only partial or no sprinkler protection. Whereas older high-rise apartments, hotels, and office buildings were required to be retrofitted with sprinkler systems, lobbyists for condominium associations have been successful in persuading cities and state legislatures to grant and extend a grace period for installing sprinklers.

To avoid an unreasonable financial burden on condo owners, some jurisdictions have arrived at a compromise allowing condominium owners to opt for an "Engineered Life Safety System" (ELSS) instead of installing a full sprinkler system that is compliant with NFPA 13, the standard for Installation of Sprinkler Systems. An ELSS is based on an engineering analysis of an existing building with implementation of additional fire protection measures including any or all of the following: partial sprinkler protection; smoke detection; smoke control systems; compartmentation; and other improvements. The analysis takes into account factors such as the risk to occupants; their health, age, and mobility; distance to exits; and fire resistance of compartmentation.

An ELSS must be approved by the AHJ, which in most jurisdictions would be the local fire marshals. Although there is significant controversy and ambiguity surrounding ELSSs, this, in my view, is how it will impact fire officers: the most we should expect in existing high-rise condominiums will be the installation of partial sprinkler systems, with sprinklers in public areas and no more than one sidewall sprinkler head inside the door of living units.

It is very important to understand that many older condominium buildings may have a very limited water supply dedicated to fire suppression. Whereas today, flow tests are required to

ensure adequate water supply for fire suppression systems, older buildings may be supplied by small-diameter and, often, dead-end water mains. Additionally, since many of these existing condominiums were constructed before 1993, they are only required by NFPA 14 to have a minimum standpipe hose outlet residual pressure of 65 PSI at a flow of 500 GPM. Although, theoretically, outlet pressure will be higher at flows less than 500 GPM, consider the age and condition of the fire pump and piping of standpipe systems in these old buildings. Consider that raising system pressures at fire department connections could result in bursting pipes that have not been regularly inspected.

A DANGEROUS SYNERGY 2 + 2 = 6

Synergy is defined as the interaction or cooperation of two or more factors or substances to produce a combined effect greater than the sum of their separate effects. An old saying, "The whole is greater than the sum of its parts," expresses the basic meaning of synergy. In terms of high-rise condominium fire safety, there are many factors which, individually or combined, should be considered as having the possibility of endangering high-rise occupants and firefighters.

FACTORS ENDANGERING HIGH RISE OCCUPANTS & FIREFIGHTERS

- Lack of sprinkler protection
- Lack of self-closers on unit's doors
- Lack of smoke barrier doors isolating elevator lobbies
- Inadequate water supplies
- Large, luxury condo units conducive to a volume of fire challenging or exceeding the suppression capability of fire department hose lines.
- Waterfront buildings, restricting the placement of fire department aerial ladder apparatus.

- A strong sea breeze can create a wind driven fire that blow torches into the public hallway and into the faces of firefighters. advancing a hose line from a stairwell.

- Elderly occupants, many with pre-existing medical conditions and confined to wheelchairs or dependent on walkers for mobility.
- Occupants who panic and will not heed the fire department's instructions to remain in their units. As a consequence, occupants will leave the refuge of their smoke-free unit and venture into a smoke-filled hallway where they will succumb to smoke in elevator lobbies, where they frantically press buttons for an elevator that is not coming as all the elevators have been recalled.
- Patio furniture on balconies made primarily with synthetic petro chemical materials. These plastics burn like solidified gasoline and transform into a running, flaming goo that can drip down and start fires on balconies below.

ADVICE FOR FIRE DEPT'S

- Assume a fire of any significance in a high-rise building, has reached that extent because it does not have sprinkler protection, and has limited water supply for standpipes and hydrants near the building.
- Understand the potential for a fire in a non-sprinklered high-rise to grow beyond the suppression capability of 1¾-inch hose lines.
- Understand the potential for a fire in a non-sprinklered high-rise building to auto extend to floors above. Command and division supervisors must proactively assign companies to check for vertical extension, starting with the occupancy directly above the fire.
- Realize old mid and high rise buildings may have been constructed with floor penetrations for utilities, such as plumbing, with no fire stops. Smoke reported by unit 1206 may be from a kitchen fire in 1106.
- Understand that the standpipe system may not have sufficient sufficient pressure, 105 PSI, to supply a 1¾-inch hoseline flowing 185 GPM.

For example, consider 1,000-sq. ft. condo unit. Using the National Fire Academy fire flow formula of square foot of fire area divided by three would equal a required flow of over 330 GPM to safely and rapidly suppress this fire.

- Consider if the condo unit was fully involved and exceeds the NFA fire flow formula, realize the potential that fire that could overwhelm and seriously burn firefighters who have initiated a direct hose line attack on the fire from the public hallway. Accordingly, the use of 2½-inch hose may be necessary for that volume of fire due to its increase in flow and low friction loss as compared to 1¾-inch hose.

Additionally, 2½-inch hose may, depending on the standpipe outlet residual pressure, be capable of supplying a portable master stream device.

- In warm climates and in the summer months, recognize the potential for reverse stack effect to contaminate stairwells at levels below the fire floor. When the temperature outside a building is higher than the temperature inside a building, the warm air has a tendency to flow into the building on upper floors, lose buoyancy as it cools and sink to lower floors.

- Understand that as smoke cools and loses its buoyancy carbon monoxide (CO) can contaminate lower floors. No secondary search is complete without monitoring all floors for CO.

- Static pressure at a standpipe hose outlet is meaningless to firefighters. It is CRITICAL for crews to fully flow their hose line to read the RESIDUAL pressure on their in-line gauge and judge the quality of their stream on the floor below the fire before ascending to the fire floor

- Consider a transitional attack. Direct a straight or solid steam from ground or elevated master streams at a steep angle through the bottom of a window or sliding glass doorway that deflects off the ceiling of the fire apartment.

- Consider attacking the fire indirectly by keeping the door to the fire occupancy closed and directing a stream from the balcony of an adjacent unit or through a hole opened in the wall of an adjoining unit.

- Ascertain the residual (intake) pump pressure of the fire apparatus connected to a fire hydrant supplying the fire department connection. A significant drop from static pressure to residual pressure is a strong indication that the water main supplying the fire suppression system and hydrants in the area are supplied by small diameter water mains that may be fed from only one direction (dead end). Don't wait for companies to start flowing water and then discover that the water supply is inadequate. As soon as a hydrant connection is made, connect a nozzle to a discharge and watch for a precipitant drop from static to residual pressure.

- When an inadequate water supply is confirmed or suspected, consider pairing engine companies to establish supply lines from distant hydrants on larger water mains.

- When an inadequate water supply is confirmed, or suspected, fire companies should consult with their Fire Prevention Bureau Water Supply Engineering to determine main sizes and request flow tests.

- Fire companies must pre-fire plan all mid- and high-rise buildings in their response district to determine their level of sprinkler protection.

CONNECTING THE DISCONNECT

Most fire officers who will be “on the hoseline” at a highrise fire have never spent any time in their fire prevention bureau. Consequently, they are not familiar with codes and standards such as NFPA 13 & 14 and do not understand the purpose of function of standpipe pressure-reducing valves. The lives of firefighters who actually fight a high-rise fire may well depend on the reliability of the standpipe system that supplies their hose lines.

Are fire officers aware of the last time it was flow and pressure tested in accordance with NFPA Standard 25, Testing and

Maintenance of Water-Based Fire Suppression Systems? Additionally, I have never conversed with a fire suppression system contractor who wasn't willing to answer my questions. Line firefighters who respond to fires must realize that they alone cannot protect the occupants of high rise buildings from fire—they must reach out to their fire prevention personnel who have a good working knowledge of codes and fire protection systems. Additionally, public education is critical. Although they will never completely prevent panicky residents from leaving the refuge of their tenable units, fire departments, through public education, should make their best effort to educate occupants of residential high rise buildings that they are better off remaining in their units rather than venturing into smoke-filled hallways and stairwells. ■



MORE ABOUT BILL GUSTIN



THOUGHTS FROM THE FLOOR BELOW

BY CAPTAIN ERIC TOLLUND, DENVER FIRE

You are the engine company officer, and you and your crew have just reached the floor below the fire floor. There is a reported fire above you, on floor 8, in an apartment. It's 10:45 pm, winter, and it's cold outside with a light wind blowing out of the north at street level. You've been to this building multiple times on nuisance alarms, EMS runs, building inspections, and even to train. You know that the north stair is a short run wrap-around, and the south stair is a smoke tower with a vestibule space between the stairwell and floor, separated by two doors. The cabinets are in the hallways, no PRVs, and the building was built sometime in the 60s. It's run down, dirty, and full of bed bugs and problems. This time it's legit.

On the way up, you encounter residents making their way out, carrying their pets; fish bowls, dogs, cats, a bird cage, and other random things like a toaster oven, a lamp, and what looks like a rolled-up rug. This exodus is always a strange and surreal event to witness. The alarm to the building is still blaring and adds to the chaos. Most occupants were asking if it's really a fire this time. The stairway is narrow, and you and your crew sometimes have to turn sideways to get past the people moving down. Hiking up the stairs wasn't even a question but rather a non-verbal nod between the senior firefighter and yourself as you entered the lobby.

Technically it's only seven floors up, so within the "7 up" rule for elevator use, but even more importantly, none of you trust these elevators, having been on multiple elevator rescues here over the years. You moved with intention, hustling to get up and get to work. You didn't really even notice the weight of the hose packs with all your gear, but now sweat is streaming down from under your helmet. You think for a moment, you hope the outlets are closed on the floors below. There wasn't time to check on the way up.

The radio is busy with other companies arriving on the scene, and you think about who's working today and who you'll see once they make their way up. Who's the second engine assigned to assist you with the stretch, who's on the rescue company today, and who's the second in truck company? You hear the chief, who is now in command and dishing out assignments. The truck crew is right behind you, and you're presuming they'll beat you to the fire floor as you stop to drop the hose packs where the crew can start the hookups. You plan on being right behind the truck as you take off for the recon.

A quick glance down at the crew reveals that they're going through the motions as expected; packs are laid out in the same direction and oriented towards the fire, ready for the stretch. The senior firefighter is pulling straps, and the junior is already working on getting the cap off the outlet, and you hear him yell, flushing, as you turn to head up for the recon. "Perfect!" you think, celebrating the small moment of operational success in seeing the crew doing the little things well. A tiny shot of confidence rushes over you as you think about all the preparation and training that went into this moment, demonstrating why it's going so well.

The stairwell is clear of smoke, but you do notice a distinct burning smell as you double step up to the fire floor, seeing the black and yellow cuff of one of the truckies' pant legs disappear as the hallway door closes behind him. In a flash, you're on the fire floor, and the

truck has already found the apartment. The two firefighters are masking up in the hallway, getting ready to open the door. The light wind at street level crosses your mind in an instant. The building is oriented north-south, and the apartment is four doors down on the left side, the west side. Clear hallway, apartment stretch it is, "excellent," you think to yourself. "Hey bros, watch the wind and control the door, keep the hallway tenable for us; I'm going to get the guys and stretch the line, be right there," you yell to the truckies, who nod and give you a thumbs up. They've got a can, irons, and a hook, again you think, "perfect!"

Opening the door to the stairwell, you hear the members below as well as the next engine assigned to you to assist in the stretch of the 2 ½".

"Hallway is clear, four doors down on the left; I think 150 will be perfect," you yell. "Got it" quickly echoes up the stairwell, past other people still making their way down. Radio traffic is now at a constant cacophony, and you sometimes have to cover the mic hanging out your coat to think clearly for a second or to say anything. You then reach back to turn it down just a little bit. In the blink of an eye, the senior firefighter is already walking your way and you meet on the half landing just below.

He's got two lengths of hose, the nozzle section and the other one for you. You give him kudos for being "on it" and take the second length to assist in the stretch. On the fire floor, you lay down the pack, set the wedge from your helmet on the floor, kick it into the gap between the frame and the door below the hinge, and you glance back to see the door just stay open about six inches. You also make sure the hose is on the edge, not flat, so that when it charges it pushes the door open and won't slide under it.

You see your hose pack playing out as the senior firefighter is making his way down the hall, now hazy with smoke. You heard the truck come over the radio and say a fully involved bedroom and that they got the bedroom door closed, holding it back with the can and searching. Again, "perfect!"

A quick glance into the stairwell and you see the junior firefighter already tidying up the layout, keeping it out from the well and anticipating what the hose will do once it is charged. You look back down the hall and see the nozzle length has been dropped at the drop point and is being stretched, "WATER!" yells the firefighter, carrying the "tray" and laying down the midpoint mark of the hose. You relay the message even before he finishes saying it and the control firefighter disappears to charge the line. Others are now showing up and asking what else needs to be done. You tell them just to mind the line as it charges and then come up to us as we push in.

A quick shuffle down the smoky hallway gets you there just as you hear the water filling the line behind you. You start masking up, thinking about how the smoke has gotten worse, wondering how the truck is doing in there. The radio is still blaring with all kinds of traffic; RIT is on the scene, fire is out the window, and ALS is staged. At least the fire alarm has stopped.

The line pops and sputters as a black and oily mess of water flows down the hallway. The sound is awesome and the sight of water rushing down the hallway is immensely satisfying. The stream pops a few more times and then looks really good. The nozzle firefighter gives you the look, and you both move, you to open the door and him to flow into the apartment if needed and move in.

The door suddenly opens, and through smoke down to the floor, a helmet suddenly pops out, "you guys coming or what?" the truckie yells. "Yup, let's go!" you answer.

The nozzle firefighter disappears, smoke pours out into the hallway, and you see the second engine now right next to you, humping line in.

Then you hear the sound of water flowing, and you hustle to get into the apartment through the smoke and heat. "Perfect!" you think, and again, get a dose of pride and satisfaction from a job that went well.

"Fire's knocked!" the truckie yells to you as he grabs your shoulder, "no extension, just letting it air out a bit." You find some air space on the radio and call command to say "water on the fire," and then once again, you think....." perfect!" ■

MORE ABOUT ERIC TOLLUND



**"OUR INVESTMENT, OUR
PREPARATION, OUR MENTAL
THOUGHT PROCESS, DECIDES
WHETHER PEOPLE LIVE OR DIE.
-CURT ISAKSON**



Chief Isakson, "Write This Down"



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Chief Isakson, "Write This Down"



A series of horizontal lines for writing, with a vertical red margin line on the left side.



Chief Isakson, "Write This Down"



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