



COMMAK FIRE DEPARTMENT TRAINING DIVISION



Commack Fire Department

CFD Probationary Firefighter Basic Lesson Plan Outline

Topic: SCBA 2 – Firefighter Survival/Flashover

- **Location**
 - Station 2 Training Center
- **Level of Instruction**
 - Probationary FF
- **Equipment Needed**
 - Full PPE - Everyone
 - SCBA - Everyone
 - Portable Radios – All Instructors
 - Pre burn Checklist
 - Post Burn Report
 - Mask Confidence Course Props
 - Safety Lines
 - Burn Barrels
 - 4 X 2&1/2 gallon water cans
- **Instructors needed**
 - Minimum of 6 or more depending on class size.
- **Resources Needed**
 - CFD Probationary FF manual
 - IFSTA FF1 manual
 - EMS CVAC
 - 6 sheets of plywood
 - 3 pallets
 - 2 bales of hay
- **Terminal Objective**
 - Probationary firefighters given both lecture and hands on instruction will learn how to escape from building under lights out conditions. Firefighters will also learn visually how a flashover develops in a compartment fire

- **Enabling Objectives**

- Probationary firefighters will learn
 - How to do emergency procedures in smoked out atmosphere
 - Reduced profile
 - Low profile
 - Swim maneuver
 - How to follow a hoseline out of the building in smoked out conditions
 - Witness fire dynamics first hand
 - Learn to work through problems as a team
 - Team building

- **Lesson Outline:**

- **Discussion**

- Review all the parts, how they work, what they do, how to use them
 - 5500 psi Cylinder
 - Metal Frame
 - Plastic housing
 - Straps - shoulder/waist/drag/ Cylinder
 - High pressure hose and coupling
 - PRA (pressure reducing assembly)
 - Pressure relief valve
 - UAC (Universal Air Connection) or RIC (Rapid Intervention Connection) – Same thing
 - Sensor Modules - Our term “Tail Lights”
 - Braided High Pressure Hose from PRA to remote pressure gauge
 - Electronics Cable going to remote pressure gauge from brain
 - Remote gauge
 - Low pressure hose from PRA to EZ-Flow 3 facepiece regulator
 - Quick Disconnect
 - EZ-Flow Facepiece Regulator
 - Facepiece

- **Hands On SCBA Assembly and Activation**

- Review assembling the SCBA, turning on and off the assembly

- **Hands On Donning the SCBA**

- Review donning the SCBA

- **Flashover Container**

- Safety Instructor checks all firefighters for proper donning of gear and SCBA
- Students for 2 lines

- Explain what they are about to do
- Looking out the back of the container, have the left side line lay on their left side with left elbow in the middle and have the right side line lay on their right side with right elbow in the middle. Both sides have their feet closer to the fire end of the container
- Explain hazards
 - Don't stand up under any circumstances
 - If you have a problem, tap nearest instructor, turn to the middle of the container and crawl out
 - After drill is over, gear especially buckles will be hot. Do not touch, or otherwise compress their own or another firefighters gear until it has cooled.
- Light the fire
- Point out all things they learned in Fire Dynamics class
 - Heat release Rate
 - Heat Flux
 - Neutral Plane
 - Air Entrainment
 - Smoke is Fuel
 - Oxygen = Rapid Fire Growth
 - Fuel Rich/Vent Limited Fire
 - Rollover
 - Flashover
- Extinguish Fire
- Have right side turn to middle and crawl out
- Have left side turn to middle and crawl out
- Review what they saw
- Change all cylinders for full
- **Hands On**
 - **Review Emergency Maneuvers**
 - **Swim Maneuver**
 - Explain what situations could arise that they might need to do this
 - Perform the swim maneuver at regular speed explaining each step as you go
 - Have the firefighters do each step with you as you are explaining it until you feel confident the firefighter is comfortable with the maneuver
 - **Quick Release**
 - Explain what situations could arise that they might need to do this

- Perform the quick release at regular speed explaining each step as you go
- Have the firefighters do each step with you as you are explaining it until you feel confident the firefighter is comfortable with the maneuver
- **Reduced Profile**
 - Explain what situations could arise that they might need to do this
 - Perform the reduced profile at regular speed explaining each step as you go
 - Have the firefighters do each step with you as you are explaining it until you feel confident the firefighter is comfortable with the maneuver
- **Low Profile**
 - Explain what situations could arise that they might need to do this
 - Perform the low profile at regular speed explaining each step as you go
 - Have the firefighters do each step with you as you are explaining it until you feel confident the firefighter is comfortable with the maneuver
- **Hands On**
 - **Burn Building Mask Confidence Course Smoked Out**
 - Firefighters are told of the following scenario. You are a nozzle and back up firefighter, you have been ordered out of the building by the OIC. Find the nozzle, follow the hoseline out to exit the building
 - Pair one instructor with TIC and a radio and 2 firefighters
 - Firefighters/Instructor enter the course and find the nozzle
 - Instructor follows behind crew watching with TIC
 - Firefighters will follow the hoseline through various props including but not limited to:
 - Entanglement Prop
 - Low Profile Prop
 - Wall Breach Swim Prop
 - Reduced Profile Prop
 - V Collapse Prop
 - Rafter Crawl Prop
 - During the entire evolution Instructor should be prompting the firefighters on air consumption/management, what they have left via the HUD lights, each coupling they come across and distance they come from the nozzle

- Instructors should make sure they do not come off the hoseline at any time. If they do you must correct them.
- Instructors should pay close attention to the firefighters beathing and anxiety levels and should reassure firefighters as they go along
- Instructors should call a “CODE BLUE” (removal of all smoke barrels and completely ventilate building) should a mask issue occur, an injury or a mental problem with a firefighter should arise
- Review with your group how they did and make any recommended changes to what they did that you might have
- Notes:
 - No more than two groups of firefighters in the course at one time
 - Firefighters should switch who leads at the pre-determined halfway mark
 - When first group is at the halfway point, start the second group in
 - Keep this pace unless it will force three groups to be in the building at the same time
- **Discussion Final Review**
 - Go over everything they just did. Ask about how they felt in the facepiece. Ask if they had any problems in the maze with anything. You must breed confidence in them wearing the SCBA. This is a final run for the SCBA to get qualified. Make sure no one slips through the cracks. You’re not doing anyone any favors by letting a less than stellar performer in the SCBA mask confidence course squeak through. Especially them. They need to be competent at all the maneuvers at this point, if they are not, you need to tell the training chief that this firefighter is not ready and needs more work. If this is the case, we will do our best to accommodate them and get them confident in their abilities and maneuvers. That’s why it’s called a Mask Confidence Course.



COMMACK FIRE DEPARTMENT TRAINING DIVISION



SCBA – 2 Self Contained Breathing Apparatus/Firefighter Survival

Introduction

- This is the second class given on SCBA or Self Contained Breathing Apparatus in CFD's probationary fire school. This class is where you put everything you've learned about the SCBA and the emergency maneuvers together. This class is a more hands on class however in the following written lesson we will go over the why's that we might come across that would cause us to use an emergency maneuver. We will also talk about some of the other things that you may need to know how to do in an emergency and we will talk about some tools that you will want to keep in your pockets.

In the hands-on portion of the class, you will be exposed to live fire for the first time in the flashover container and then you will be performing all of the emergency maneuvers under smoked out, zero visibility conditions as you crawl through the SCBA Mask Confidence Course.

The main purpose of this class however is in the title at the top of the page. Firefighter Survival. That is what the class is ultimately all about. Its about learning how to survive in a fire when situations go bad. This class is for you and you alone.

Firefighter survival is a topic that can encompass many subtopics. It includes mental aspects of survival and physical aspects of survival. To begin we will talk about Maydays, what they are how to use the radio to call for one, mayday statistics, specifically line of duty death statistics (LODD) and Mayday incident numbers.

- **Mayday's**
 - What is a mayday?
 - It's a call for help. Any time a firefighter is in trouble in a fire building they should and must call a Mayday. Do not wait, do not hesitate, don't think to yourself, I can get out of this because by the time you realize you can't, it may be too late. There are many reasons why firefighters hesitate to call a mayday, from embarrassment to arrogance. Is your life really worth the thought of avoiding someone breaking your chops about calling a Mayday? Besides, its not going to happen. The service can be a fun and jovial line of work, however, when it comes to calling a Mayday, nothing is taken more seriously. No one will break your chops about it after its over if you make it out alive.

- When to Call for a Mayday
 - If you are lost inside a building
 - If you are low on air and can't make it out
 - If you are trapped by:
 1. Collapse
 2. Extreme fire event
 3. Entanglement
 - If any other firefighter has any of these events

- How to call for a Mayday – What to Say
 - There are few schools of thought on how to call for a Mayday. The books tell you to use the acronym LUNAR.
 1. LUNAR Stands for:
 - Location
 - Unit
 - Name
 - Air Supply
 - Resources Needed for Rescue
 - The Commack Fire Department does NOT teach LUNAR. The reason for this is because we live in the real world and understand that when a Mayday situation occurs, there is absolutely no way you are going to remember those 5 things no matter how much you practice. If you have a Mayday situation occur, you are having arguably the worst day of your life. Your life is in peril, your anxiety level will reach heights not previously experienced at any time prior to this event. You're not going to remember all 5 things to say over the radio, and the problem with that is, if you only remember a couple, they may not be the crucial 3 things that the Incident Commander (IC) and everyone around you, needs to know. In Commack, through real life experiences of Maydays at fires and through dozens of live fire training evolutions, we teach the 3 W's method when calling a Mayday.
 - The 3W's stand for:
 - WHO you are
 - WHERE you are
 - WHAT your problem is

The simplicity of this method is that it encompasses all of the lunar aspects in it anyway without having to think about it and it can be said in any order. Who, Where and What are the 3 most important things we need to know about the situation. We will delve deeper into this as we break down calling the Mayday over the radio and the steps you take in the following section, just understand that the simpler you keep it, the less stress you will put on yourself at an already stressful time. You don't need to amp up the anxiety by thinking wait, did I give my name? Or what does R stand for? Just keep it simple so it becomes automatic.

- How to call for a Mayday – The Radio
 - The portable radio is going to be your only link between you and the people trying to rescue you. The more your communications are clear and concise the less you'll have to talk on it and repeat yourself giving you more time to work on getting yourself out of the situation you are in. There is a very specific way to call for a Mayday on the radio and it is best, if adhered to for a better chance at a positive outcome. Radio communication can be hard for people to get used to. Not everyone is comfortable using/speaking on the radio. If you are one of those people, you need to practice giving maydays until you are comfortable. This cannot be stressed enough. If you are a fumbling mess on the radio when you're not under stress, how do you think you will be in a Mayday? Probably not too good, so practice at it often until you get it right.
 - Mayday Example:
 - "MAYDAY! MAYDAY! MAYDAY! 2-11-1 Irons. I'm on the 2nd floor in the exp ½ corner. There's been a collapse and I am trapped."

It is that simple. When calling a mayday, you always start with the three Maydays in a row. That way it can't be mistaken for anything else. The next is, Who. Where. What. Notice that after the three Mayday's, in three sentences you encompassed everything there is to know without having to think about an acronym and what letter means what and what order it should be said in. With the 3W's method, it doesn't matter what order you say it, just get those 3 things out there and you'll be okay. Let us look back at LUNAR for a minute. The L stands for location, we get that with the Where. The U stands for Unit, we get that with the Who. The N stands for Name, do we really need to know your name? No, it is completely unimportant once we have your unit and riding position, i.e. 2-11-1 Irons. The A stands for Air, does anyone need to know what your air supply is other than you unless, you're low or out of it? If this is the case, you'll be letting us know that in your "What". Air management in a Mayday situation is a given. The R stands for Resources needed, the units coming to get you are going to know what they need to bring from your "What" report ie. "there's been a collapse and I'm trapped". Well, I know I need to bring tools and saws etc., if your report was you're out of air well then, I know I need to bring a RIT pack or someone's pack off their back outside. LUNAR is a ridiculous system written by people who have never experienced a Mayday on the fireground and or have never trained on it during live fire training evolutions. Stick with the 3W's and you will be just fine.

- Communicating on the Radio
 - The radios at a fire are as much about listening to it as they are about talking on it. When you listen to audio recordings of maydays on

YouTube, you will notice that quite often the maydays and transmissions coming from the mayday firefighter will get stepped on by another unit, or even worse, never heard or acknowledged by anyone. This occurs when people are not listening, this occurs when people are not disciplined enough *to* listen. This comes from lack of use and most of all a lack of training. Sometimes it could be that radios aren't that good, or the building is large, and the transmissions are broken up. Whatever the reason is, it does happen, and it does happen quite often.

Once again, the books will offer up a different way than we teach here at Commack to call a Mayday on the radio for the same reasons previously stated.

The book will tell you to:

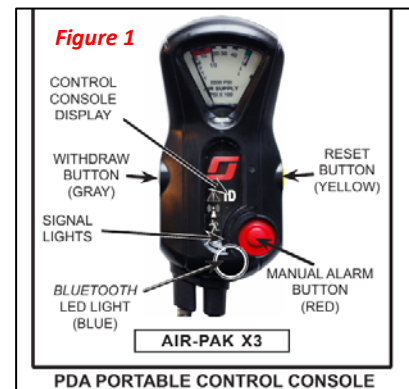
- Say MAYDAY MAYDAY MAYDAY, then wait for a response. If no response comes, say it again. When or if you finally get acknowledged, they now want you to go through LUNAR. Knowing what we know about Maydays being stepped on or completely missed, this is a terrible idea. Once you key up that mic, you have the air...keep it until your entire message is transmitted. This reduces the possibility of your message being stepped on by an undisciplined firefighter who's not listening to the radio, and if it does get stepped on, it is more likely that it will only partially be stepped on and someone will hear part of your message and understand that there is a problem somewhere. This also reduces radio traffic and helps in not wasting time trying to get through, Its one transmission from you, one response from the IC instead of a transmission from you, a response from the IC another transmission from you and another response from the IC. The more transmissions the more chances for the messages to be stepped on. Once you have the air...Keep it!
- Impact of the Incident Commander
 - In a Mayday situation, the IC will have a major impact on the outcome of the situation. If the IC is inexperienced, they may not handle it well, they may start yelling into the radio and they will likely call you a million times on the radio asking, "How are you making out?" or "What's your status?". Understand that giving the IC a progress report every 30 seconds is not important and if you are working to get yourself out of the situation, it is not your priority to answer the IC and let them know that you've crawled three feet. You do want to give updates as necessary on things like, worsening conditions and or location changes etc. but its not a priority that you answer them every time they call you. If the IC remains calm, it will help you remain calm. The same goes for you, if you remain calm, it will help the IC remain calm.

○ Procedure for Calling a Mayday

- The following is a list of steps when calling a Mayday
 - Recognize the need and admit to yourself that you need to call a Mayday
 - Call the Mayday on the radio
 - Turn on your pass device
 - Immediately start working to solve your problem

○ The PASS Device (Fig.1)

- The PASS device on your SCBA is a crucial component to resolving a Mayday. Sounding it manually or if you become incapacitated and it goes off automatically will help other firefighters inside or even outside the building to locate you. As you know by now, its loud, its loud and annoying, it is this way for an obvious reason. This is one of the many reasons why it is so important to make sure your PASS device is not blaring all over the fireground when you take it off outside, forgetting to reset the system when you are done, or changing a cylinder to go back in. There are *many* documented cases where a firefighters PASS device was going off because they became incapacitated and unconscious and other firefighters heard, not only his PASS device but 3 others, out in the street going off as well, thus causing a long delay in anyone noticing and or even looking for the sound of where and why there was a PASS device going off in the first place. Because it is so loud, it is procedure to reset it when you have to communicate something over the radio during your Mayday, this includes your initial Mayday transmission as well.



○ Unacknowledged Mayday's

- What if your Mayday doesn't get acknowledged after two or three tries? If for some reason your mayday message does not get acknowledged after a couple of tries, hit the emergency button on your radio (Fig.2) and try again. The reason it is pointless to hit your emergency but right away is that the emergency button stops alerting everyone as soon as you key up to transmit. Another and likely a more effective method is to set your PASS device off manually and key up the radio and let it blast over the air, for a couple of seconds. You can be pretty sure someone will hear that, then

reset it, keeping the air, repeat your entire Mayday message again. If for some reason your mayday message still does not get acknowledged, Get Moving! As you will see later in this text, the large majority of Maydays are resolved by the firefighter who called the Mayday, self-rescuing. Don't sit around, ever, when you have a Mayday. Do everything you can to resolve the situation yourself while the brothers are coming to get you. If you resolve the problem before they get there, so be it, no one's going to care that they came to help you and you didn't need their help anymore. They will just be glad you're okay and will likely lead you out if needed.



- **Mayday Statistics**

- Project Mayday is a website, projectmayday.com started by Chief Don Abbot (ret) of both the Indianapolis Fire Department and the phoenix Fire Department. In 2015 he started the site with some private funding to try to get fire departments to report any Mayday incidents voluntarily and anonymously that they had. Since the inception of the project, as of 2021, there have been more than 5,800 maydays in the volunteer fireservice reported to the site. He separates the data between volunteer and paid but when you add the paid department maydays reported there have been over 18,000 reports made to the site. Obviously, these numbers are much greater as not everyone reports their Mayday to the site. This is an extremely comprehensive report that is broken down to the ultimate degree but in this section we will look at only some of the most important statistics. For the full report see [Resources](#).

- **Years of Service**

- As you can see, the years of service is a little surprising. You would tend to think that it would be members with less experience get into trouble more often. Less experience = more caution. More experience = more knowledge. Median experience = complacency

Years of Service of Volunteer Firefighters			
M A Y D A Y P R O J E C T	Years of Service		
	1 – 5	922	17.4%
	6 – 10	1,279	24.2%
	11 – 15	1,125	21.3%
	16 – 20	962	18.2%
	21 – 25	573	10.8%
	26 – 30	241	4.5%
	> 31	178	3.3%
2015-2021		5,281	

- Time of Day
 - This is related to the statistic of crew size. Most volunteer FD's lack manpower during the day as people are working

MAYDAY PROJECT

Time of Day of Volunteer Firefighters MAYDAY			
0001 – 0300	542	10.2%	
0300 – 0600	668	12.6%	
0600 – 0900	643	12.1%	
0900 – 1200	1,117	21.5%	
1200 – 1500	783	14.8%	
1500 – 1800	596	11.2%	
1800 – 2100	559	10.5%	
2100 – 2400	673	12.7%	
2015-2021			5,281

- Initial size up/360
 - Major component, poor size up, no 360, almost 50%! Every firefighter from chief to probie should be doing there own size up at every fire.

MAYDAY PROJECT

Component 2: Size-Up / Initial Radio Report	
<u>Size Up / Initial Radio Report:</u> (5,281)	
<u>360:</u>	NO 360: 2,492 (47.1%)
	Incomplete: 824 (15.6%)
	Completed: 1,729 (32.7%)
<u>Address Confirmed:</u>	NO: 2,897 (54.7%)
	YES: 2,384 (45.3%)
<u>Sides of Structure:</u>	
- North, South, East, West	52%
- Alpha, Bravo, Charlie, Delta	44%

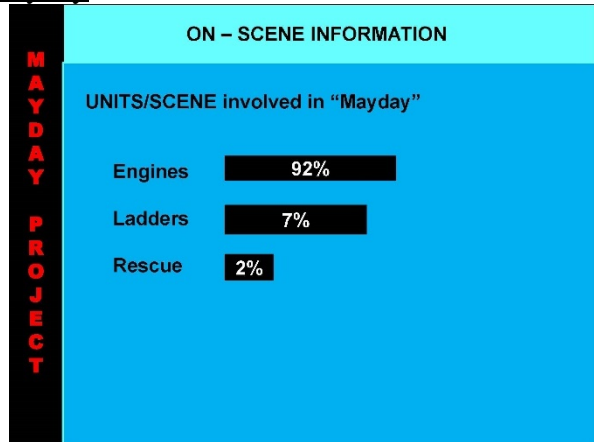
- Unit That Has Mayday Most Often
 - There is no shock here that first unit is the one getting into trouble most often. They're on scene the longest, which leads to air and collapse issues

MAYDAY PROJECT

ON-SCENE INFORMATION	
UNITS / SCENE involved in "Maydays"	
1 st Unit	74%
2 nd Unit	15%
3 rd Unit	7%
4 th Unit	2%
5 th Unit	1%
6 th Unit	0%

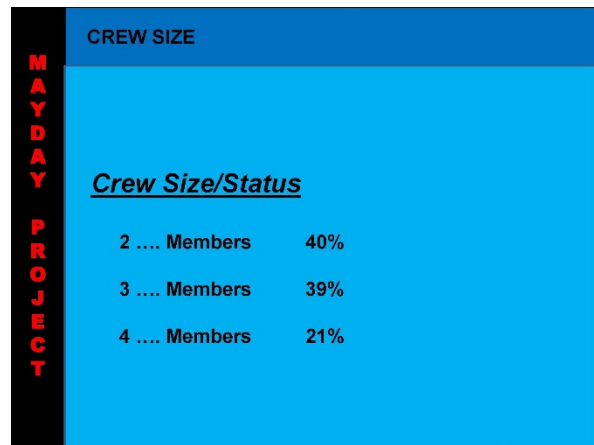
○ Type of Company Involved in the Mayday

- Why are engine companies #1? Most fire depts have more engine companies than truck companies. So, more engines are responding and they're station locations in comparison to the fire scenes are going to be closer because there are more. This speaks to the previous stat as well.



○ Crew Size

- This is fairly obvious in that the less people you have the slower tasks are going to get accomplished. It is certainly something to think about before rolling to a working structure fire



○ Types of Maydays

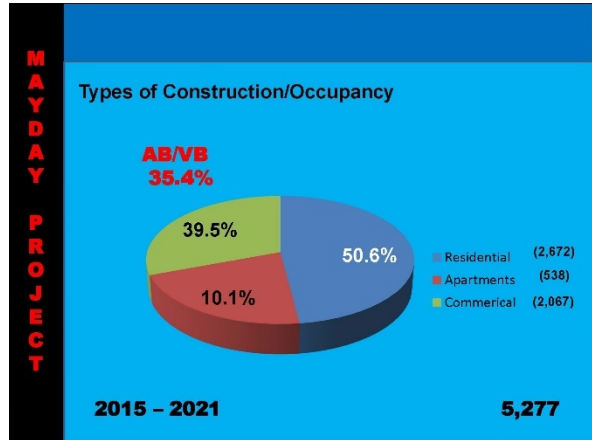
- Lost or separated from the hose is not shocking, this speaks to the engine companies being 1st due again. As the engine company, your job is to put the fire out. Stay on that hose line, if you put the fire out everything gets better for everyone. Air problems and collapse into basement again goes to who's on scene the longest

MAYDAY PROJECT

Types of Maydays		
Lost/Sep. from Hose	1,289	24.4%
Air Problems	918	17.4%
Falls/Collapse Basement	897	17%
Entrapment	731	13.8%
Medical	496	9.4%
Falls Off/Through Roof	462	8.7%
No Communications	273	5.1%
Other	219	4.1%
	2015-2021	5,271

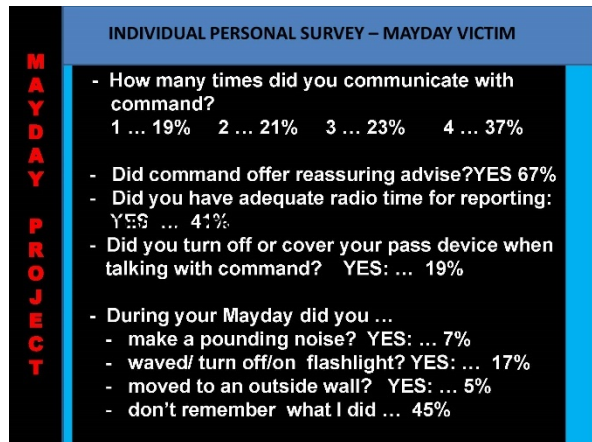
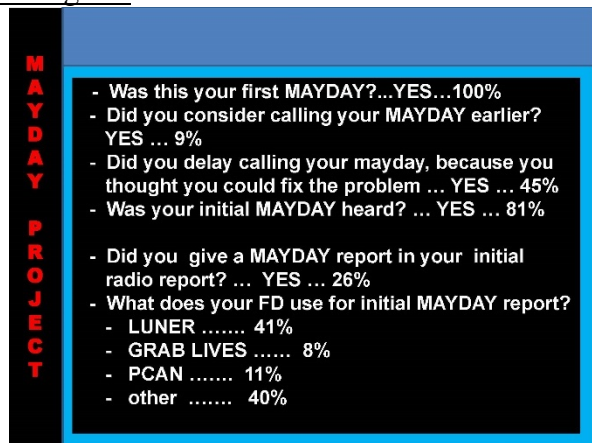
○ Types of Construction/Occupancy

- This stat is very deceiving. It makes it look like we get in trouble at commercial and residential fires almost equally, we don't! We go to more residential fires therefore more Maydays will occur because there are more fires in them, its simple math. So now thinking about the commercial fires we go to less but the percentage of maydays is higher, this means that you are more likely to have a Mayday in commercial fires



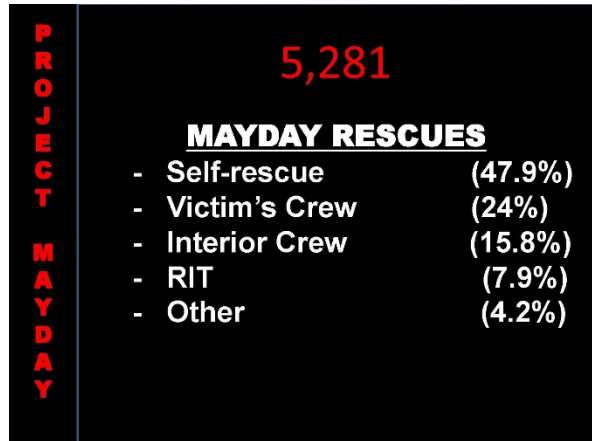
○ Some Questions Asked of Mayday Firefighter

- There is a lot to look at in these two slides.
- Did you delay calling your Mayday because you could fix the problem? 45% said yes, almost half.
- Only 26% gave their initial report with the Mayday, back to the book, no good!
- LUNAR 41%. Other 40%, hoping the 3W's made it in there somewhere. There is no need to elaborate on this again
- Only 41% had adequate radio time (Clear air on the radio) goes to giving the entire message in one transmission
- Only 19% remembered to turn pass device off when talking on the radio



- Who Resolves the Mayday

- Self-Rescue #1! Almost half of the maydays are resolved by the firefighter who called the Mayday. This is why survival skills are so important! 87.7% of all Maydays are resolved by someone inside the building. Train on survival, practice the emergency techniques, practice on the radio. Keep



your situational awareness at all times, mainly, knowing where you are in the building. Air management extremely important! Pay attention to the radio. Listen for PASS devices, these are all crucial aspects of not only mitigating a Mayday that should arise, but avoiding one as well

- The National Institute of Occupational Safety and Health (NIOSH) Appendix A

- NIOSH investigates every LODD that occurs across the country. The main take away from all their studies is that there are 5 things that happen most often at almost every line of duty death that occurs in the U.S. They're called the "NIOSH 5"
- The NIOSH 5 Numbers in order of least to most occurring

5.) Not Having/Following Dept SOG's – The department SOG's are in place for a reason. They get revamped by the chiefs office every year. They are on the training app, the website and should be posted on every cork board in every firehouse so that they are readily available to read. When SOG's are deviated from, the system breaks down and people get hurt.

4.) Inadequate/Insufficient Incident Command – Every single member should have a good working knowledge of ICS. Even you as a probationary firefighter needs to know how the Incident Command System works. If you don't, you'll have no idea what's going on at a scene.

3.) Inadequate Accountability – This leads back to ICS. However, it's your responsibility to let command know where your going and what you're doing. Especially if you're deviating from the SOG's for whatever the responsibility for your crew is. The IC needs to have a general idea of where your crew is, at all times just in case the shit hits the fan.

2.) Communication – It's not just about radio communications but verbal as well. Many of these reports talk about a mayday that was never heard because the mayday was stepped on by another radio transmission. When speaking on the radio, key up, and speak your message in its entirety. You have the air utilize it, if you key up no one else can step on you. A proper example - "Command 40, you have fire extension on the 2nd floor". "40 command 10-4". Two calls and my message got through. If you do it the other way waiting for IC to answer, that's 4 transmissions which may be covering up a more urgent message. Do it the right on every run!

1.) Size Up – I don't know how it's possible at this point in the fire service that people aren't sizing up the fire building. This is the most frequently reported issue in in these reports. You should be listening to the first unit on scenes size up but once on scene, you **MUST** do your own! If nothing else, you want to know where the fire is, where the fires been and where the fire is going. Then you need to report it to either command or your officer.

- These are the reasons why firefighters are dying in the line of duty, the insane part is, they're almost always the same and they keep reoccurring. The one thing you must know and always remember about Mayday's and LODD's, it's never just one thing that goes wrong that causes them, it always one thing after the next causing a snowball effect and making the incident spiral out of control.

- **Case Studies**

- Case study # 1 – "The Black Sunday Fire #1" Appendix B
 - When we take a look at the "Black Sunday Fire" in the Bronx on January 23rd, 2005, 6 firefighters were forced to jump from the top floor of a 5 story building, 2 died that day, one died a few years later from complications due to the massive injuries he received and three others had career ending injuries that nobody could believe they survived. There are multiple YouTube videos out there with the survivors telling their stories which are heartbreaking enough and there are some with the actual radio audio on them as well. They are tough to watch, and the audio is tough to listen too, however, if after watching these videos it doesn't make you want to be the best you can be, I don't know what will. Because these guys were some of the best the FDNY had to offer and yet still, some of them did not make it.:
 - What Went Wrong
 1. 1st they lost water on the fire floor, so they had to back the line down from the floor above.
 2. 2nd they suddenly had fire extension on the floor above, but now with no line in place.
 3. 3rd all the apartments' upstairs were illegally broken up into SRO's (Single Room Occupancies) where they built rooms inside rooms

with walls that stopped a foot short of the ceiling allowing fire to roll over the top of them.

4. 4th because of the SRO's none of them were able to make it to the fire escape. They were forced to make a decision of whether to stay and burn to death or jump and take their chances.

I can't even imagine having to make that decision. The point is, it is never just one thing that goes wrong, it was one after the other and it just kept going down the toilet. It is always a snowball effect.

o Case study # 2 - "The Black Sunday Fire #2" (Appendix C)

- No, you did not read the above section header wrong. On the same Sunday, January 23rd, 2005, the FDNY lost another firefighter at a completely different fire, this time in Brooklyn. This fire occurred in the basement of a two family dwelling. The firefighter and his officer went down to the basement through the interior stairs which were very tight and had a 180* return at a half landing to search for the seat of the fire as the 1st due truck company. As conditions started to rapidly deteriorate, the Officer told the firefighter to get out of the basement as no line had made it down the stairs yet and was only operating in the stairwell. As the officer and the firefighter began to ascend the stairwell, the engine officer yelled for everyone to get out of the basement and in doing so, his nozzleman had his helmet and facepiece dislodged, so he put the nozzle on the stairs adjusted his PPE and ascended the stairs leaving the nozzle. As everyone arrived at the top of the stairs, the Truck officer noticed that his firefighter was missing. He immediately attempted to descend back down the stairs but due to extreme heat, was unable. At the same time he heard the firefighters PASS device going off and transmitted the Mayday which was not heard by the IC. As the RIT crew arrived on scene, they heard the Mayday and went straight to the stairs where it was occurring. When they arrived, the Truck officer and another firefighter were descending back down the stairs as the engine boss had his nozzle, an pull the line up the rest of the way and operate the line into the stairwell to protect the truck boss, his firefighter and his down firefighter as they attempted rescue. The truck boss and firefighter found the victim lying with his upper body lying on the on the stairwell return landing, which was very small, his lower body were lying on the lower portion of the stairs. He immediately transmitted another Mayday. When they found the down firefighter, his facepiece was dislodged and his PASS device was in full alert, and he was unconscious. He was tangled up in a large amount of debris including a coat rack with hangers and clothes that were on the small landing which hampered efforts to remove him. He was a big muscular guy an weighed quite a bit dry without gear on, when they were removing him, his gear was soaking wet from the protection line. Between the small landing, the 180* stairwell return, the skinny stairs and the debris. The firefighters who were trying to remove him said "it was like he was nailed to the floor"

- What Went Wrong
 1. Rapidly deteriorating conditions occurred before a line could reach the basement
 2. An extremely skinny stairwell
 3. A 180* stairwell return with a small landing (unusual)
 4. Debris on the landing caused the firefighter to get hung up

- Once again it wasn't one thing that went wrong, once there was a problem, there were more and more.

- These case studies are not to Monday morning quarterback or in away place blame on anyone involved. The reason why we picked these two out of a thousand is because they were local FDNY firefighters who are well trained and experienced, but there are more in the Appendix as well. The companies involved were good busy companies proving it can happen to the best. We must learn from every incident that happens in order to get better and try to get something out of these lessons learned. We owe it to not only the firefighters who perished that day, but every single firefighter that has been killed in the line of duty and those that survived these incidents as well:
 - The Bronx
 - LT Curtis Meyran Ladder 27
 - FF John G. Bellew Ladder 27
 - FF Joseph DiBernardo Rescue 3
 - Brooklyn
 - FF Richard T Scalfani Ladder 103



- **Preparing for a Mayday**

- The only way to truly ensure that you won't have a Mayday is to not go to fires, and we know that's not possible. But there are things we can do to lessen our chances at having one and there are things we can do to mitigate them when we do have them.

First and foremost, is to train. Be a student of the game. Train on every single aspect of it. From fire dynamics to building construction, from handlines to search, from survival to RIT, all aspects of being a firefighter. You need to be more than competent to be good at this job. Mediocrity breeds complacency and complacency kills firefighters.

You need to train your body physically in order to have the strength and stamina to do this type of work. This isn't some 9 to 5 desk job, this is dirty gritty blue collar hard work and if you're not prepared physically, it can easily kill you and that should never be taken lightly.

You need to train your brain just as much as you do physically. A strong mind and learning how to control your anxiety levels can go a long way in getting you out of a dangerous situation in one piece.

Training on all of these aspects of the job can save your ass or someone else someday, so why not do it?

- **Physical and Mental Preparation**

- Being In Shape and Staying In Shape

- We all know the difficulty level of trying to stay in shape, especially as we get older. There are meals after drills such as pizza and before drills such as bagels. Try to limit yourself in eating a lot of these meals before and after training and meetings. This will pack on the pounds fast, and before you realize it, you'll have gained 15lbs without batting an eye. You've heard of the freshman 15, well this is the probie 15, it happens to everyone who is not aware of what they're consuming at the firehouse and not realizing that 3 to 4 times a month they're having an extra meal, and an extra high calorie meal at that. Many a beach body has been ruined by the fire service, so keep it in mind

- Job Relevant Workouts

- From time to time, you will see firefighters in full turnout gear, with an SCBA on their backs and on breathing air working out in the truck room at headquarters or one of the stations. Stations are set up and a high intensity circuit workout is performed. Sometimes its only one person and other times its several. These workouts will not only increase your job related strength, but it will increase your cardiovascular stamina and health as well. Probably the biggest positive that will come from an on air workout is mental, you will not get more uncomfortable with you r breathing doing any other kind of training. This type of workout gets you comfortable with being uncomfortable very quickly, and the more you do them, the more uncomfortable will become comfortable. You can set the circuit up anyway you like, anywhere from 3 to 5 stations and you can chose from a variety of exercise stations.

1. Stations

- Truck tire flip
- Truck tire drag
- Sledgehammer strike on the truck tire
- 100' roll of 5" hose drag on your feet
- 100' roll of 5" hose drag on your knees
- Raising and lowering a 24' extension ladder
- Climbing flights of stairs
- Climbing flights of stairs with a 50' length fold of 3' on your shoulder
- 180 lb Dummy drag on your feet
- 180 lb Dummy drag on your knees
- 180 lb Dummy drag on your belly
- Forcing both inward and outward opening doors (HQS door prop only)
- "Get Up's" from a position on your belly to a standing position alternating legs
- Doing a reduced/low profile under neath the rigs
- Doing a reduced/low profile under neath the rigs dragging a 180 lb dummy
- Doing a reduced/low profile under neath the rigs dragging the 100' roll of 5"
- Using Jacobs ladder (headquarters only)
- Using the tread climber (headquarters only)
- That's 18 different exercises that can be done and you can use a combination of any of them, but really the exercises are only limited by your imagination and the possibilities are endless. There are even groups of firefighters that do a set of a bunch of exercises and time each other for a little competition. There are firefighters who will even go through 2 bottles for an extra kick in the pants. There is a GroupMe app for guys that do these workouts, don't be afraid to ask to join. The more people the more fun it is, you'll always be welcomed when you're looking to work.
- Training
 - Hands On
 1. Nothing will prepare you for an emergency better than hands on training with the SCBA. This means going down to Station 2 and getting in that maze with a partner at least twice a month. You need to be and stay proficient at the 4 emergency maneuvers you have been taught
 - The Quick Release
 - The Reduced Profile
 - The Low Profile
 - The Swim Maneuver

These skills are all perishable skills meaning if you don't use them you lose them. Getting in the maze as often as possible, turning the

lights out, practicing your mayday procedures prior to doing each maneuver will make it second nature if/when there comes a time when you will have to use them for real. Getting a feel for the straps clips and buckles of the SCBA with your gloves on is something that is an invaluable part of this equation as well. Everything feels completely different with gloves on, so think about how it all feels like while doing the maneuvers also. While going through the maze, work on your breathing. Pay close attention when you are starting to get out of breath and are in danger of out breathing your facepiece. Take a break and use the time to catch and control your breathing. There are many techniques out there such as the:

- The Hum Technique is used to decrease your respiratory rate by humming as you exhale and inhaling normally
- Four Count Box Breathing is a technique used to decrease your respiratory rate in which you inhale using a four count, holding your breath at the top for a four count, exhaling for a four count and holding it at the bottom for a four count

These techniques, when practiced often can slow your breathing down rapidly. A great time to try them is when doing an on-air workout. Work on getting your respiration rate back down to as close to normal using the pre-alert notification on your PASS device. Try to be back to as close to normal when it goes off at around 20 seconds. This may sound like it's a very small amount of time but the more you practice it, the quicker you will arrive at that very reachable goal. The more you get comfortable being uncomfortable in an SCBA, the higher your chances of survival will become should you find yourself in a Mayday situation

▪ Training Mentally

- There is no question that training your mind for a mayday is equally as important as hands on training. There are many things you can do to train yourself mentally to prepare for a Mayday. The best way is to incorporate into your physical training and into your hands on training. As was said before, get comfortable being uncomfortable. The more you push yourself while working out and doing hands on training the better your brain will react when the real thing happens. Mike Tyson, arguably one of the dumbest people on the planet said something so profoundly brilliant in an interview before one of his fights. When an interviewer said to him, "Mike, I spoke to your opponent last night and he seems pretty confident in the fact that he has a plan to beat you." Tyson's reply was "Everybody's got a plan til they get punched in the face." He beat that fighter with a first round knockout.

If your plan is to sit on your couch and think about what you're going to do if a Mayday should happen to you and that's all you do, sit and think about it, get ready to get punched in the face... Although sitting on your couch thinking about it can be a start, and a good refresher, more needs to be done.

Read

While you're on the couch, read. Read about Maydays in fire engineering. Read about them online on about 20 different sites. Read the NIOSH reports that now number in the thousands. Read books on tactics which can help you from getting into these bad situations before they happen. There are some really incredibly good books out there for the fire service. We will list a host in the back of this lesson to choose from but do some research on your own as well. Another very important subject and one that is an entire section later on in this book is building construction. It is important to know what type of building will kill you the fastest and how to help avoid getting yourself into a bad situation in the first place. There are many books on the subject, some are listed in the Resources section of the back of this lesson.

Videos

Not a reader? Okay get out your iPad or tablet or go on your smart tv and watch YouTube videos on the subjects of survival and Maydays'. The amount of stuff on there is endless. Some of its good some of its bad but you will definitely have to weed through them, but when you find a good one its definitely worth the effort, we will also put some links in the references section in the back of this lesson to get you started. As mentioned before about the books, almost all of the ones in back of the lesson are audiobooks on audible too.

Podcasts

There are some great podcasts out there to listen too from some really passionate people. The subjects are anywhere from tactics to leadership and everything in between. Driving to or from work, throw one on in the car and listen to it them during your commute instead of music or news radio, even if its just one trip a week.

Recognition Primed Decision Model (RPD) [Appendix C](#)

When we talk about mentally training your brain, there is a book that was published in 1998 called "Sources of Power: How People Make Decisions" by Gary Klein. Klein at one point in his career worked for the government as a research psychologist for the U.S. Air Force (1974–1978). The Arab oil embargo of 1973 forced the military to start training their pilots in simulators rather than in actual fighter planes because the price of fuel had skyrocketed. This is when Klein began his investigations into the way people develop expertise. The military tasked him to improve the process of decision making for all officers in the military. At that time, the

Vietnam war was ending, and the military understood that they were about to lose a large number of experienced officers and that should another conflict arise the new officers would not be prepared for battle due to a lack of experience. The military also realized there was a flaw in the system in that people would join the military for say a 4 year enlistment, stay at the lowest level for at least a year, train to be an officer for a year and a half and only have 2 years as an officer and be discharged. Even if the person reenlisted, they were transferred usually after a short time and never really received any experience where they were to gain an expertise level of what they were doing.

The short answer of what came out of his study was something called the “Recognition Primed Decision Model (RPD)”. You may have also heard of a similar name for this model referred to as the “Ooda Loop” which many police departments around the country teach and is basically a version of RPD, more specific for police work. As a part of the study, Klein and his team of researchers would ride along with the FDNY IC’s during the “War Years” in New York City in the late 1970’s responding to fires and observing the IC’s during these high stress incidents. In the 70’s, the Bronx was burning at an exponential rate, and he was able to get quite a bit of research completed during this period due to the number of fires these guys were going to during those years. His goal was to pick these chiefs brains, after the incident to try and figure why they made the decisions they made at the times that they had. The researchers also spoke to military officers who had a tone of experience in Vietnam to find out why they made some of the decisions they made in battles during the war.

What he was ultimately trying to understand is not only the why portion of the decisions they made, but the how as well. It wasn’t really understood at the time, most thought it was just intuition because a lot of the answers they received from the subjects interviewed when asked the why question were, “I don’t know, I just felt like something was wrong”. This answer just kept coming up. An interesting story from the book came from an incident with a helicopter pilot in Vietnam. He was tasked with flying a high-level general to a remote area in the jungle so that this general could sit with a leader of the South Vietnamese Mountain Yard Army to discuss a future operation. The flight was set, the landing zone (LZ) picked out and the mission was a go. He had multiple helicopters in a group with him, but he was the lead chopper. As the pilot began to come in to land at the LZ, the closer he got the ground the more uneasy a feeling he got in his stomach, his gut was telling him something was wrong. Fifteen feet from the ground he aborted the landing and the other helicopters followed. He circled the LZ a few times and decided on landing in the field

next to the one that was planned, and they landed without a hitch. He was asked what the hell happened? He just simply stated, I don't know, I didn't like the way it looked, my gut told me not to land there and that the field on the other side of the road looked better. The generals meeting went off without a hitch and they flew back to base safe and sound. The next day, other pilots were tasked with bringing a platoon of soldiers in to the same area. The LZ picked was the same one that was picked the day before, the one which our previous pilot avoided. As the choppers came in to drop the soldiers off, they hovered over the field about 3' off the ground as the soldiers jumped out. As many soldiers hit the ground simultaneously, mines began to explode all around them killing many, injuring even more and taking 2 helicopters down from shrapnel hits. The LZ was mine field.

Another example in the book is the story of an interview with a battalion chief who was operating a 3rd alarm fire in a 4 story tenement. At some point in the fire he went to the deputy chief who was the IC of the fire and advised him to get everyone out of the building, that it didn't look good. The BC was a respected aggressive firefighter, but the DC didn't see anything out of the ordinary and couldn't understand the BC's concern. However, because of the BC's reputation and the fact they had been to many fires together over the years at every different operational level, the DC ordered everyone out of the building. Moments after everyone was out, the third floor collapsed. When the BC was asked, what made you think it was going to collapse? He stated I had a bad feeling, I could feel it in my gut it was coming down.

So the ultimate question is, is it intuition or is it experience with which we make decisions in crisis situations? The RPD model states that your brain remembers everything it sees and makes mental slides of these images/incidents that you are not consciously aware of and uses these memories to draw conclusions faster than today's computers.

The helicopter pilot in Vietnam was on his fourth tour of duty when that incident occurred. He of course had flown over many mine fields in that time that were known, but was never told "hey when you see this in the grass it's probably a mine field" or anything else to consciously tell him what a mine field looked like in his experience. He would just be told hey, that area is mined, just watch yourself over there or else along those nonspecific lines. So, whatever his brain took in on those occasions, became the mental slides his brain used to tell him not to land in that field on that day with the general, and it also put that sick feeling in his gut. His experience saved his life, and the lives of many others.

The battalion chief had been to so many fires like this one in the past and had seen plenty of buildings collapse during those fires.

All the while his brain was making mental slides of those incidents without him even knowing of it. His experiences of the past fires put that feeling in his gut and told him to get everyone out of the building, saving countless lives of firefighters that day.

In the years prior to this study, it was though that we made decisions, in crisis situations where time matters, the same way we make decisions all day long, by having 2 or 3 options in our heads, comparing the outcomes of all 3 decisions, select the one and that seemed best through our deliberations. But during this study it became obvious when story after story like the ones above began to emerge. There wouldn't be enough time to make these decisions that are made, by using conscious deliberation.

So, is it instinct or experience? Since instinct can't really be explained scientifically other than to say it could be RPD that cause that gut feeling, and, RPD can be explained scientifically, you would have to say its experience that enables us to make these incredibly time sensitive decisions that carry so much weight. So RPD is the way our brains make decisions in crisis through experience.

It was now confirmed that the military, specifically the U.S. Air Force had real problem on there hands. How do we get our pilots the experience they need to be able to make the high-speed decisions needed when flying at 500 miles an hour in dog fights when there is no war?

Training. It is safe to say that the war years in the 60's and 70's are over, and that the economic downturn of the time will not likely go on for as long as it did back then. Sure, the economy will have its ups and downs, but they will be shorter and not cause the problems we had in those decades. With that said, how then do we as firefighters ever get the experience we need to be able to make these same decisions they were making? After all, although not as frequent, there will always be fires to fight. The same way the military does...

Training. Physical hands-on training, under live fire conditions is the most essential component of all training in the fire service. It trains your brain to see/feel/experience everything from fire behavior to which tactics in searching, stretching lines and applying water to a fire work best, just to name a few. But survival training, under live fire conditions is unquestionably the *only* way to build those mental slides in your head so that when a mayday occurs, this isn't the first time you have performed survival skills in a situation as uncomfortable mentally, as it gets. Yes, training on survival in the maze or mask confidence course without these conditions with your facepiece covered are important as well, at a minimum the more you do it, the more muscle memory you will build, which is important too. This will train your brain for the

stress that will come too. But nothing will put those mental slides in your brain of how you did something, why you did something and how you controlled your anxiety levels during that time, like training under realistic fire conditions will. These mental slides, this “data” that goes into your brain, will allow you to draw on these past experiences in training and use them without even thinking about it, to make the right decisions in the most time sensitive situation you will ever be in. Nothing else will encompass all aspects of survival from physically, emotionally, and mentally like live fire training. Nothing...

- **Avoiding/Mitigating a Mayday**

- You're as trained as you can be, you're in good physical and your mind through training is comfortable being uncomfortable. Making sure to be prepared for the Mayday is half the battle. You've done all you can do to decrease your chances to becoming a Mayday, but sometimes you can do all of the things mentioned above in preparation, but a Mayday may still be unavoidable. As previously stated, the only way to guarantee not becoming a Mayday is to not go to fires. Learning how to mitigate the Mayday should it arise is the other half.
- There are things you can do to help yourself out of these situations some of which you have been taught in SCBA class 1 and through your mentors. The following items below can help in a successful outcome of a Mayday
 - Knowing/practicing the following emergency maneuvers:
 - The Quick Release to help you navigate an entanglement in wires or ductwork, ceiling track, cables and insulation. This method allows you to free yourself from an entanglement hazard without making things worse
 - The Reduced Profile to get you skinny in situations where you have to go through vertically tight spots or areas that may be deep such as a long skinny corridor
 - The Low Profile will get you through tight horizontal area such as a ceiling collapse or anything you may have to crawl under that you won't fit through with the SCBA on your back
 - The Swim maneuver for scooting through a tight vertical space such as wall studs, where maybe you get trapped in a room and have to breach a wall to get through to the other side and escape the room you are in.
 - EES or Bailout training, going out the window using your bailout system is important too. Being comfortable with that system may be the difference in you coming down gently, on your feet, or like an anvil, on your head
 - Things you can and should do when you're working your way through a Mayday.
 - Don't ever stop working to rescue yourself. Don't just sit there and say ok I set my PASS device off and wait for the cavalry to come. By the time they get to you it may be too late.

- Communication is not only important, but clear concise and most of all calm communication will set the tone for the entire Mayday. You must practice it and be comfortable on the radio
- Convert Your Own Waist Strap? Unless you are in a situation where you're about to be cooked by a hostile fire event, you can convert your own waist strap which will give the firefighters who come for you a distinct time advantage when/if they find you unconscious
- Be aware of your breathing at all times. The calmer you remain, the less wasted breaths you will take.
- Be sure to activate the PASS device when you're not speaking on the radio and deactivate it when you are
- Pounding on the floors or walls with a tool can alert someone to where you are well as the PASS device, maybe they feel the vibration when they are up against the wall or crawling on their hands and knees
- Understanding where you are in a building by the furniture you come across. If you come across a bed, you're probably not in a living room. If you come across a couch, you're likely not in a bedroom. Once you find a piece of furniture like this, find the wall its up against and start sweeping it for windows as you crawl across it

- Carry at least one, if not two sets of cutters in your gear in 2 different pockets. Make sure they have a webbing loop installed on the handles (Fig.3). In years past we have found it best to install this loop on the handles using tubular webbing and a good quality electrical tape on your own leaving a knot at the end. The prpose of the loop is so that you can crawl and cut and not have to put them back in your pocket thereby increasing speed and lessening risk of losing or dropping themm. The knot on the end should be the only thing sticking out of your pocket for recognition by feel of the cutters in lights out conditions. You can purchase cutters like these



Figure 3

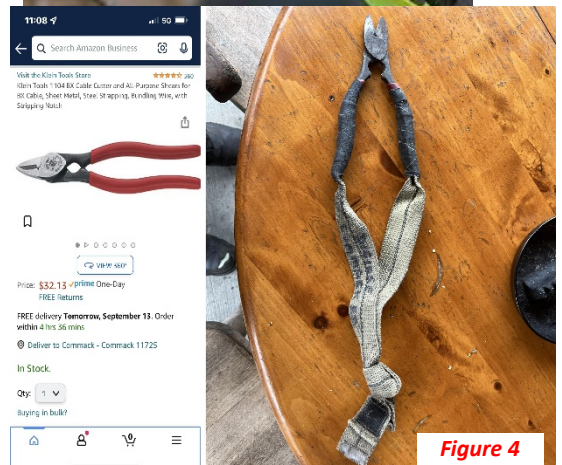


Figure 4

with the webbing loops installed on them from just about any place that sells fire equipment however, the cutters themselves are of an inferior quality. Klein Tools (Fig.4) makes a wide selection of cutters that will cut the 3 main items you will encounter should a ceiling collapse and you get entangled. They will cut speaker wire, cable wire, romex cable, BX cable and ceiling track. It is very difficult to find another set of cutters that will cut that wide of a variety.

- If you come across a hose when you're working to get out, don't just know the term "smooth bump bump to the pump"! You must be able to feel a fire hose and couplings with a gloved hand. Should you come across a hose, and there are no couplings within reach, try picking the hose up and slamming it down, maybe you hear a coupling click off the floor or a piece of furniture. If you can't find a coupling right away or there's a mess of hose that you come across, you can't get caught up in figuring out which way to go. Pick a way and get moving, worst case when you come to the coupling and you realize you're going the wrong way, turn around and go the other way. Trust yourself and your judgement.
- As with the circumstances that lead to the mayday, your ability to deal with the situation you're in can snowball out of control in the same ways. You must use the strategy of "little victories". Deal with the immediate problem at hand first. Don't get caught up in the big picture of "I've got to get out of here". For example if you're caught in a collapse and have to do a low profile, deal with and think about that immediate problem and that problem only, when you get through, that's a little victory but you're not out yet, maybe now you have to breach a wall to keep going, deal with/think about that problem only. You must do this to keep yourself from getting caught up in that negative loop, which will sprill your thinking to an out of control state of panic. Mitigation of little problems through little victories leads to the mitigation of the overall problem at hand. You must keep your head in order to survive. If you get through one thing and another bad thing happens, so be it, get through that next thing now and keep moving in a forward direction to meet the ultimate goal of getting out of the building. The more you train on this the better you'll be at it, just like anything else. It's why when you go through a mask confidence course, it's not just about the obstacles you encounter, it too is about giving you problem after problem to solve so that the little victories strategy becomes second nature in a real world event.

- **Conclusion**

- The topic of firefighter survival is vast and encompasses many sub-topics. However, there are so many things you can do to increase your chances of survival in the event you find yourself in a Mayday situation. The number one

thing you can do is to train on all aspects of it. Being a student of the game your entire time as a firefighter will help more than can be described in one lesson. Study every aspect of it, go to seminars and take classes on it. Read watch videos do hands on training both with live fire and without. There are so many good instructors and writers out there that are so enthusiastic about the fire service that they can be very inspiring. In all aspects of training, it is important to seek out like minded individuals from all around the country who have differing opinions on topics related to everything in the fire service. The book way of doing something is not always the best way, it's just *the* way some people will teach it. Getting training from multiple people/agencies will give you a broader band of knowledge of everything you do. Sometimes you will come across instructors that you just don't learn from because of their teaching style or just because they suck, the more you try the better your chances of finding someone who you understand because, they teach the way you learn. Do not just rely on the instructors and training lieutenants to train you. Train yourself, seek out opportunities to train elsewhere. I very rarely see a request to train somewhere outside of the Commack fire department get denied by the board of fire commissioners for financial reasons. Take advantage of those opportunities and be grateful they are offered to you, because not every fire department is willing to send there people away to train. Some do not for financial reasons and yet others don't because they feel "We're the best, what is anyone going to teach us that we don't already know?" this is a very dangerous and arrogant way of looking at training, but it does happen.

Preparing for a Mayday is essential to Firefighter Survival, it is the only thing we do for ourselves, it is a must that we never stop learning about it.

So remember the basics, know how to call a mayday on the radio including the 3W's, know when to call a Mayday, stay physically fit, know your survival skills emergency maneuvers, train as much as you possibly can, get comfortable being uncomfortable, train that brain for muscle memory and little victories, be a perpetual student of the game, and build that file system of slides in your mind through training and experience.

Sometimes, "It'll never happen to me." Actually happens...



APPENDIX A
Abbreviated & Full
NIOSH Reports





FIREFIGHTERCLOSECALLS.COM

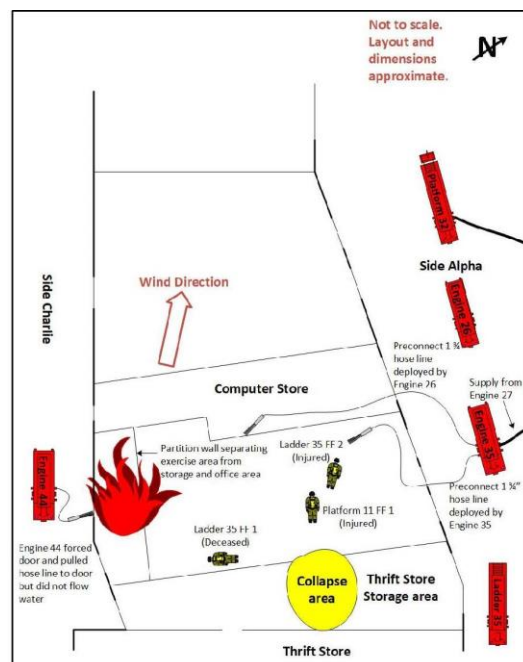
NIOSH FF Fatality Report 2017-14

On May 18, 2017, Firefighter Scott Deem of Ladder 35 of the San Antonio, (TX) Fire Department died in the line of duty after fire conditions rapidly deteriorated inside a commercial strip mall.

Ladder 35 was the first apparatus to arrive on-scene at 2117 hours. The Ladder 35 Captain sized up the scene, assumed Incident Command (IC), and directed Engine 35, the first arriving engine, to pull a hoseline while the two Firefighters from Ladder 35 forced open the front door to a fitness center where smoke was showing. The two Ladder 35 Firefighters were then directed to perform a quick search for victims while Engine 35 went interior for an offensive attack. A second alarm was also requested.

As the search was being conducted, conditions began to deteriorate very rapidly. A MAYDAY was requested and the IC was unable to make radio contact with FF Deem. Rapid Intervention Teams were immediately sent in but they were unable to find him. The IC was forced to abandon the search due to extreme fire conditions. While operations were shut down, a Firefighter saw the reflective trim of FF Deem's SCBA near the Side B wall and he was removed from the building.

Scott Deem was 31 years old and had a wife and 3 children.



Key Contributing Factors

- Arson fire
- No sprinkler system in commercial structure
- High wind conditions
- Zero-visibility and cluttered floor space impeded hoseline advancement
- Freelancing fire tactics
- Crew integrity not maintained
- Uncoordinated ventilation

Read the entire report at:

<https://www.cdc.gov/niosh/fire/pdfs/face201714.pdf>

<https://www.tdi.texas.gov/reports/fire/documents/fffsadeem.pdf>



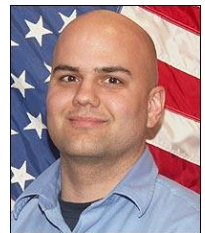
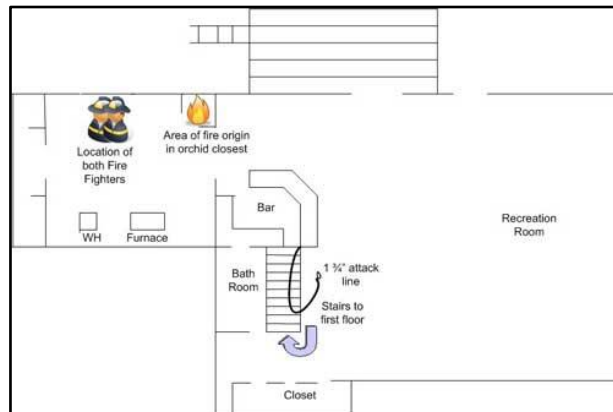
NIOSH FF Fatality Report 2008-09

On April 4, 2008 Captain Robin Zang Broxterman and Firefighter Brian Schira of the Colerain Township (OH) Fire Department died in the line of duty when a section of floor collapsed and trapped them in the basement during a residential structure fire.

At 0611 hours, **an automatic alarm** was dispatched. Dispatch upgraded it to a Working Fire at 0620. At 0623, Engine 102 with both the Captain and Firefighter arrived first on scene. The homeowner advised that the fire was in the basement and everyone was out. With moderate smoke showing, Captain Broxterman and FF Schira entered the residence through the front door with a 1 3/4" hoseline. A second fire fighter joined them at the basement stairs doorway. After the Captain called for water several times, the line was charged and both fire fighters took the hoseline to the bottom of the stairs. The 2nd firefighter went back up the stairs to pull more hose at the front door. As he returned to the basement stairway, he saw the Captain at the top of the stairs, trying to use her radio and telling him to get out.

A Captain from the 2nd arriving engine noticed the smoke getting black, heavy, and pushing out the front door and requested the IC to evacuate the interior crew. The 2nd firefighter exited the structure alone. The IC made several attempts to contact the interior crew with no response. At 0637 hours, the IC sent out a **"MAYDAY."** A RIT team followed the hoseline through the front door and down to the basement. Returning to the first floor, they noticed a collapsed section of floor and went to investigate the debris in that area of the basement.

At 0708 hours, Captain Broxterman was found near a corner of the basement. At 0729 hours, after removing debris from around her, FF Schira was located underneath her and some additional debris.



Key Contributing Factors

- Initial 360-degree sizeup incomplete
- Likely disorientation of victims effecting key survival skills
- Radio communication problems
- Well-involved basement fire before the fire department's arrival
- Potential fire growth from natural gas utilities

Read the entire report at:

<https://www.cdc.gov/niosh/fire/pdfs/face200809.pdf>

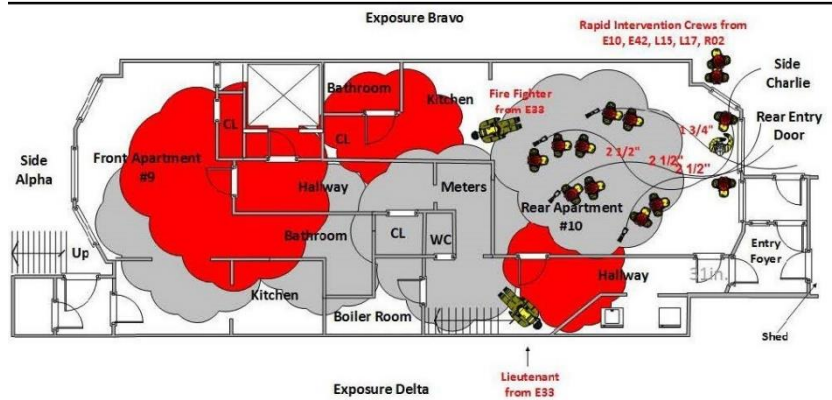


NIOSH FF Fatality Report 2014-09

On March 26, 2014, Lt. Edward J. Walsh (43) and Firefighter Michael Kennedy (33) of the Boston Fire Department died in the line of duty in an occupied multifamily residential building.

At 1442 hours companies were dispatched for a reported structure fire. Engine 33, with both Lt. Walsh and FF Kennedy, arrived on scene at 1445 and reported “a four-story with smoke showing from the first floor”. E33 stretched an uncharged 1 ¾” hoseline up the front steps, through the front door, and into the front hallway. They were then advised of fire and a possible victim in the basement and took the hoseline down the steps. The E33 pump operator charged the hoseline, but the hoseline lost its water due to the **rapidly deteriorating fire conditions**. Other arriving companies stretched additional hoselines to backup and protect E33 but conditions became untenable.

Open doors created an unrestricted flow path from the basement to the first floor and floors above, triggering a rapid progression of fire conditions. This trapped Lt. Walsh and FF Kennedy in the basement. The fire, heat, and smoke throughout the basement and first floor created untenable conditions on both floors. An evacuation of the building was ordered and approximately one minute later Lt. Walsh called Command and advised they were running out of water. Command requested a 2nd alarm. Several companies attempted to enter the building but were pushed back by heavy fire and smoke. Crews were able to advance a 2 ½” hoseline into the basement apartment on Side C. Approximately 15 minutes later, crews located FF Kennedy in the kitchen area of this apartment. Conditions got worse and the structure became fully involved. Once the fire was completely knocked down, Lt. Walsh was found at the bottom of the stairs near the entrance to Apartment #10 in the basement.



Key Contributing Factors

- Delayed notification to the fire department
- Uncontrolled ventilation by a civilian
- Occupied residential building with immediate life safety concerns
- Staffing
- Scene size-up
- Lack of fire hydrants on Side C (a private street)
- Lack of training regarding wind-driven fires
- Unrestricted flow path of the fire
- Lack of fire sprinkler system

Read the entire report at:

<https://www.cdc.gov/niosh/fire/pdfs/face201409.pdf>



FIREFIGHTERCLOSECALLS.COM

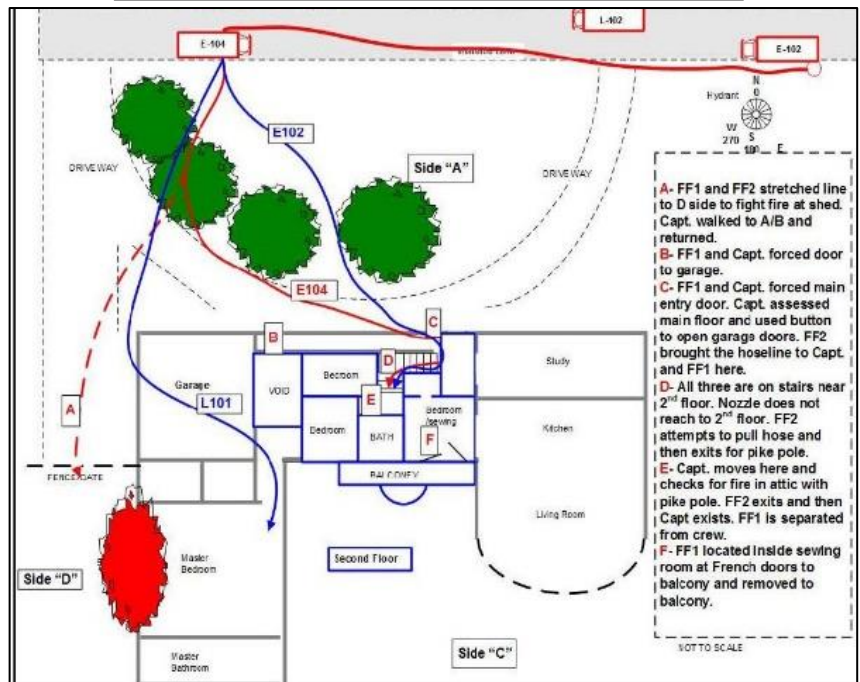
NIOSH FF Fatality Report 2014-15

On July 9, 2014, Firefighter Daniel Groover of the Houston (TX) Fire Department died in the line of duty while conducting interior operations at a two-story residential structure fire.

At 1555 hours Engine 104 was dispatched for a reported shed fire. Upon arrival they observed fire and black smoke from Side C and D of the structure and the Captain requested a box alarm. The crew reported hearing ammunition going off while they advanced a 1 3/4" hoseline. The Captain and FF Groover forced entry to the front door and after only observing minimal smoke and no visible fire or civilians, proceeded to a narrow stairway to the 2nd floor.

FF Groover, the Captain and another Firefighter went to the top of the stairs and began searching for civilians and fire. After the Captain heard one of the Firefighters say that they were getting hot and low on air, backed the crew down the stairs. It was then realized that FF Groover was missing. Going back to the 2nd floor the Captain heard a PASS device in the room to his left, notified the Incident Commander and then had to back out due to being low on air.

Engine 63 made entry through the rear double doors off the deck on the 2nd floor and located FF Groover just inside the double doors. He was taken down a ladder to the yard and was then transported to the hospital where he died from his injuries. He was 46 years old and had a wife and 3 children.



Key Contributing Factors

- Crew integrity
- Air management
- MAYDAY procedures
- Firefighting experience
- Operational characteristics of the SCBA and other life safety devices
- Fireground communications
- Ventilation timing
- Hoseline deployment
- Construction features of the residence
- Munition hazards

Read the entire report at:

<https://www.cdc.gov/niosh/fire/pdfs/face201415.pdf>

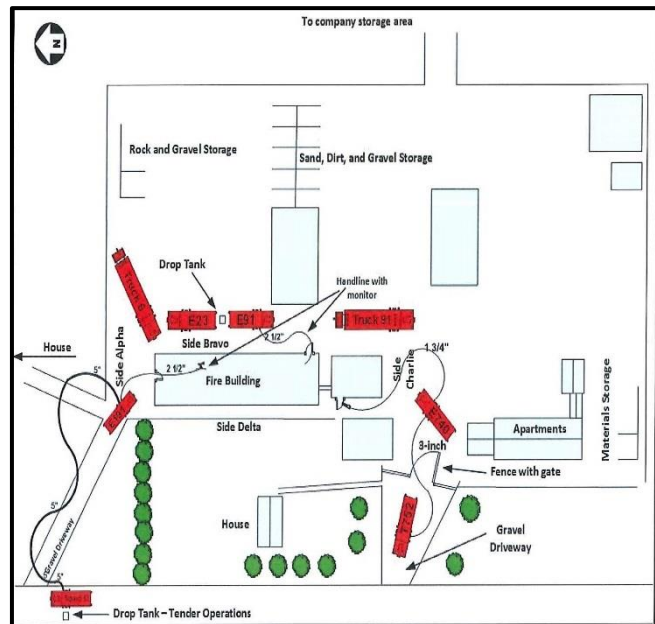


NIOSH FF Fatality Report 2014-18

On August 5, 2014, Assistant Fire Chief Jamie Middlebrook of New Carlisle (IN) FD died in the Line of Duty after being trapped under a roof collapse while fighting a fire at a commercial storage building. Heavy fire was showing through the roof on Side B and Side C of the structure when the first-due company arrived. After a brief conversation with the assistant fire chief (victim), the Incident Commander decided to open the doors on the north end (Side A) of the building to set an unmanned ground monitor to keep the contents of the building cool.

A defensive fire attack was initiated - however - the Assistant Chief was one of 3 Firefighters who entered Side A of the structure to stretch a 2½-inch hoseline to protect equipment and acetylene. Command was unaware of their decision to enter.

The fire was **already in the overhead truss system** above the Assistant Fire Chief and the Firefighter, and **the fire was likely concealed by the ceiling**. As the third Firefighter got to the overhead door, a loud crash occurred. The truss system failed and the ceiling and roof assembly collapsed on the Assistant Fire Chief and Firefighter. Chief Middlebrook was killed by the collapsing truss system. The Firefighter, who suffered a broken leg, was able to crawl under some equipment before being rescued by a Rapid Intervention Crew.



Contributing Factors

- Incident Management
- Incident action plan and assessment
- Offensive actions in a defensive fire
- Communications
- Mutual aid
- Collapse/exclusion zones and situational awareness
- Lack of a Safety Officer

Read the entire report at:

<https://www.cdc.gov/niosh/fire/pdfs/face201418.pdf>



Newly Released

NIOSH FF Fatality Report 2018-06

On March 22, 2018, Firefighter Ivan Flanscha and Firefighter Zachary Anthony of the York (PA) Fire Department died in the line of duty following a structure collapse while working to extinguish hot spots following a structure fire the previous day.

On March 21, companies were dispatched at 1616 hours for a report of a structure fire. Upon arrival heavy smoke was showing from the **large Type IV (heavy timber) construction mill building that was under renovation**. After an initial interior attack, operations changed to a defensive attack. **Approximately 2 hours into the incident cracks began to form in the Side B exterior wall and a large portion of the structure collapsed (Sides B, C, & D)**. Firefighters from 5 departments remained on scene overnight to extinguish the fire.

The next morning, March 22, after an inspection, a decision was made to use an elevated aerial platform to send a hose line crew onto the 3rd & 4th floors to extinguish the remaining hot spots. Truck 99-1 was repositioned at the Side A/D corner so that fire fighters, supervised by the Incident Commander (located in the elevated platform), could access the 4th floor. **At approximately 1515 hours, a collapse occurred that dropped three Firefighters and the shift commander (Assistant Chief) to the ground.**

The Incident Commander, located in the bucket of Truck 99-1 immediately radioed a **MAYDAY** and requested additional resources. Fire fighters worked for 29 minutes to free the four Firefighters trapped under the debris. Firefighters Flanscha and Anthony received fatal injuries in the collapse while the Assistant Chief and the fourth fire fighter were seriously injured.



Key Contributing Factors

- Building under renovation with inactive sprinkler system
- Long-burning deep-seater fire could not be reached by exterior master streams
- Previous partial structure collapse
- Firefighters entered collapse zone following defensive operations
- Inadequate risk versus gain analysis

Read the entire report at:

<https://www.cdc.gov/niosh/fire/pdfs/face201806.pdf>



Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

SUMMARY

On June 17, 2001, a 50-year-old male career Fire Fighter (Victim #1), a 46-year-old male career Fire Fighter (Victim #2), and a 40-year-old male career Fire Fighter (Victim #3) died while performing interior suppression and exterior ventilation activities when an explosion occurred in the cellar of a hardware store, causing a structural collapse. Victim #1 and Victim #3 were removed from the debris after the collapse and transported to a local hospital where they were pronounced dead. Victim #2 was recovered from the cellar approximately 4 hours later and was pronounced dead at the scene. NIOSH investigators concluded that, to minimize the risk of similar occurrences, fire departments should

- *ensure that pre-incident plans are updated and used on mercantile occupancies*
- *ensure that fire fighters from the ventilation crew and the attack crew coordinate their efforts*

- *ensure that fire fighters are trained to know the hazards associated with cellar fires and the precautions that can be taken to reduce serious injury*

Additionally,

- *Municipalities and building owners should consider requiring and modifying older structures to meet new building codes and standards to improve safety of occupants and fire fighters*
- *Building owners should consider placing specific building hazard information on an exterior placard*
- *Building owners should follow guidelines of the local authority having jurisdiction regarding the storage of hazardous/flammable materials and ensure that all existing safeguards are operational*



Aerial Photo from Side 2

The **Fire Fighter Fatality Investigation and Prevention Program** is conducted by the National Institute for Occupational Safety and Health (NIOSH). The purpose of the program is to determine factors that cause or contribute to fire fighter deaths suffered in the line of duty. Identification of causal and contributing factors enable researchers and safety specialists to develop strategies for preventing future similar incidents. The program does not seek to determine fault or place blame on fire departments or individual fire fighters. To request additional copies of this report (specify the case number shown in the shield above), other fatality investigation reports, or further information, visit the Program Website at

www.cdc.gov/niosh/firehome.html
or call toll free 1-800-35-NIOSH



Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

INTRODUCTION

On June 17, 2001, a 50-year-old male career Fire Fighter (Victim #1), a 46-year-old male career Fire Fighter (Victim #2), and a 40-year-old male career Fire Fighter (Victim #3) died while performing interior suppression and exterior ventilation activities when an explosion occurred in the cellar of a hardware store, causing a structural collapse. On June 18, 2001, the International Association of Fire Fighters (IAFF) and the United States Fire Administration (USFA) notified the National Institute for Occupational Safety and Health (NIOSH) of this incident. On July 9, 2001, three Safety and Occupational Health Specialists and the Team Leader of the Fire Fighter Fatality Investigation and Prevention Program investigated this incident. Interviews and meetings were conducted with the Chief of the Department, the Chief of Safety, the Safety Battalion, fire fighters from the department who were on the scene of this incident, the presidents and representatives of the Uniformed Firefighters Association (UFA) and the Uniformed Fire Officers Association (UFOA). The incident site was visited and the scene was photographed. Copies of witness statements, training records, standard operating procedures (SOPs), dispatch logs, fire/arson investigation report, building blueprints, video footage, and a map of the fire scene were reviewed.

This career department consists of 11,500 uniformed fire fighters. The department serves a population of 8,000,000 in a geographic area of approximately 321 square miles.

Structures

Two structures were involved in this incident. Also, both buildings were interconnected on the first floors as well as the cellars. Both structures were built prior to 1930 of ordinary construction, and were two stories in height, each with a full cellar. Building 1 measured 2035 square feet and was triangular in shape. Building 2 measured 1102 square feet and

was rectangular in shape. Building 1 and Building 2 shared a common or party wall and were interconnected on the first floor and the cellar. Building to building access in the cellar was through a fire door. *Note: The fire door was blocked open to allow free movement between the cellars which were used for storage.* The hardware store occupied the first floor and cellars of both buildings. Building 1 had two apartments on the second floor. Building 2 had an office and storage space on the second floor. *Note: A third uninvolved building was attached to the west side of Building 2 (Figure #1).* The flat roof system sheathing consisted of 5/8-inch plywood covered by felt paper and rubber roof membrane. The foundation was constructed out of stone and mortar. The support system was a combination of steel masonry posts/lolly columns and wooden support beams.

Equipment

Additional units were dispatched; however, only those units directly involved in the fatal event are discussed in the investigation section of this report.

Battalion 49 [Battalion Chief (Initial Incident Command), aide]

Battalion 45 [Battalion Chief (rear sector command), aide]

Division 14 [Deputy Chief (Incident Commander), aide]

Special Operations Command (Battalion Chief, aide)

Engine 260 (Lieutenant, four fire fighters, chauffeur)

Engine 262 (Lieutenant, three fire fighters, chauffeur)

Squad 288 (Captain, four fire fighters, chauffeur)

Engine 312 (Lieutenant, three fire fighters, chauffeur)

Engine 316 (Lieutenant, three fire fighters, chauffeur)

Squad 041 (Lieutenant, four fire fighters, chauffeur)

Ladder 115 (Captain, four fire fighters, chauffeur)

Ladder 116 (Captain, four fire fighters, chauffeur)

Ladder 117 (Lieutenant, four fire fighters, chauffeur)

Ladder 163 [Lieutenant, four fire fighters, chauffeur (Victim #3)]

Rescue 4 [Captain, four fire fighters (Victim #2), chauffeur (Victim #1)]

Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

Accelerants Present

The hardware store had a considerable volume of hazardous/flammable materials, stored in the cellars of both buildings (Photo 3):

Building 1

Material	Quantity
Propane (14 oz.)	142 Cylinders
Mapp Gas	27 Cylinders
Oxygen	3 Cylinders

Building 2

Material	Quantity
Acetone	6 – 12 Gallons
Denatured Alcohol	24 Gallons
E-Z Alcohol	12 Gallons
Spray Paint	350 Cans
Laquer Thinner	12-24 Gallons
Methyl Ethyl Ketone	24 Gallons
Mineral Spirits	24 Gallons
Naphtha	24 Gallons
Paint Thinner	24 Gallons
Toluene	4 Gallons
Turpentine	24 Gallons
Xylene	4 Gallons
Propane (14 oz.)	6 Cylinders

Training

The department requires all fire fighters to complete a 13-week Probationary Fire Fighters School. Candidates must be Certified First Responders to become probationary fire fighters. Probationary fire fighters are instructed in hydraulics and learn the basics of fire suppression systems and fire-fighting tactics.

Victim #1 had 27 years of experience and had completed an extensive list of training courses which

included: Hazardous Material Operations, Ladder Company Chauffeur, and Fire Suppression and Control.

Victim #2 had 14 years of experience and had completed an extensive list of training courses which included: Hazardous Material Operations, Building Construction and Firefighter Safety, Tactical Forcible Entry, Tactical Engine Company Operations, Tactical Ladder Company Operations, Tactical Roof



Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

Operations, Tactical Search Operations, Engine Company Chauffeur, and Fire Suppression and Control.

Victim #3 had 11 years of experience and had completed an extensive list of training courses which included: Tactical Forcible Entry, Chain Saw: Ladder, Tactical Search Operations, Tactical Mask Confidence, Tactical Private Dwelling Fire, Tactical Roof Operations, Hazardous Material Operations Level, Ladder Company Chauffeur, and Fire Suppression and Control.

Personal Protective Equipment

At the time of the incident, all three victims were wearing their full array of personal protective clothing and equipment, consisting of turnout gear (coat and pants), helmet, Nomex[®] hoods, gloves, boots, and a Self-Contained Breathing Apparatus (SCBA) with a Personal Alert Safety System (PASS) integrated into the air pack.

Weather

The weather conditions at the time of the incident included a relative humidity of 84%, an ambient air temperature of 69.8°F, wind speed of 13.8 mph, and barometric pressure of 29.86 Hg.

INVESTIGATION

On June 17, 2001, at 1420 hours, Central Dispatch received a call from a local resident of a reported fire in a hardware store. At 1421 hours Central Dispatch assigned the first-alarm companies. At approximately the same time crews cleared the scene of a previous call approximately seven blocks away and were added to the alarm. Battalion 49 cleared Squad 288 from the previous call and notified Central Dispatch that they were adding their units to the structure fire call. Battalion 45 was assigned as the first-due Chief, and Engine 260 and Ladder 163 were assigned as the first-due companies. However, due to the proximity of the previous call, Squad 288

was stopped by a civilian for a verbal alarm and was the first unit to arrive on the scene at 1422 hours.

A civilian led the Captain from Squad 288 through a downstairs apartment in Building 3 to a cellar door in the Exposure 3 side of Building 2 (see Figure #1). The Captain heard the fire crackling behind the cellar door and transmitted to Central Dispatch a working structure fire. *Note: The fire origin was a flammable liquid (gasoline) that was accidentally spilled outside the rear security door of the cellar on Exposure 3. The gasoline traveled underneath the door and its vapors were believed to be ignited by the pilot light of a hot water heater located inside the cellar of Building 2.* When the Captain returned to Exposure 1, members of Squad 288 were pulling a 1 3/4-inch handline off their rig to the front of the structure. The Captain from Squad 288 informed them that the fire was in the hardware store and ordered them to stretch a 2 1/2-inch handline. The Roof Man from Squad 288 took a saw and performed forcible entry on the security gates that protected the two front entrance doors.

Between the hours of 1425 and 1430 Battalion 49, Engine 262, Engine 260, Ladder 116, Ladder 117, Ladder 163, Rescue 4, Battalion 45 and Engine 312 arrived on the scene. Battalion 49 assumed Incident Command (IC) and began his walk-around to check for conditions and fire extension throughout the structure. As the IC was walking down the Exposure 2 side, a civilian informed the IC that fire fighters would probably have better access to the fire through the rear of the structure, the Exposure 3 side. The IC instructed Engine 262 to stretch a handline to the rear of the structure for a possible entry into the cellar through a door on the Exposure 3 side. The cellar door was accessed through the security gate between the Exposure 2 and Exposure 3 side (see Figure #1).

The IC assigned Battalion 45, the all-hands Chief, as rear sector-command over forcible entry on the



Fatality Assessment and Control Evaluation Investigative Report #F2001-23

Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

Exposure 3 side. The Lieutenant from Ladder 163, Ladder 163 Irons, and Ladder 163 Can, along with a member of Rescue 4, and Ladder 117 Outside Vent (OV) began forcing the reinforced steel security doors. Battalion 45 ordered Engine 262 to stretch a 2½-inch line to the door. While waiting for the door to be forced, the officer from Engine 260 ordered his crew to stretch another 2½-inch line.

Ladder 116 Roof (with the saw) and the OV raised a portable ladder to the roof on the Exposure 1 side. Ladder 116 Can and members from Ladder 117 raised a 24-foot extension ladder to a window and conducted a quick search of the second floor. The OV and Ladder 163 Roof went to the roof in their bucket to perform vertical ventilation. Ladder 163 Roof exited the bucket and met up with Ladder 117 Roof, Rescue 4 Roof and the crew from Ladder 116 to perform ventilation. *Note: Ladder 163 Roof noted that heavy white smoke was pushing from the chimney.* The ventilation crews removed the panes of glass from the skylights.

At approximately this time, Squad 288 had completed forcible entry on the front doors (Exposure 1 side) of the hardware store and encountered a medium smoke condition with no heat on the first floor. Squad 288 located an interior door that opened to a 6-foot-long landing which led to a set of stairs going to the cellar. The Captain from Ladder 116 and the officer and a fire fighter, with a thermal imaging camera (TIC) from Rescue 4, entered the landing to assess the conditions. They encountered heavy black smoke and no flames. The TIC revealed heat in the walls around the stair enclosure and sections of the floor. The stairs had a plywood slide over them that was covered with materials. The Captain from Ladder 116 removed the plywood and did not feel much heat on the walls with his bare hand. The IC entered the hardware store and Squad 288 informed him that the fire was behind the cellar door on the Exposure 3 side. Squad 288 was

ordered to hold this position so that an attack could be made from the Exposure 3 side without opposing hose lines. During this time Squad 288 was holding their position at the door, and the door blew open a few times with a gust of blue flame. *Note: The IC and members of Squad 288 heard noises coming from the cellar that sounded like electrical arcing. The sound progressively got louder and stayed constant.*

Ladder 115 arrived on the scene at approximately 1435 hours and was assigned as the rapid intervention team (RIT or Fast Truck). At approximately 1440, the Captain from Ladder 115 walked by Exposure 2 to check on the progress at Exposure 3. During this time, he noticed the Chauffeur from Ladder 163 (Victim #3) and the Chauffeur from Rescue 4 (Victim #1) conducting venting operations on the cellar windows on the Exposure 2 side (see Figure #3). The crew removed the steel bars from the window with an extrication tool and vented the first cellar window, which was toward the rear of the structure. A fire fighter from Engine 262 looked into the window and did not see any fire. He then assisted stretching another handline while the crew began venting the next cellar window closest to Exposure 1.

A fire fighter from Squad 288 and a fire fighter from Rescue 4 (Victim #2) then forced a door in Building 2 to gain access to the second-floor office and storage area (see Figure #1). The fire fighters conducted a search of the second-floor, which had light smoke conditions. The fire fighter from Squad 288 then returned to the first floor to assist on the 2½-inch line into the Exposure 1 side.

The Deputy Chief from Division 14 arrived on the scene at approximately 1442 hours and proceeded to Exposure 1 to obtain a briefing from Battalion 49. Using hand tools, a power saw, and the extrication tool, the crew at the rear had just opened the reinforced steel security door approximately 18 inches.

Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

Battalion 45 and the Lieutenant from Ladder 163 entered the cellar through the narrow opening to assess the condition and the entry and exit route. The smoke condition was light with no heat and no distinctive smells were present. The steel-over-wood door was reinforced on the inside with an iron bar gate. The determination was made to remove the door to provide a clear entry and exit route while operating in the cellar. Battalion 45 notified Battalion 49 that they would have good access in the rear once the door was removed.

Battalion 49 checked the air supply of Squad 288 and decided on an attack down the cellar stairs. At this time, Battalion 49 did not hear any more arcing sounds from the cellar. While the rear door was being removed, the IC stepped into the street to ensure Engine 312 stretched a 2 ½-inch line to Exposure 1 as backup to their attack from the first floor of Exposure 1. The Special Operations Command (SOC) Chief had just arrived on the scene and was being briefed by the IC in front of the Exposure 1 entrance. There was a radio transmission of an unknown or lacquer odor followed by an acknowledgment of the same smell. The explosion took place within seconds of this transmission.

The IC and the SOC Chief were blown into the street by the blast from the explosion. Battalion 45 and the forcible-entry crew on the Exposure 3 side were blown from the doorway into the backyard. The explosion collapsed the Exposure 2 wall, burying the Chauffeur from Ladder 163 (Victim #3), the OV from Ladder 116, and the Chauffeur from Rescue 4 (Victim #1), who were conducting venting operations (see Photo 1). Squad 288 and additional crew members on the first floor were lifted off their feet, and they landed in the rubble created by the explosion, which led them to believe they were blown into the cellar. They were able to exit through the debris of the Exposure 2 wall (see Photo 2). Victim

#2 radioed that he was trapped in the cellar under the stairs. *Note: It is believed that Victim #2 was on the first-floor landing at the top of the stairs to the cellar in Building 1 and was blown into the cellar down the stairway by the explosion (see Photo 1).*

A personal accountability report (PAR) was conducted and it was determined that four members were missing. The OV from Ladder 116 was found buried under brickwork. The store sign had fallen across his chest, shielding him from direct contact with the bricks. He was removed and transported to a hospital by ambulance. Crew members began removing the bricks and rubble on the Exposure 2 side by hand to search for Victim #1 and Victim #3. They were both found after approximately 25 minutes and transported to a local hospital where they were pronounced dead. Fire fighters cut a hole in the floor near the stairs of Building 1 to attempt rescue of Victim #2 by placing a hand ladder into the cellar. Crew members were forced off the ladder several times due to the intense fire and heat. Fire fighters took about one hour to breach the Exposure 4 cellar wall of Building 2 from Building 3. Victim #2 was recovered by a member of a squad after descending the portable ladder placed into the stairway hole earlier in the operation. Victim #2 was found near the base of the cellar stairs and was pronounced dead on the scene.

CAUSE OF DEATH

The cause of death for Victims #1 & #3 was listed as massive blunt force trauma. The cause of death for Victim #2 was listed as asphyxia due to smoke inhalation.

RECOMMENDATIONS AND DISCUSSION

Recommendation #1: Fire Departments should ensure that pre-incident plans are updated and used on mercantile occupancies.¹

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Discussion: NFPA 1620 states that “Pre-incident planning in a mercantile occupancy involves not only the emergency responders, but administrators, section or department supervisors, and other staff members.” The primary purpose of a pre-incident plan is to help responding personnel effectively manage emergencies with available resources. Pre-incident planning involves identifying the protection systems, building construction, contents, and operating procedures that can impact emergency operations. The construction of the building in terms of the size of the building (both vertical and horizontal), building features (fire walls, fire barriers, roofs, and floors), access points, areas where products of combustion could spread due to a lack of structural barriers (e.g., stock areas), and building services, should be determined.

Most occupancies present an ever-changing environment making ongoing maintenance of the pre-incident plan as critical as the original development of the plan. Where conditions indicate that a change in a pre-incident plan is warranted, the plan should be updated and distributed to the appropriate persons and agencies.

A system to utilize the pre-incident plan should be designed to allow access to the plan, or a summary with key elements of the plan, while in route and during the incident. Some supplemental detailed information such as building plans can be kept in a lock box or other secured area.

Recommendation #2: Fire departments should ensure that fire fighters from the ventilation crew and the attack crew coordinate their efforts.^{2,3}

Discussion: Fire can quickly spread upward into the structure, causing potential problems such as a flashover, a backdraft, or an explosion. An explosion is the rapid ignition of a combustible gas/air mixture

that results in shock waves, structural collapse, and heat release. Ventilation timing is extremely important and must be carefully coordinated between both fire attack and ventilation crews. Ideally, ventilation should occur just prior to interior crews advancing their hoselines. Proper venting of heat, smoke, and combustible gas/air mixtures from buildings can reduce the possibility of dangerous situations that confront fire fighters.

Recommendation #3: Fire departments should ensure that fire fighters are trained to know the hazards associated with cellar fires and the precautions that can be taken to reduce serious injury.³

According to Dunn, “Confinement increases the chances of combustible gas explosion. A cellar is the most confined space in a building because there are fewer windows and doors leading to fresh air. The chance of an explosive mixture developing there when gas escapes is increased. Also, there are many combustible liquids and gases present that can form an explosive mixture.”

Additionally, “A firefighter can reduce his chances of serious injury when a cellar explosion is anticipated by these precautions: 1. Stand clear of any windows that may suddenly explode outward. 2. Avoid standing near the entrance opening that will vent the pressure or shock wave of the cellar explosion. 3. Do not use a cinder block or masonry wall for protection against the force of the explosion. 4. Most important, wear all protective clothing—helmet, mask, gloves, boots, and turnout pants and coat. Even if a firefighter survives the explosion shock waves in a cellar, there will be a flash fire of extremely high temperature, created by the rapid ignition of combustible gas.”

Recommendation #4: Municipalities and building owners should consider requiring and

Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

modifying older structures to meet new building codes and standards to improve safety of occupants and fire fighters.⁴

Discussion: There are building codes and standards which are used as guidelines for new building design and construction. However, before municipalities adopted or enforced specific codes and standards, many buildings were designed and constructed without incorporating such standards. New or improved codes have been established which can improve the safety of existing structures. Sprinkler systems are one example of a safety feature that can be retrofitted into older structures. It is proven that sprinkler systems reduce the loss of property and life. There is also a strong possibility that sprinklers could reduce fire fighter fatalities, since they contain, and even extinguish, fires prior to the arrival of the fire department. Sprinklers are currently the most proactive fire safety approach in building construction. The structure involved in this incident did not incorporate a sprinkler system.

Recommendation #5: Building owners and/or fire departments should consider placing specific building construction information on an exterior placard.⁵

Discussion: Information regarding the construction of the building is very valuable to fire fighters if a fire should occur. The information could provide fire fighters with such information as roof type (lightweight truss, bowstring, etc.), roof materials (metal, wood, etc.), roof loads (HVAC units, displays, etc.), sprinkler system(s), standpipe location, utilities (gas or electric), occupancy, occupancy hours, chemicals on site, pressurized cylinders, contact numbers, and the interior floor layout. This information could save the IC time when planning the fire attack. Additionally, the information would provide fire fighters with important information that they might not otherwise have access to.

Recommendation #6: Building owners should follow guidelines of the local authority having jurisdiction regarding the storage of hazardous/flammable materials and ensure that all existing safeguards are operational.^{6,7}

Local codes are adopted or developed to safeguard against the loss of lives and property to the specific conditions that can be found throughout an area. In this incident, the city had developed rules prohibiting the storage and use of propane or liquefied petroleum gases (LPG) below grade. At a minimum, there were 142 14 oz. cylinders stored in the cellar area under Building 1 and Building 2. The fire door in the common or party wall that provided cellar level access between Building 1 and Building 2 was blocked open. Building owners should adhere to guidelines set forth by the local authority having jurisdiction regarding the storage of hazardous/flammable materials. They should also ensure that safeguards such as a fire door are maintained and operational. If the fire door was operational, it may have provided additional time for the protection of the cylinders of propane, mapp gas and oxygen that were being stored in the cellar of Building 2.

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Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

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INVESTIGATOR INFORMATION

This investigation was conducted by Richard W. Braddee, Team Leader; Tom P. Mezzanotte, Mark McFall, and Jay L. Tarley, Safety and Occupational Health Specialists, Division of Safety Research, NIOSH. The report was written in final form by Jay L. Tarley, Safety and Occupational Health Specialist.

Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York



Photo 1. Collapse of Building from Side 2

Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York



Photo 2
Area where
crew members
exited the
building on
side 2

Photo 2. Exit Location from Side 2

Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York



Photo 3. Example of Hazardous/Flammable Materials Stored in Cellar



Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

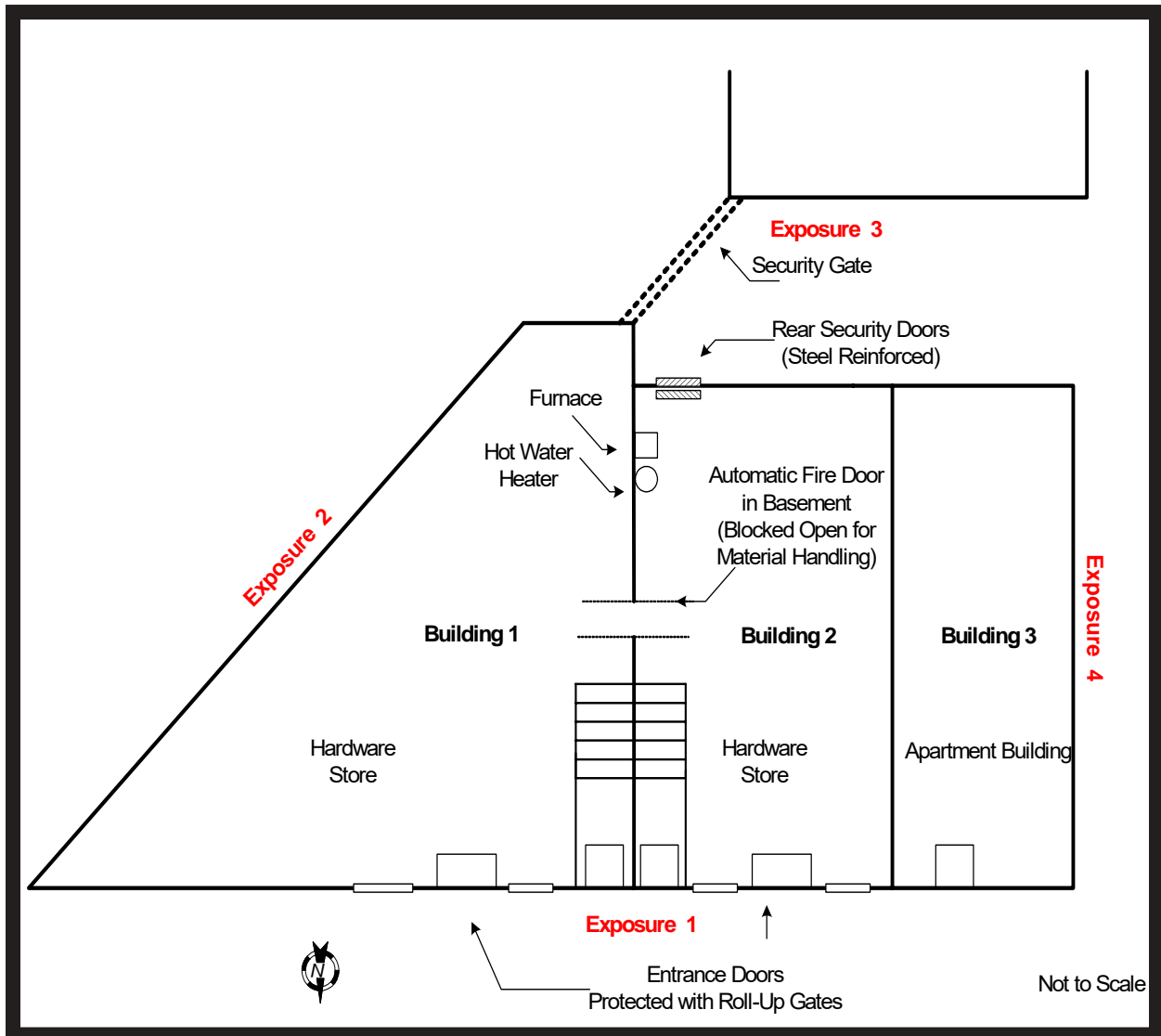


Figure 1. Aerial View of Building Layout

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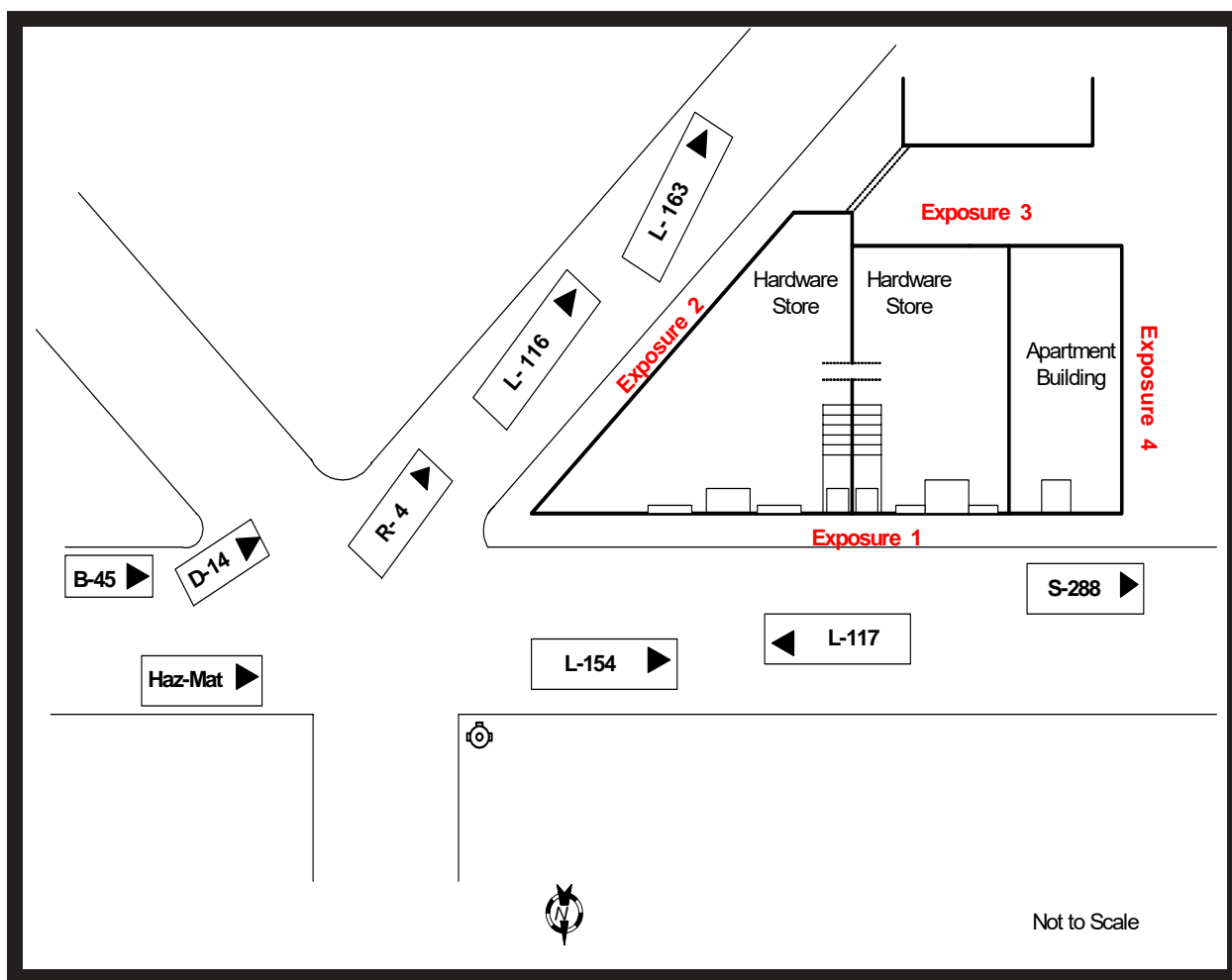


Figure 2. Aerial View of Engine Layout



Hardware Store Explosion Claims the Lives of Three Career Fire Fighters - New York

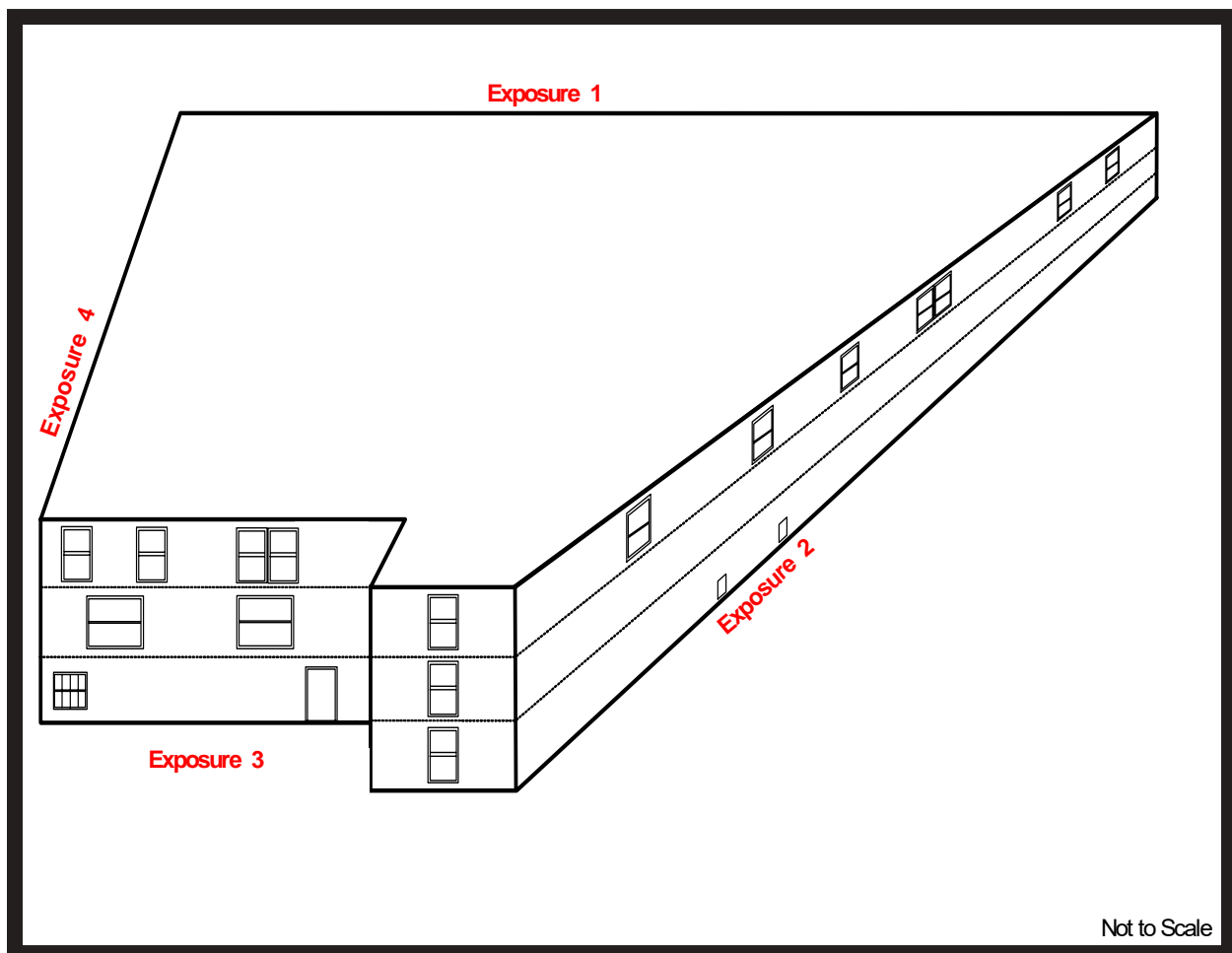


Figure 3. Three Dimensional View of the Structure

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Fire Nuggets

August-November 2001

FATHERS DAY

BY THE LATE ANDREW A. FREDERICKS

On Sunday, June 17, 2001, a fire occurred in a hardware store in the Astoria section of the Borough of Queens, New York. The FDNY was notified and responded with a full first-alarm assignment, including Rescue Co. 4, which was returning from a box in Manhattan. As the first alarm companies went about their assigned tasks, an explosion took place that caused a massive collapse and severe injuries to scores of firefighters. Three firefighters were trapped two beneath tons of bricks that had once been the exposure two side wall of the fire building and a third who was blown down the interior stairs leading to the cellar. After the explosion, the fire rapidly escalated from a second to a fifth alarm; and eventually some 350 firefighters converged on the scene, including all five rescue companies and seven squad companies. This account represents my recollections of the event, as well as the feelings and emotions I experienced during the operations to locate the trapped firefighters. It is not in any way meant as a critique of the incident or even necessarily represents an accurate description of the events as they unfolded. I have found that by talking about the incident, I can better cope with what happened. Since writing is a passion of mine, I thought that by writing about it and sharing those thoughts with other firefighters, the grief might become somewhat easier to bear.

The investigation into the cause of the fire and explosion is ongoing and new facts come to light each day. A recent theory is that a combination of smoke and flammable vapors gases escaping from failed containers of paint, lacquer, and propane stored in the cellar triggered what might be described as a super backdraft a backdraft explosion with enough power to lift a two story, 30 foot by 60 foot building of ordinary construction off the ground and blow out a side wall causing the collapse of the second floor and roof.

I wasn't scheduled to work until Fathers Day night, but because I had to drive some 235 miles to the New York State Fire Academy early the next morning, I switched my night tour with a firefighter who wanted the day off. The morning was bleak and rainy, but sunshine was predicted for later in the day.

We had a covering lieutenant working in place of our regular officer. Like me, he was a native New Yorker who had been a firefighter in Alexandria, Virginia, before being appointed to the FDNY. Our chauffeur was a twenty-year veteran who worked in 43 Truck in Spanish Harlem before coming to Squad 18. The can man was out of one hundred and eight truck in Williamsburg, Brooklyn, and the forcible entry or irons man was from 12 Truck in the Chelsea section of Manhattan. I was assigned the hook and a detailed firefighter from Engine Company 325 in Queens was given the roof position. The nine hour day tour started out no differently than most- committee work, extra effort

was given to the stove and refrigerator since it was Sunday, some ball breaking, and a discussion over what to prepare for lunch.

Kitchen duties were soon interrupted by an alarm, which turned out to be false, followed shortly thereafter by a report of smoke that turned out to be steam. While returning to quarters from the steam leak, we were directed to respond to a store fire on 16th Street near Fifth Avenue. We operated at the small all hands fire for about 40 minutes, assisting with forcible entry and performing searches of the store, cellar, and sub-cellar. After being ordered by the chief to take up, we left the scene and had traveled no more than a couple of blocks before we came across a woman lying on the sidewalk. We administered first aid and shielded her from the now heavy rain using two borrowed umbrellas. Once she was stabilized, we moved her into the vestibule of a nearby apartment building and awaited EMS. An ambulance soon arrived, and we went back in service.

Since the morning was so hectic, we decided to pick up sandwiches for lunch. The Mets and Yankees were playing later at Shea, and everyone was hoping the rain would soon stop. We finished lunch around 2:00 and settled in to relax a little bit. The quiet didn't last very long. At about 14:50 hours the voice alarm sprang to life and the dispatcher announced a second alarm in Queens for a fire in a two story taxpayer. A second alarm is hardly unusual, but within minutes this second alarm escalated to a fifth. We switched our kitchen scanner to the Queens fire frequency and the urgency in the voices of the chiefs aides indicated something unusual something tragic had happened. With little time to consider the possibilities, the teleprinter in the housewatch spit out our response ticket to box 55 7512 12 22 Astoria Boulevard between 12 Street and 28 Avenue. It was 15:26 hours, and Squad 18 was on its way to Queens.

Due to our chauffeurs knowledge of the area and relatively light traffic, we made it from lower Manhattan to Astoria in eleven minutes. We parked a block away, collected our firefighting hand tools, and walked up the street toward the fire building. The sight that greeted us could only be described as surreal. Firefighters from Squad 288 and several other companies were sprawled out on the sidewalk with EMS personnel frantically trying to keep up with triage. The exposure two side of the fire building was ahead of us the wall blown out into the street with the second floor and roof hanging down in a supported lean-to fashion. Debris littered the street, and smoke poured from every opening in the collapsed building.

I walked up to the command post, and the first person I recognized was a captain who is currently the fire commissioners executive officer. I asked him, Ray, whats going on. Do we have members missing. He nodded yes. I left the command post and walked around the front of Ladder Company 116s apparatus, which was parked on the exposure two side of the fire building. I couldn't raise my officer by radio, and in the sea of smoke and firefighters, I recognized no one from Squad 18. I noticed many of the firefighters digging through the collapsed brick wall that lay on the sidewalk, so I threw my forcible entry tools into a freezer box lying at the curb and started moving bricks. Seemingly not more than a minute or two had gone by and a firefighter only a few feet

from me shouted: I got one! About two dozen firefighters and officers, myself included, began frantically grasping at bricks and debris. The SCBA on my back was a hindrance and made it difficult to balance on the rubble pile. I was finally able to hand it to the lieutenant working in Hazardous Materials Co. 1, with whom I worked in Squad 18 before he was promoted. They had just concluded an operation nearby and when the alarm for the hardware store came in, they responded and assisted with forcible entry.

Paint cans kept exploding and two members of Squad 18 grabbed a 2 ½-inch line to drive the fire away from our position. The work was physical and frustrating, and I remember thinking how bad the smoke was, and I wished I could quit digging. I pushed the notion of quitting into my subconscious and kept working. Several minutes went by, and the first firefighter was pulled from the rubble. Dust was caked in his bloodied hair, and I couldn't make out his face.

The second firefighter was discovered next to the first. I recall the veteran lieutenant from Rescue 2 yelling at me, Andy, you're on his legs! A firefighter from Rescue 2 was standing on debris above the trapped firefighters head. We moved and continued to claw at the rubble. It was difficult finding a place to toss the bricks without interfering with some other part of the rescue effort. Tempers grew short. In addition to bricks, the contents of the store were scattered all over. I remember fighting with mop handles and perforated particleboard partitions used to display hardware sundries. A reciprocating saw was brought in to cut away some wood entangling the trapped firefighter's feet. With Herculean effort, the second firefighter was pulled free and dragged onto a backboard. I helped move him onto a stretcher. He was quickly wheeled away by other firefighters and EMS personnel. I soon found out that one of the firefighters was Harry Ford, the senior man in Rescue 4. I learned later that the other firefighter was John Downing from Ladder 163, who was working his last tour before leaving on vacation with his wife and kids to visit relatives in Ireland.

With the two firefighters removed, we were ordered to enter the cellar of exposure 4 A and assist as needed. I immediately relieved a firefighter operating a pavement breaker being used to breach the cellar wall. I used the tool for only a short time before we were told to reposition and start another breach closer to the front of the building. I set up the tool and began to operate, but after only a minute or two trying to penetrate the brick and stone wall, I physically died. Holding the tool horizontally, even with help the help of my officer and roof man, was like trying to lift up the back end of car. I just couldn't do it. A suggestion was made to try and secure the tool with nylon webbing slung over a joist supporting the first floor. My lieutenant told me to go up to the first floor and size up this possibility. I was relieved, I had never felt so exhausted and this assignment gave me a chance to catch my breath.

Once inside the first-floor apartment, I helped move some furniture so Ladder 115 roof man could cut the floor and expose the joists. After this assignment was completed, I desperately needed some water, so I headed outside and met the forcible-entry firefighter from Squad 18 who was just as tired as I was. At some point I learned that the firefighter trapped in the cellar was Brian Fahey from Rescue 4. I had gotten to know

Brian over the past three years, and I was stunned. We soon joined the other members of Squad 18 in a storefront church on the first floor of exposure 4B to rest and regroup. The can man let me use his cell phone so I could call my wife. I noticed the sun was shining; it had become a beautiful day.

After this short break, we went back to work. Members of Squad 1 had courageously entered the store cellar through one of the breached openings, but were ordered to withdraw due to heavy fire conditions and three feet of accumulated water. We assisted in breaching the sidewalk in front of the fire building in an effort to reach the cellar. The can man, irons man, and chauffeur relieved members of Rescue 5, who were using pavement breakers. The roof man and I helped pass chunks of concrete out from the work area in bucket brigade fashion.

Simultaneously, attempts were being made to reach the interior stairs to the cellar. At one point, Squad 252 used a 2 ½-inch handline to push the fire back within the heavily damaged store while Rescue 3 entered the cellar. While this was going on, the can firefighter suggested we search what was left of an aisle filled with plumbing supplies in the off chance Brian was still on the first floor. The roof man and I joined him, and while moving shelving and digging through debris, a member of Rescue 3 reported he had located Brian in the cellar. It was approximately 18:00 hours. At about 18:30 hours, his body was removed from the fire building by the off duty members of Rescue 4 who had assembled at the scene. Except for the firefighters carrying Brian, everyone removed their helmets as a mark of respect. I had often studied photographs of the 23rd Street collapse, which took the lives of twelve firefighters and officers five from Engine Company 18 now Squad 18 in 1966 but never imagined that I would someday be part of such a grim scene.

By this point, I had no more emotions left. Emptiness is the only way to describe the way I felt. The night tour arrived to relieve us, and they set about the task of finding several tools we had lost during the operation. I finally made it home to eat leftovers at about 10 p.m. I kissed my kids and hugged them and watched the news and cried. I think every New York City firefighter calls home more often now and hugs his kids a little tighter when he gets home safely from work.

Thankfully, the most seriously injured members Lt. Joe Vosilla from Ladder 116 and Lt. Brendan Manning from Ladder 163 are doing better. Many other members remain on medical leave, and some have additional surgeries and extensive rehabilitation ahead. In a touch of cruel irony, the firefighter detailed to Squad 18 for the day was assigned to the same firehouse as John Downing and helped free him from the rubble. I recently saw a tape of the ABC News Nightline segment that dealt with the fire. Despite being at the scene and watching news footage in the days following the explosion, I was astonished at the devastation. That more members weren't killed can be attributed only to the grace of God. The two kids who admitted they spilled the gasoline that ran into the cellar and was ignited by a pilot light starting the original fire were not charged.

I know Ive left out numerous details, but many of these are not important. Since the incident, Ive often felt a sense of failure that accompanies the sadness. I know its quite normal to have doubts in a situation such as this, but that knowledge doesn't seem to make the doubting and second guessing any easier to deal with. In closing, I ask that you pray for the widows and especially the eight children left behind. To Brian, Harry, and John Rest In Peace Brothers.



APPENDIX B

Case Studies



Quick Reference Articles

Back to Basics







COMMACK FIRE DEPARTMENT



“Back to Basics Training Bulletin”

The NIOSH 5

The National Institute for Occupational Safety and Health or NIOSH performs an investigation into every LODD across the country. In every LODD or incidents with significant injury, there are 5 factors that are always in their report. The following is a list in the order of which they are most frequent with one being of the highest occurrence.

5.) Not Having/Following Dept SOG's – The department SOG's are in place for a reason. They get revamped by the chiefs office every year. They are on the training app, the website and should be posted on every cork board in every firehouse so that they are readily available to read. When SOG's are deviated from, the system breaks down and people get hurt.

4.) Inadequate/Insufficient Incident Command – Every single member should have a good working knowledge of ICS. Any member at any time could be tasked with running a fire (scary proposition) but true. Even if you're not an officer or chief, you could be the IC at the next fire...let that sink in a minute...Now go to the National Fire Academy website and take a 1 hour online refresher course.

3.) Inadequate Accountability – This leads back to ICS. However, it's your responsibility to let command know where your going and what you're doing. Especially if you're deviating from the SOG's for whatever the responsibility for your crew is. The IC needs to have a general idea of where your crew is, at all times just in case the shit hits the fan.

2.) Communication – It's not just about radio communications but verbal as well. Many of these reports talk about a mayday that was never heard because the mayday was stepped on by another radio transmission. When speaking on the radio, key up, and speak your message in its entirety. You have the air utilize it, if you key up no one else can step on you. A proper example - “Command 40, you have fire extension on the 2nd floor”. “40 command 10-4”. Two calls and my message got through. If you do it the other way waiting for IC to answer, that's 4 transmissions which may be covering up a more urgent message. Do it the right on every run!

1.) Size Up – I don't know how its possible at this point in the fire service that people aren't sizing up the fire building. This is the most frequently reported issue in in these reports. You should be listening to the first unit on scenes size up but once on scene, you HAVE to do your own! If nothing else, you want to know where the fire is, where the fires been and where the fire is going. Then you need to report it to either command or your officer. I could ramble on for hours about size up...but I already have in previous bulletins...

Mitigating all of these issues will take some training but some can be easily remedied with common sense. Ive never heard of any LODD where just one thing went wrong. It's always a perfect storm of multiple events. The only way to deal with the unexpected is to train for it...

Stay safe and keep Training.

This week's edition by Fire Marshal Digiose



COMMACK FIRE DEPARTMENT



“Back to Basics Training Bulletin”

Firefighter Survival

This January and February, the SCBA requalification's will commence. Every prop that you will go through is designed with and for a specific purpose and/or possible emergency event that you may be encountered with. In this article we'll discuss some statistics and some reasons why we have to go through these props.

Statistics – The following numbers are taken from “The Mayday Project”. These numbers represent the mitigation of maydays on the fireground and the percent win which they are mitigated. **Self-rescue – 36 %.** Assisted by their own crew – 26 %. Assisted by another interior crew – 25 %. RIT rescue – 7 %. Other – 6 %. So what's the bottom line? You need to know how to get yourself out of trouble should you find yourself in a mayday situation. How can you prepare yourself for such an event? Train...

High Risk Low Frequency Events (HRLF) – Years ago HRLF events would be considered a commercial building fire, for example. Today, all building fires are HRLF events. We get nowhere near the amount of work we got just 8-10 years ago. When something is HRLF, the only way to prepare is to train for them. A mayday would be considered even more high risk and more low frequency. Do you really think that when the time comes for you to call a mayday, that if you have never done it before, it'll go nice and smooth and you'll get yourself out of the situation with ease? If that's what you think, your delusional. So what can we do? Train...

RIT Teams – In only 15% of ALL maydays was a RIT team present or established. Why is that? There are multiple reasons, one is maydays usually occur in the first 15 minutes of an incident and in the volunteer fire service, which makes up 90% of the country, we rely on mutual aid for RIT. Two, that said mutual aid is probably just arriving at their firehouse when your mayday occurs. With that, who the hell even knows who's on the mutual aid crew? It's a crap shoot. Is that really what you want to bank your survival on? I don't.... The 4th or 5th piece of apparatus could wind up being the RIT. Therefore, you absolutely need to be prepared for such an event. How do we do this? Train...

Types of Maydays - #1 – Lost, disoriented, exit cut off, out of air (air management). #2 – Fall through/from a roof (collapse) #3 – Fall through floor or collapsed floor. Two of the top 3 causes for maydays involve collapse and the number one cause will most certainly follow the other two. With collapse being in the top 3 and air management being number one, it makes sense to train on all three of these issues. The survival requalification course hits on all three of these points. You crawl up and over debris - collapse. You crawl across rafters – fall through roof or roof collapse. You crawl through an entanglement hazard – roof collapse with wiring and debris hanging down. You crawl/walk through a “V” prop – simulated floor collapse. You breach a wall and go through – simulated exit cut off, lost or hostile event (Fire or Collapse). You have to perform a low profile – simulated roof or ceiling collapse. Finally, you exit out of a small opening...All the while you are working on air management. This is called...Training...

Conclusion – This course was not set up by the chief's office to make you look bad or to waste your time! For those who consider this “stupid” or “Pointless”, as this drill referred to by some people, I have this to say...If you don't want to do this for the guy next to you, do it for yourself. Do it for your family. The more you train, the better you'll become. The better you become, the safer it will be for you... It is just that simple...

Stay Safe and Keep Training...

This week's edition written by Joe Digiose



COMMACK FIRE DEPARTMENT



“Back to Basics Training Bulletin”

Firefighter Survival – Part 2

Every drill or training event that’s ever been invented for the purpose of firefighter survival is stained with the blood of one or more firefighters. It’s a lesson learned from a LODD or a severe injury to a firefighter. With that being said, our SCBA requalification course is no exception. The SCBA requalification course should not be looked upon as a test. It should be looked upon as an opportunity to get better. The courses are set up for three months out of the year and the indoor maze is available year round. You should be utilizing these props at least once a month. Grab a guy or two and bring them down with you and go through one or both courses. Practice the SCBA maneuvers, practice giving Mayday’s and just as important is practicing communicating with each other. These are the things that may save your life, so it begs the question, why wouldn’t you? The complacent attitude of, “this is never going to happen here” or “this will never happen to me so what’s the point”, is dangerous not just for the person next to you, but for yourself especially. Complacency kills...

Drills:

Follow the Hose – This is a drill that can easily be set up on one of the rooms of the firehouse, you don’t even have to charge it. Black out your facepiece, put a mess of hose on the ground, make a ton of loops, go over stuff, under tables and follow it until you’re out. Sounds easy enough, so go try it. Just make sure you start at the nozzle.

Follow the Search Rope- This is a great way to familiarize yourself with the rope, counting the knots, the directional knot, etc. Take the rope down to a playground or school. Run the rope over and through one of the giant jungle gyms they have. Black out your masks and follow the rope. The possibilities of things you can do in this drill are only limited by your imagination. In this drill just make sure you start at the rope bag and work your way out from it.

Remember

Doing the SCBA requal once a year is not enough! These are perishable skills. You need to practice these skills as often as possible so when the time comes that you need them...its muscle memory and it just comes naturally...



Stay Safe and Keep Training...

Article written by Joe Digiose



FIREFIGHTER SURVIVAL

A NEW YEAR'S RESOLUTION

Here's a partial listing of skills that have become popular over the last few years. Check off the skills that you've performed and are proficient at. If all items aren't checked then get to work! Make it a new year's resolution to get you, and your crew, through every one of these survival skills - your lives may depend on it!

New skills are created and developed all the time by firefighters. This is not a comprehensive list it simply contains some of the skills that have been highlighted over the past few years. The best way to remain proficient is to practice these skills. Reading about a skill and performing it are two different things. Under the intense conditions of your own emergency it's doubtful that you'll recall a skill that you read about (if you do you're lucky). More importantly, successfully completing a skill that you've never tried before is even less likely.

These skills aren't difficult, they're not time-consuming, and they're not for somebody else. These skills may save your life someday - make it a new year's resolution to practice each and every one of them. In addition, make it a point to stay abreast of the new tips and techniques that are sure to be developed throughout the year. How? Read, attend seminars, attend conferences, attend training classes. It's our job as firefighters to pass on any new tips or techniques we come up with - *that's part of firefighter survival.*

- SCBA mask confidence course/training
- SCBA low-profile maneuver
- SCBA disentanglement
- SCBA failure - emergency exit
- Out of air situation- emergency exit
- Orientation - find and follow a hose line out
- Orientation - locate a wall and follow it out
- Retreat to a room and close door
- Breach a wall to a safe area
- Window exit -ladder slide
- Window exit - rope slide
- Window exit - hang
- Window exit - hang and drop
- Denver drill - restricted window rescue
- Nance drill - firefighter through the floor
- Firefighter drag - SCBA harness
- Firefighter drag - webbing / sling
- Moving a firefighter up / down stairs
- Firefighter rescue - ground ladder
- Firefighter search - PASS device assisted
- Firefighter search - radio squelch assisted
- Firefighter search - conventional
- Searching with a personal search rope
- Large area search
- Firefighter in distress (*see Managing YOUR MAYDAY*)
- And more...



COMMAK FIRE DEPARTMENT TRAINING DIVISION



Practical Skills Checklist – SCBA 1

Name:	Badge:	Date:
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Task: Donning PPE & SCBA	Satisfactory	Unsatisfactory
Don's turnout gear		
Checks / prepares SCBA		
Dons SCBA in approved manner		
Dons & secures face piece		
Dons hood in proper manner		
Dons helmet and chin strap & gloves		
Completes task in two minutes or less		

Comments

Task: Perform the Quick Release	Satisfactory	Unsatisfactory
Properly transmits a MayDay		
Backs up and tries to remove entanglement		
Fully loosens both waist straps		
Unclips waist strap buckle		
Fully loosens right shoulder strap		
Removes right arm from right shoulder strap		
Places left hand high on left shoulder strap		
Uses right hand to fully loosen left shoulder strap		
Turns into the SCBA		
Removes entanglement		
Backs up away from hazard		
Re-dons SCBA in reverse order		

Comments


Task: Perform Reduced Profile	Satisfactory	Unsatisfactory
Properly transmits a MayDay		
Fully extend and remove right shoulder strap		
Place right hand on buckle and left hand on neck of the cylinder		
Shift the SCBA to the left side		
Uses right hand as a guide and left maintains cylinder contact		
Drops right shoulder and re-dons SCBA		


Comments



Task: Perform the Low Profile	Satisfactory	Unsatisfactory
Properly transmits a MayDay		
Fully extend and release waist strap		
Fully extend and remove right shoulder strap		
Grabs High with the left hand on left strap		
Fully extend left shoulder strap with right hand		
Swings SCBA towards the front with cylinder in on the ground		
Takes a prone position and navigates obstacle		
Maintains contact with left hand on left strap		
Re- Dons SCBA in reverse order		

Comments


Task: Perform the Swim Maneuver	Satisfactory	Unsatisfactory
Properly transmits a MayDay		
Sounds floor on other side of opening		
From knees places right hand on floor on other side of opening		
Head through the opening		
Left hand/arm up over and through the opening		
Rotates body and cylinder through the opening		
Crawls through		

Comments


Evaluator:	Date:
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Overall Performance	Satisfactory	Unsatisfactory
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SCBA 2 - Firefighter Survival

Version - #1
Date - 9/13/2022

Revision # _____
Date _____

Revision # _____
Date _____

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