

WE ALL GO HOME!
The Evolution of Firefighter Accountability Systems

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Dedicated to the heroes of the fire service, who answered the call, never to return home to their families.

We will never forget!

Abstract

JEREMY LYNN ROY: We All Go Home!

(Under the direction of Dr. James Vaughan)

Accountability is arguably the single most important tool that a fire department has at its disposal. Although accountability systems have been used throughout history, one thing is proven: when there is no accountability system in place, it is only a matter of time before firefighters will get injured, or worse, lose their lives. This work will discuss the history of fire department methodology dealing with the creation of incident management accountability systems. In order to provide historical evidence that lack of an accountability system can cause injury or death, case studies of multiple fire departments that have reported line of duty deaths will be discussed. Next, the promising future of firefighter accountability systems will show that the previously discussed issues are actively being addressed. Finally, my personal experience within the fire service as well as accountability systems used in my department will be revealed.

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List of Abbreviations

BC	Battalion Chief
DC4	District Chief of Quadrant 4
E-10	Engine 10 – Lafayette County Fire Department
EMT	Emergency Medical Technician
FD1	Fire Department Chief – Lafayette County Fire Department
FD2	Fire Department Assistant Chief – Lafayette County Fire Department
FDNY	Fire Department of New York
GPM	Gallons Per Minute
GPS	Global Positioning System
HAZMAT	Hazardous Materials
HUD	Heads Up Display
IC	Incident Commander
ID	Identification
IMS	Incident Management System
LCFD	Lafayette County Fire Department
LED	Light Emitting Diode
LODD	Line of Duty Death
MFRI	Maryland Fire and Rescue Institute
NFPA	National Fire Protection Association

NIOSH	National Institute for Occupational Safety and Health
OFD	Oxford Fire Department
PASS	Personal Alert Safety System
PLB	Personal Locator Beacon
PPE	Personal Protective Equipment
PSI	Pounds Per Square Inch
RIT	Rapid Intervention Team
SCBA	Self Contained Breathing Apparatus
SOG	Standard Operating Guidelines

Introduction

A young knight, on a quest to rescue the villagers from the grip of death, shakes in his armor, feeling hopeless as he makes his advance towards the beast's cave. The boy believes this will surely be his own tomb, but just as he reaches the threshold of darkness, a guiding hand lands on his shoulder. The hand comforts him as he realizes he is no longer alone in his hunt. Together, the two prepare to battle the inferno that waits in the darkness. Through every twist and turn and over every obstacle, the intensity of the heat grows exponentially. A deep roar begins to surround them as they inch closer and closer to the core of the lair. They confront their fear as they turn the final corner and stare down the throat of the snarling creature. With shields up and swords at the ready, they deliver a swift, perishing blow directly to the heart of the dragon. Victory! With the chaos subsided, the two knights retreat out of the structure, remove their armor, and take a breath of fresh air as the villagers reunite with their families.

This story repeats itself every single day in the life of a firefighter. Individuals in the community cry out for help when fire begins to clench and encircle their homes. The firefighters arrive, prepared to risk life and limb for those imprisoned by the blaze. Most of the time, the willingness of the responders proves to be successful, as they rescue the victims and extinguish the flames. Occasionally though, the efforts of firefighters do not allow them to prevail as the champion in this hellish bout. In a duty as dangerous as fighting fire, it is essential to have a system of checks and balances, ensuring everyone

can safely return home to their families after each incident. These checks and balances are originated in the form of accountability systems that are encompassed by an overall incident management system.

Throughout history, the incident management system has continuously improved where it can clearly be seen that more and more firefighters are saved with each enhancement. Measures promoted by the fire service have not been able to reduce all risks, and unfortunately, there are some cases, such as the terrorist attacks on September 11, 2001, in which the circumstances do not play out in a favorable manner. These cases are being reduced; however, it is almost impossible to account for every factor within an emergency incident. Sadly, with this being said, it is practically inevitable that firefighters on the frontline will continue to get injured and perish at the mercy of the dragon.

Luckily, advances in technology are creating a safer way to monitor incidents by keeping track of those in the danger zone. There are new developments, from electronic trackers to unmanned drones, which are able to account for the location of firefighters, no matter the hazards that surround them. With these emerging technologies, the risks are mitigated as much as possible, but more importantly, if a problem does arise, a rapid solution can be enacted. These solutions effectively reduce damages and save the lives of firefighters, which in turn, serve as the sole purpose of accountability within the incident management system.

Chapter 1: The Origin of the Incident Management System

When the tone drops, a firefighter experiences an abrupt awakening. He knows that somewhere in the distance, the night sky glows orange. With heart pounding, he scrambles to find some clothes, not worrying whether or not his socks match. The dispatcher announces the report of entrapment within the burning house. Tunnel vision takes over as he immediately begins to focus on the job at hand: rescue the victim. There are brief thoughts about his own love-ones, still slumbering peacefully in their beds, but duty calls, and he must rush into the night. As he speeds down the road, his lights and sirens illuminate and echo off of the surroundings. He is first on scene as a voice calls out from within the house. He knows he should not enter alone, but as the voice grows faint, he neglects reasoning. Smoke and flame continue to billow out the roof for what seems like an eternity, but the firefighter finally emerges with the child in his arms. By this time, others have shown up and are scrambling to charge the hoses and complete various other tasks to aid in dousing the fire. The flames are soon extinguished, allowing the firefighters to load their gear and head back home, where they can rejoin their family in peaceful harmony.

To everyone involved, it seems like a job well done: the child was rescued and half the house was saved. Unfortunately these are the views of the untrained eye. All too often, firefighters feel an overwhelming duty to rescue other people and protect property that they neglect their own personal safety. It is true that the risks of these “heroes” can

sometimes pay off, but it is only a matter of time before they mess up and are not quite so lucky in their efforts. The pride that is instilled from the successes often times boost morale, but this same pride is what leads to the downfall of many individuals within the fire service.

Over the years, leaders in the fire service have noticed these prideful ways and attempted to combat them. These combative weapons are referred to as accountability systems that reside in the armory of the incident management system. The incident management system is exactly what the name implies: a systematic approach for the command, control, and management of an emergency incident. It provides a command structure and designated responsibilities for the functions that must be addressed to stabilize any incident.¹ Within the IMS, accountability systems serve two major purposes. The first is to ensure that everyone entering the area has a specific assignment and, the second is to be able to track all personnel at the scene and identify the location of any missing personnel if a catastrophic event, such as a collapse, should occur.² With these implementations throughout history, pride and safety have been able to coexist in the fire community. In order to discuss these implementations and improvements, one must first discuss the most obvious adversary to the fire service, the fire itself.

Fire is arguably the greatest force of nature that humans have ever been able to harness. It has provided a sense of safety and security that is unparalleled. From turning on a light in the morning, commuting to and from work, and cooking a meal to feed a family, it is utilized everyday. Though it is true that people have been able to create and

¹ *Firefighter's Handbook: Essentials of Firefighting and Emergency Response*, (Clifton Park, NY: Thomson and Delmar Learning, 2004), 37.

² Klaene, Bernard J. and Sanders, Russell E., *Structural Fire Fighting*, (Quincy, MA: National Fire Protection Association, 2000), 111.

develop uses for fire in applications from metalworking to motors, it cannot truly be referred to as an invention, simply because it is a natural occurrence. Being able to reproduce and work with fire has given the human race a sense of power, but with great power comes great responsibility. Often times, people take for granted how much power they truly have over this remarkable energy. All it takes is a careless error, allowing the right combination of fuel, heat, and oxygen to become so great that it overwhelms all that surrounds it. The greatest task has been learning to manage fire while simultaneously preventing it from destroying its user.³ But, who could apprehend such a monster? This is where the risk taker, masked vigilante, and unsung hero all become encompassed into one individual: the firefighter.

In 1736, Benjamin Franklin organized the Union Fire Company in Philadelphia, PA, which officially pronounced the start of the fire service in America.⁴ The method used by his department was a basic bucket brigade system where individuals would line up and pass leather buckets from the water source to the seat of the fire. During these times, equipment did not evolve a great deal. A member of the fire service in Franklin's day would have used the same tools that his grandfather had used. Moreover, his grandchildren would not have used much more effective equipment. The bucket brigade method was the go-to fire solution for the majority of the next 100 years.⁵ It is important to note that, during this time, accountability and incident management systems were practically nonexistent, simply because the firefighters would not be farther than a few

³ *Firefighter's Handbook*, 5.

⁴ *Ibid.*, 23.

⁵ *Ibid.*, 18.

feet away from the next guy passing the buckets, which allowed them to keep track of each other fairly easily.

A problem gradually began to emanate as modern building construction materials evolved. These materials, such as plastic, burned at a much higher temperature and put off more toxic gases than wood or other natural occurring materials. While modern material burns hotter and quicker, fire behavior involves a standard process that radiates, conducts, and convects itself onto anything and anybody that it possibly can. The unextinguished result of an old time fire is exactly the same as a blaze that might occur this afternoon – with death, damage, and destruction. Burned-up new stuff looks about the same as burned-up old stuff...the ultimate difference is only academic.⁶ Due to these increasing hazards though, new technology had to be developed to assist firefighters in extinguishing the flames. Water still reacted to and eliminated fire the same way it always had, but the means in which the water was delivered was where the fire service would find the greatest developments.

The steam wagon era soon began, rendering the bucket brigade obsolete. Steam engines, known as steamers, were used to pressurize water in order to pump it through hoses and nozzles at high pressures to provide a more effective fire suppression technique. When the internal combustion engine was developed, it was not used to pump water, but rather replace the horses that pulled the steam wagons, allowing the fire companies to arrive on the scene of a fire much quicker. Prior to World War I, the internal combustion engine was a novelty, but once the war was over, it became the power source of choice. Once the horsepower of combustion engines improved, water

⁶ Brunacini, Alan V., *Fire Command: The Essentials of Local IMS*, (Jefferson City, MO: Von Hoffmann Corporation, 2002), 27.

tanks were added to the chassis of fire wagons. Prior to this time, several pieces of equipment had to be assembled to fight a fire.⁷ With the rapid progress of engines during that time though, it was not long before there was a solution to transporting these various pieces of equipment.

The fire engine was the first vehicle capable of arriving to the scene of a fire with an operating pump and enough hose to account for whatever job might arise. Soon, more and more equipment was able to be loaded on fire engines, causing them to increase in size. In comparing the capabilities of the engine company to the steamer company, there is an obvious efficiency boost on the engine side when talking about how long it took to get to a fire and actually be able to flow water. There is an interesting comparison when it came to the pump power of each of these companies, though. The control panel of a steamer in the 1880s describes the pump as having a capacity of 1,250 gpm at 150 psi. That is about the average capacity for fire engines today.⁸ We have seen a steady stream of changes revolving around electronics, computers, space-age materials, and design improvements, but today the fire service is still using engines to pump water.⁹

There is a bit of irony associated with these developments of steam engines and internal combustion engines because they both require a source of fire to put out a fire. The majority of people either do not understand how water flows to the fire, or they reasonably care more about the fire that is engulfing their house, causing them to overlook this humor. The phrase we can comically make the association with is “fight fire with fire.” The first literal use of this phrase came in the 19th century when US

⁷ *Firefighter's Handbook*, 16.

⁸ *Ibid.*, 16.

⁹ Brunacini, *Fire Command*, 31.

settlers started small fires to burn off any brush that could potentially ignite during a wildfire.¹⁰ Even though the phrase is not directly derived from the use of engines for fire suppression, individuals who make the reference connection appreciate this comic relief while working in the midst of hell.

The changes associated with the delivery of water to the scene of a fire were a tremendous step for the fire service, but there is one thing that has not changed throughout the years, the role of a firefighter. A firefighter is an individual trained to perform the function of fire prevention and suppression. Depending on the fire department's organization, there may be other areas that firefighters must be knowledgeable about in addition to firefighting. A firefighter may be required to be an EMT or paramedic, a HAZMAT technician, a rescue specialist, a fire investigator, or a fire prevention officer.¹¹ No matter the immense range of tasks asked of the firefighter, the primary duty still reverts back to the title itself, fighting fire. With this role being established, the realization of the dangers associated with the duties have turned the majority of the population away from the calling, but for the few people that accept the challenge, the respect and admiration from the millions of people they protect make the life of a firefighter so much more than anyone outside the fire service could imagine.

As fire evolved, so to had the fire service. Line of duty deaths were increasing at the helm of the beast, and there were no simple measures to prevent it. This is the time that the incident management system began to develop into what it is today. The IMS can be broken down into several major categories that all mesh together in order to keep

¹⁰ Martin, Gary. The Phrase Finder, "Fight fire with fire." Accessed February 28, 2015. <http://www.phrases.org.uk/meanings/fight-fire-with-fire.html>.

¹¹ *Firefighter's Handbook*, 26.

effective accountability of personnel on scene. Some of the most important categories are establishing the chain of command, effectively communicating, developing specific accountability systems, training to Standard Operating Guidelines, and debriefing to continuously improve on incidents. These categories create and develop standards that all firefighters must live up to in order to return home each and every day.

Like nearly every established group, from small businesses to the military, the fire service has a structured chain of command. This chain of command takes the shape of a pyramid, with three different levels: strategic, tactical, and task. At the top of the pyramid, the strategic level is comprised of the Incident Commander and occasionally a few others, but for these purposes, it will just be the IC. The IC has five major responsibilities: provide for safety and survival of the responders, protect and provide care to those in danger, stabilize the situation, conserve property, and assist in stabilizing and normalizing the lives of victims.¹² He will always stage in a central location, outside of the danger zone, where he can have a broad view of the incident and be the most effective. The IC will typically be the most senior member of the fire department because he has the most experiences that can be recalled in order to compare current tactics to ones that worked at previous incidents.

Below the IC on the pyramid is the tactical level, generally comprised of captains and lieutenants of the department. They have an incident view that is more localized than that of the IC, allowing them to gather more detailed information pertaining to the evolution of the scene. Depending on the size of a scene, these individuals could be assigned to monitor multiple stories of a high-rise building or a side of a single-family

¹² Brunacini, *Fire Command*, 32.

house. More often than not, a more localized placement of tactical officers is established, simply because houses are the most common type of fires. It is up to the IC to make the determination of the number of tactical-level members and where to place them on the scene. He also must take into account that the number and positions could change depending on the evolution of the fire scene.

The base of the pyramid is comprised of firefighters that are performing physical duties. The task level takes orders from and relays information to the tactical level. The firefighters on this level are given a very specific area to operate, combined with the efforts of other teams on the same level, to eliminate the dangers on scene, whether that be rescuing trapped victims, putting water on the fire, or ventilating. These are the people that are always greatest in number, in the most dangerous positions, and the most susceptible to injuries and casualties. Accountability, therefore, is most important for this level of the pyramid.

Each of these levels must stick to the assigned chain of command in order to perform their roles efficiently. The task level firefighters should not be in direct contact with the strategic level IC because it begins to hinder the span of control. Typically, the IC has a span of control limited to five tactical individuals who each have a span of control limited to five task individuals. Span of control is important because it allows people to effectively keep up with everyone under them. The span of control limit of five is universally observed on every management level from companies to sectors to the IC.¹³

It is imperative that the IC has complete control of the situation because if there are multiple people giving orders, it could be just as bad as nobody giving orders. The

¹³ *Ibid.*, 283.

specific orders that the IC gives are meant to eliminate freelancing by ensuring everyone has one job to perform in a certain area. Freelancing, where firefighters would take it upon themselves to determine what task that they thought should be done, was the historic method when responders would arrive on the scene of a fire. They would notice where the fire was and attempt to combat it as quick as they could to prevent it from spreading. This system would work only if the firefighters could find and overpower the problem before it overpowered them and although this method was an exciting one, it was extremely dangerous.¹⁴ No matter the hazards, freelancing still continues today due to the fact that firefighters have occasionally found success in this approach, causing a reinforcement of their prideful ways. Freelancing cannot and should not be tolerated.¹⁵

In order for the chain of command to be effective, there must be a strong communication system in place. When someone outside the fire service talks about communication within the fire service, they are usually referring to the emergency dispatch centers they reach when dialing 9-1-1; although this is a crucial part, it is by means not the only one. For members of the fire service, communication takes the form of dispatch, radios, face-to-face contact, and various other methods. Each of these methods combine to allow the fire department pyramid to effectively receive, respond, and record information such as where the incident is taking place to what the conditions are like within a fire.

When a fire breaks out, the first person to be notified is the dispatcher. This notification can come from a variety of sources, but they primarily come via a phone call from a victim or an alarm system within the structure. It is important for dispatch to

¹⁴ *Ibid.*, 22.

¹⁵ Klaene and Sanders, *Structural Fire Fighting*, 26.

gather every bit of data that they can in order to relay the information to the fire department that will be responding to the incident. Some of the important information requested is the location, type of incident, occupant status, callback number, etc. The IC uses this information to establish roles for each of the firefighters that respond to the scene in a manner that he believes will be the most efficient in performing the necessary tasks. This initial wave of information only allows for so much preparedness on any level of command when responding to a fire due to the ever-changing fire conditions.

When the first firefighter arrives on scene, he immediately becomes the IC. It is his responsibility to give an accurate size-up of the scene with details of the type of structure, smoke or fire conditions, possible occupants, hazards such as power lines, and resources such as fire hydrants. The main tool for the firefighter at this time is his radio, which enables him to relay these details to all incoming units. Status reports are very important to the overall success of any major scene operations.¹⁶ These reports allow the incoming officers to make changes to their plans, such as changing from an offensive attack, inside the structure, or defensive attack, outside the structure. The radio communication must be short but effective, allowing the information to be easily comprehended and repeated back to ensure all details are understood by those still on the way to the scene.

Once more personnel arrive on scene, the IC position is given to the senior most officer, allowing the younger, more agile firefighters to perform the physical tasks assigned by the new commander. The old and new IC, for the most concise communication possible, make this change of command face-to-face, then they relay the

¹⁶ *Firefighter's Handbook*, 68.

message over the radio to inform everyone else of the change. Face-to-face communication is also best used when a team of firefighters has to exit for new air bottles and another team enters. The team leaders get together and discuss the layout of the structure that the exiting team encountered along with any sort of hazards such as holes in the floor. This type of communication proves to be the most efficient for these purposes because it allows for a full understanding through clear speech as opposed to a radio.

There are various other forms of communication on the scene of a fire. One of the first things that a firefighter is able to establish is who is in charge, simply by the colors of helmets. In reference back to the fire department pyramid, a white helmet that easily stands out amongst the rest of the department typically denotes the strategic level officer. Next the tactical level of officers typically have red helmets, which are slightly more numerous than the previous. Finally, the task level of firefighters generally have black or yellow helmets, depending on the departmental preferences. Each of these helmets can be customized with the firefighters' name, badge number, special skills, and various other bits of information to easily identify an individual.

There are also forms of emergency communication within the fire scene. If the IC or another officer outside the structure notices a negative change in the fire conditions, something that firefighters on the inside might not notice, they can call for all units to retreat with the universal alarm of three loud, distinct blows of the air horns on the fire apparatus. If for some reason something on the inside occurs, such as a ceiling collapse or a firefighter gets separated from the team, a mayday is voiced as emergency traffic over the radio. Once this occurs, all non-emergency traffic immediately stops, allowing the focus to be on hearing crucial information that can allow for the trapped or lost

firefighters to escape or be rescued. Another means of emergency communication is the use of a personal alert safety system. The PASS device sounds an audible alarm if the firefighter manually activates it or does not move for a short amount of time. This device aids in the swift rescue if the need were ever to arise by allowing the rescuers to follow the sound. With all of these communication systems in place, the safety of firefighters has increased dramatically, but there are still more improvements to be made.

Accountability systems have been put in place by departments to keep a record of who is on scene and performing what job. The IC must initiate an accountability system that includes functional and geographical assignments at the beginning of operations and maintained throughout operation.¹⁷ There are various types of systems being used by different departments, according to their preferences.

One type of accountability system is known as the passport system, and is used by the majority of full-time departments. This system utilizes a series of magnetic or Velcro labels attached to the helmet of each firefighter. At the start of a shift, one of the labels is placed on a small card, or passport, that stays on the apparatus that they will be working on. Once this apparatus responds to a scene, the passport is transferred to the IC, where he can then delegate the members on that apparatus to an assigned task. The second label of each firefighter can be utilized in a couple of ways. Some departments keep the label on the helmet as a form of identification, while others place them on a second passport as they enter a structure. Another accountability system is known as a tag system. The tags

¹⁷ National Fire Protection Association, "NFPA 1561: Command Safety." Last modified 2014. Accessed March 15, 2015. <http://catalog.nfpa.org/2014-NFPA-1561-Standard-on-Emergency-Services-Incident-Management-System-and-Command-Safety-P1433.aspx>.

act in the same manner as the labels in the passport system, except they are hung on a metal ring that serves the same function as the passport card.

These accountability systems coincide with the chain of command and communication, but they are only effective if utilized. The accountability system allows for a flexible solution for fast-and-dirty, offensive front-end operations, while still keeping track of firefighters. The initial-attack wave often times is successful in putting out the fire, but when fires happen in larger structures, the accountability system can easily be overwhelmed with a new flood of resources needed to enhance operations.¹⁸ This is where additional measures need to be put in place to ensure the effectiveness of resources such as accountability systems.

Additional means to boost safety and eliminate freelancing came when departments began developing specific roles and responsibilities within Standard Operating Guidelines. These SOGs aid the IC in teaching firefighters what roles they could expect before they arrive on scene of a fire. Engine companies would know they typically have the role of extinguishing the fire while truck companies would be in charge of tasks such as ventilation. Each department creates their own SOGs, but they generally have the same structure dealing with the chain of command, communication, and accountability systems. Every firefighter receives a copy and must memorize the departmental guidelines in order to serve as an active member. These rules become the building blocks of the informational lifeline that keeps the firefighters safe when they are faced with some of the most extreme environments.

¹⁸ Brunacini, *Fire Command*, 208.

Establishing a chain of command, communication, and accountability systems are effective only if they are practiced on a regular basis. These SOGs can be memorized, but they are much more effective when they are trained on to the point that they become second nature. Good work comes from human skill, which comes from training. Good training is essential to the organizational structure that allows firefighters to perform their job effectively. When firefighters perform at their best, they feel better, which in turns allows them to push to do an even better job.¹⁹ Training allows the firefighters to work in a similar, but safer, environment, as they would normally operate in at the scene of a fire.

It is simple to hand new firefighters a list of the things that they should and should not do, but in order for officers and other firefighters to have any faith that the new round of recruits can save themselves and others in a fire, they need to see their actions first-hand. Soldiers are not placed on the front lines of combat the day they enlist, and firefighters, in the same manner, are not thrown into a burning building before they go through extensive training. Fire training typically lasts for several weeks under the guidance of senior officers of a particular department that the recruits are attempting to join. This in-house training allows the specific SOGs for the department to be drilled and mastered to allow the new firefighters to easily mesh with the others that they will soon be working with.

Accountability training is one of the most important pieces of training that firefighters receive. The objective of this training is to establish a consistent approach to maintaining personnel accountability within the hazard zone of all incidents.²⁰ With so

¹⁹ *Ibid.*, 56.

²⁰ Union County Fire Department, "Accountability Training." Accessed March 16, 2015. www.marysvilleohio.org/DocumentView.aspx?DID=453.

many variables going into the workings of a fire, accountability, being the most important, should be second-nature to allow seamless utilization when the moment of implementation arises. No matter the smallest piece of training, it is important for accountability to be stressed with each and every task.

When accountability systems and communications are in place, safety on the fire scene is exponentially increased. Unfortunately, unforeseen events sometimes occur within structures that cause a firefighter to need rescuing. The IC then has the responsibility of deploying a rapid intervention team. The RIT's responsibility is to stand by, ready at all times to respond and rescue trapped firefighters.²¹ The RIT will typically stand near the main entrance with all tools necessary for forcible entry and rescue. They will carefully monitor radio traffic to gather information on building layout and internal conditions so they can quickly gain access and rescue downed firefighters if and when the mayday alarm is sounded. Once the mayday is sounded, the IC will give direct orders for them to initiate a rescue.²² They should never enter the structure without authorization because they could end up trapped just as easily as the first firefighters.

With all of these systems in place and trained on, firefighters are prepared for the real fires that are to come. There should never be a thought in the minds of firefighters, officers, or any other personnel that their training did not prepare them for anything they will encounter. If even a single person feels this way, the department needs to immediately resolve the issue because that one person could potentially have to save a fellow firefighter on the department. Once everyone feels comfortable performing their

²¹ Klaene and Sanders, *Structural Fire Fighting*, 121.

²² *Firefighter's Handbook*, 733.

assigned tasks, they can officially join the brotherhood, and set out to combat the destructive power of fire that will stand before them.

As the department begins to grow and respond to incidents, it is important for a debriefing session after each major incident. This debriefing serves several purposes from continuous improvement to counseling assistance. Mistakes will be made on the fire ground because firefighters are human, but it is important for departments to learn from the mistakes in order to prevent them from occurring again. Sometimes, firefighters will often be subjected to a traumatic event, such as seeing a burn victim, or being injured themselves. When this occurs, it is important for these responders to talk to officers or older firefighters who have experienced these things already in order to find a means of coping with the incident. Larger departments will have a counselor or chaplain specific for dealing with these types of incidents.

Most firefighters will agree that over the past 300 years, the improvements to the American fire service have been outstanding. From bucket brigades to ladder trucks that reach hundreds of feet into the air, word of mouth to radios that transmit hundreds of miles, and the creation of accountability systems, modern fire hardly stands a chance against the improvements. Occasionally, the dragon rears its ugly head, slips past the defenses, and takes the life of a firefighter. It is up to the departments to continuously improve and train on new techniques and technologies in order to ultimately reduce LODD numbers to zero. Until that time of zero casualties comes, war will endure between the heroic knights and the flaming beast.

Chapter 2: LODD Case Studies

With the establishment of the incident management system within the American fire service, along with advancements in communication and development of accountability systems, it is easy to think that the safety of firefighters has become something to not worry about. Contrary to that belief, there are still firefighters that are getting injured, or worse, perishing at the fire scene due to poor implementation of accountability systems. There are countless examples proving that a lack of various forms of accountability are a major cause for losing great firefighters, even some who are veterans of their department, but poor execution caused their careers to halt abruptly.

The American fire service still questions why there are still so many line of duty deaths when there are so many advancements that are solely purposed to combat them. LODD have remained around one hundred per year for several decades without any sign that the numbers are improving. Even with various initiatives being enacted specifically geared toward implementing new standards for the fire service, the deaths keep occurring. The link to these deaths finally came to light when research determined that when there were no consequences for violating safety standards, they would continue to occur. The safety standards clearly denote the roles of IMS within the fire service, but they are only effective if followed.²³ Unfortunately, it can also be seen that despite

²³ Rounds, Scott M. "Firefighter Safety: Fire Leaders' Perspectives." *Fire Engineering*, Dec. 20, 2013, 77-83.

having accountability systems in place, the knights occasionally prove no match for the dragon's breath.

Many times, building construction proves to be a large factor in line of duty deaths. Statistics have been able to show that a large majority of deaths have occurred when the structure involved with the fire has a basement. In 1966, twelve firefighters were killed after responding to a commercial building fire. Crews quickly attempted to extinguish the fire, but their unfamiliarity with the structure ultimately caused their demise. Upon investigation, it was determined that the building they were in shared a basement with the adjacent building. This adjoining pathway allowed the fire to rapidly advance and surround the firefighters. In 1991, firefighters, again, were attempting to battle a basement fire of a large commercial building, this time in Brackenridge, Pennsylvania. Due to the limited access, the smoke and heat were trapped and began to affect the structural integrity of the building. The steel beams that held up the concrete floors were unprotected and began to soften, eventually failing and causing the floor to collapse onto four firefighters, instantly killing them.²⁴

In a Seattle, Washington warehouse fire in 1995, four firefighters were pronounced dead after responding to what appeared to be a structure with heavy timber construction. After 30 minutes since they arrived on scene, the firefighters fell through the floor directly into the fire beneath them. Upon investigation, it was noticed that part of the floor had been heavily modified with 2 x 4 boards as opposed to the heavy timber construction as originally believed.²⁵ When investigators spoke with the other crews at the fire, nobody knew that the house had been modified. The modification included a

²⁴ *Firefighter's Handbook*, 343.

²⁵ Klaene and Sanders, *Structural Fire Fighting*, 103.

subbasement, where the majority of the fire load actually was. The firefighters on the inside thought they were almost done putting the fire out because they had resorted to hitting the hot spots. By that time, it was too late for the four individuals directly above the fire.

Upon looking back at crew positioning, it was determined that there was actually a group of firefighters that had a hose down in the basement, but they failed to use it because they were worried about the possibility of opposing hose streams. One of the major factors that could have helped the entire scene was better utilization of communication. Every firefighter had been issued a radio, but they chose not to use them. At that point, they could have used their radios to check the positions of other teams within the house. This department typically waited until they interior firefighters needed to change their air bottle, and then they would give a face-to-face report to the IC. This went against several of the crucial principles that IMS attempted to correct, such as using the resource of radios that are provided and following the chain of command. With each of these firefighters attempting to give a direct report to the IC, there was no possible way for all of the conditions inside the house to be noted and monitored efficiently. This proves that even though face-to-face communication is very efficient in relaying information to the IC, when the information is actually needed by more than just the IC, radio communication should always be utilized.²⁶

In a similar manner to the Seattle fire, a fire at the Hotel Vendome in Boston, Massachusetts took the lives of nine firefighters in 1972. The bulk of the fire had already been extinguished, and overhaul operations were under way. Suddenly, five floors in one

²⁶ *Ibid.*, 123.

corner of the building collapsed, taking the firefighters down with it. It was determined after an investigation that there had been a modification to the structure of the basement wall. None of the responders had a clue that this modification had taken place, and even if they did, there was hardly any way to determine it had weakened the structure.²⁷

Another building construction factor that should be noted is large spanning ceilings that typically use of lightweight wood trusses within structures. Five firefighters died in Hackensack, New Jersey when a bowstring truss ceiling collapsed. The firefighters became relaxed when fire conditions inside the structure seemed minimal, but unknowingly, an inferno raged above them in the concealed ceiling space. It was not long before the entire ceiling gave way, trapping the firefighters under the debris, and ultimately resulting in their death.²⁸ It was later noted that the building was a car dealership that had been using the space between the trusses to store a good bit of inventory for the repair garage below.²⁹ Similarly, a fire on Thanksgiving Day in Branford, Connecticut took the life of a firefighter when a lightweight wood truss roof of a carpet store collapsed on him during the task of extinguishing the fire.

Three firefighters in Lake Worth, Texas died while they were advancing a hose into the rear of a church. The roof, composed of lightweight wooden trusses, similar to the Branford fire, ultimately collapsed as the firefighters were in the middle of the building. Another fire in a Chesapeake, Virginia auto parts store killed two firefighters. The auto parts store was part of a strip mall, which was constructed with lightweight wood trusses as well. The firefighters were not aware of the actual conditions because

²⁷ *Ibid.*, 104.

²⁸ *Ibid.*, 103.

²⁹ *Firefighter's Handbook*, 343.

the suspended ceiling was hiding the fire upon their initial entry. The fire ultimately burned through the main truss supports, causing the ceiling to collapse on the two.³⁰

In 1989, two Orange County, Florida firefighters were killed just twelve minutes after arriving on scene when a ceiling collapsed on them in a commercial structure. They entered and reported light smoke and no heat. As they continued to investigate, they were unaware that the tile roof coverings above them were masking the flames. These tiles are often attractive for the look of a room, but they do not allow firefighters to see into the truss space, much less determine the potential of a collapse. In this case, the tiles did just that as the fire worked its way into the truss space above the firefighters, causing a collapse, and killing the men. This fire was also similar to a 1980 fire in an abandoned building in Detroit, Michigan. Again, the firefighters arrived and reported light smoke in the area, but due to the rundown conditions and open space of the commercial building, the fire overwhelmed the ceiling supports and caused a collapse that killed one firefighter trying to escape and two more when a firewall collapsed.³¹ It is important for firefighters to consider the possibility of collapse of these wood trusses, especially in structures such as churches or commercial buildings where the trusses can span large distances without having any support in the middle.

These various cases of building construction causing the death of firefighters might not have been specifically due to the lack of a personnel accountability system, but they could have been prevented. Part of IMS is determining a game plan for a fire attack before even arriving on scene. It should be common practice to understand the building construction within the structures that there may be potential calls to. During these

³⁰ Klaene and Sanders, *Structural Fire Fighting*, 105.

³¹ *Firefighter's Handbook*, 343.

instances, each of the departments could have easily done an occasional walkthrough of buildings within their district to determine that there were basements or wood trusses. Departments can even request a copy of blueprints and structural modification lists to store in a database that can be accessed in order to ensure there are no safety concerns when it comes to fighting fire within the structure. It is even easier now to reference these databases because so many departments are utilizing computer software onboard their apparatuses.

For larger cities, such as Philadelphia, Pennsylvania and New York City, New York, there is a larger risk factor to take into consideration when dealing with high-rise buildings. In 1991, at the One Meridian Plaza in Philadelphia, Pennsylvania, three firefighters took their last breath as they battled a fire. This fire began on the twentieth floor and spread up ten additional stories. Once it got to the thirtieth floor, the building's sprinkler system began to put the fire out. The building began to show signs of potential collapse, so efforts were made to evacuate all teams working inside. For the team that was closest to the bulk of the fire, the complexity of the building along with the smoke conditions caused them to become disoriented, which led to their death from smoke inhalation.³²

In 1993, New York firefighters were called to the World Trade Center after it was reported that a bomb had gone off. The World Trade Center consisted of seven individual buildings, with the most prominent being two 110-story skyscrapers. The sheer magnitude of these buildings would cause trouble for nearly every department, but the FDNY equipped to handle it, even though it required 45 percent of their workforce.

³² *Ibid.*, 344.

The decision was made to attack the basement fires from the start, which proved to be effective in saving thousands of lives. In the end, only six people died that day, none of them being firefighters. This effective firefight and rescue operation began to remove doubts about the potential for death and injury during fires in high-rise buildings.³³

Sadly, eight years later, the FDNY firefighters would not be so fortunate. On the morning of September 11, 2001, terrorists hijacked two commercial airplanes and crashed them into the two towers of the World Trade Center. This catastrophe set the stage for the largest and most valiant rescue mission in the history of the fire service. Firefighters that first arrived were informed that there should be around a four-hour window in which the structure would actually hold up because the buildings' construction was primarily comprised of steel beams with fire-resistive coating. This would have allowed them ample time to rescue most, if not all of the people inside. When the airplanes struck the towers, the force of the impact, combined with the jet fuel that was burning, caused the steel to inevitably be unprotected. This caused the structure to weaken at a much more rapid pace than anyone could have predicted. Less than an hour after the first airplane made impact, the first of the towers collapsed, followed by the second tower around thirty minutes later. Out of all the resources of fire trucks and tools that the FDNY lost, nothing can compare to the resource of lives of the 343 firefighters that were lost performing selfless acts of heroism that day. That event will forever be remembered as the largest tragedy in the history of the fire service, but to the ones who

³³ Klaene and Sanders, *Structural Fire Fighting*, 384-385.

gave their life that day in order to rescue others, they will always have the respect of people throughout the world.³⁴

The FDNY has been regarded as the most proficient fire department in the world, partially due to their extensive training and accountability systems that are in place. This event shows the unrelenting characteristic of fire, in the fact that no matter how many accountability systems there are in place, death and destruction can still occur. Some of the firefighters that responded to the fire on September 11 were on the department during the first bombing of the World Trade Center. The tactics were very similar when it came to the rescue process, even though the bombing occurred on the lower floors and the airplanes struck much higher. The entire department trained for scenarios like those two, hoping they would never actually occur but being prepared if they did. The benefit of being familiar with the building layout as well as having an organized accountability system did in fact benefit the department. Thousands of lives were lost that day, but to the ones who did survive, the rescue operations were not in vain.

With the ever-present need to reduce and hopefully eliminate line of duty deaths in the fire service, there needed to be an organization proactive in finding a solution. The National Institute for Occupational Health and Safety, which was created in 1970, has been evaluating every LODD case, describing the contributing factors and making recommendations to prevent these tragic incidents from occurring. In 2011, two veteran firefighters, with a combined 35 years of experience, were killed while fighting a structure fire in a hillside residence in California. The NIOSH report mentioned several contributing factors such as the construction features of the house that was built into a

³⁴ *Firefighter's Handbook*, 344.

steep sloping hillside and natural horizontal ventilation of the fire since it started on a lower floor, but the major factors that were mentioned go back to the company SOGs and accountability system.

The department was dispatched to the structure with the report of an electrical fire. When they arrived minutes later, they noticed light smoke inside the house as they made entry through the front. It was determined that the fire was below the street-level floor so the firefighters made their way in an attempt to gain access to it. The IC called over the radio for a size-up of the situation, but there was no response from the crew inside. A battalion chief followed the hose and made face-to-face contact with the crew. The BC told them that the best attack would need to be performed from the side of the house as he exited, expecting the crew to follow him. The crew, however, did not follow him out.

At that time, a second crew was getting ready to gain entry at the point where the BC had suggested. As they opened the door, they felt an explosion of heat from the basement area, where the fire was fully involved. This blast, known as a backdraft, was caused when the fire was introduced to a fresh supply of oxygen that caused it to rapidly expand and ignite. The crew at the side of the structure quickly went to the front door, where they were able to follow the hose and find the two downed firefighters. The IC was informed that there was a man down, but he did not realize there were two victims until they were both pulled from the house. Both victims received medical treatment, but it was no use as one died before they reached the hospital and the other died two days later from injuries sustained by the blast. This just goes to show that no matter the age and experience of a firefighter, they can be taken from the world in an instant.

After the investigation, it was obvious that the department's incident management system had failed that day. There were ineffective size-ups, if any at all, as well as a lack of a personnel accountability system. In order to prevent this same occurrence from happening again, they made several key recommendations that the department would need to address immediately. First off, the SOGs for the department should have a defined system for operating at fires in hillside structures, since there are a great deal of similar structures in their area. Second, radio system capabilities needed to be evaluated and improved to ensure more effective communication for the individual teams. Finally, and most importantly, the department needed to ensure that a personnel accountability system was established immediately when arriving to a scene and continued until operations are complete.³⁵

For the firefighters in the Lafayette and Oxford community, luckily, there have been no line of duty deaths while working a fire. There is however, one NIOSH report that hits close to home. In 1998, just an hour away in Marks, Mississippi, two firefighters died while fighting a fire at a strip mall. The IC noticed that the fire was getting out of hand for the small town department so they called for additional resources to be dispatched. Just after 1:00am, the first victim and two additional firefighters were assigned to make an interior attack in one of the stores while the second victim was accompanied by another firefighter to ventilate the same store.

³⁵ National Institute for Occupational Health and Safety, "A Career Lieutenant and Fire Fighter/Paramedic Die in a Hillside Residential House Fire." Last modified March 1, 2012. Accessed March 26, 2015.
<http://www.cdc.gov/niosh/fire/reports/face201113.html>.

Less than thirty minutes into fighting the fire, the roof of the store collapsed. The two firefighters who were with Victim 1 were able to escape from the store but Victim 1 was not. Immediate rescue attempts began as crew after crew depleted all of the available air bottles as they searched for the first victim. Once additional air bottles arrived, nearly two hours after the collapse, Victim 1 was discovered a mere fifteen feet inside the doorway. Rescuers could not believe that he had been so close to them the entire time and they had no clue. Once the rescue of Victim 1 had ceased, the fire was eventually brought under control. At 6:00am, nearly five hours after the incident started, Victim 2 was discovered by firefighters performing overhaul of the store; nobody had a clue that he had even been missing. It was later determined that the firefighter that had accompanied him to the roof was called to perform another assignment, leaving Victim 2 alone on the roof.

The NIOSH report, again, made various contributing factors and key recommendations to the departments involved. First off, the department knew that they did not have adequate resources to perform a safe and effective offensive attack on the strip mall, so they should have begun with a defensive attack until other personnel arrived. The firefighters should be equipped with radios in order to establish a viable source of communications during an incident. Neither of the victims' SCBAs had a PASS alarm on them, which would have allowed rescuers to locate the first victim much faster and actually realize that the second victim was missing. One of the biggest problems was the lack of structure to the IMS between the two departments. One group of firefighters was following the orders from their leader while the other group likewise followed the leader they knew. When mutual aid is requested at the scene of a fire, each

department should have established SOGs to deal with who would command the entire scene. Since there were essentially two ICs, conflicting tasks were issued, which resulted in problems such as the firefighter initially with Victim 2 being called somewhere else.³⁶

Most departments find it easy to relax as they discuss how effective their accountability systems actually are, but in reality, the fire service is a long way away from where accountability should actually be. These NIOSH reports are just a small step in bringing this realization to life as they constantly contribute the LODDs to a flawed accountability system or no accountability system at all. Once an accountability system is created, it should not just be written in a department's SOGs, but it should be constantly practiced and improved upon. The key to developing an accountability system is getting everyone from the chief to the newest rookie on the department to be willing to express the same concern for the safety of themselves and the department as a whole; then, and only then, will the death of firefighters be eliminated.³⁷

³⁶ National Institute for Occupational Health and Safety, "Commercial Building Fire Claims the Lives of Two Volunteer Fire Fighters." Last modified March 19, 1999. Accessed March 26, 2015. <http://www.cdc.gov/niosh/fire/reports/face9821.html>.

³⁷ Robertson, Homer. Firefighter Nation, "Drilling on Accountability." Last modified March 31, 2010. Accessed March 26, 2015. <http://www.firefighternation.com/article/firefighter-safety-and-health/drilling-accountability>.

Chapter 3: The Future of Accountability Systems

Accountability systems such as the passport system or tag system, which are used by the majority of departments today, allow firefighters to be accounted for when they arrive on scene or possibly when they enter a structure, but that is about the extent of it. Radios might allow interior firefighters to relay some information to other crews or the IC, but often times the information is not clearly understood or even transmitted at all. With these accountability systems and communication systems in place, it is noted that the number of line of duty deaths has decreased, but the goal is to eliminate these fatalities all together. The efforts of the fire service to develop new technologies to aid firefighters are beginning to finally take shape.

When responding to a fire, time is of the utmost importance. Response times are generally quick, but there are some occasions where it takes thirty minutes for the first person, much less enough people to fight the fire, to arrive. The incident commander should be able to immediately know exactly who he has available and how to keep them safe on scene. For the IC, addressing the fire and ensuring the safety of those within the building is just as critically important as the safety and accountability of the firefighters themselves.³⁸

³⁸Herold, Brenda. Fresh Ideas in Public Safety, "The Future of Fireground Communications - A Complete Firefighter Accountability System." Last modified Aug 2, 2012. Accessed March 26, 2015.
http://communities.motorolasolutions.com/community/north_america/fresh_ideas/

Fire departments are beginning to increase their use of wireless communications technology. The movement is obviously still evolving, but significant progress can be seen. Technology is helping departments of all sizes to operate more efficiently with access to faster data, better mobility, and real-time situational awareness.³⁹ Some of the most prominent developments to date are the use of radio frequency identification devices in order to track firefighters.

The New York Fire Department has taken the early lead on developing new systems for tracking firefighters on scene. After the collapse of the twin towers on September 11, 2001, where so many heroes gave their lives, the department needed a way to better keep track of their personnel. With a scale of fire that was this large, it could have taken hours to determine which firefighter was in distress. The Electronic Fireground Accountability System was created to incorporate a firefighter's radio and a computer system to allow an individual to be identified by a specific code. This code would be assigned by the company officer at the start of every shift to identify what company each firefighter is with. Once on scene, the codes would be logged according to the firefighter's assigned position. If something were to happen where a firefighter stops responding, or he calls a mayday, the IC would be able to determine who needed help and could then send a rescue crew to the firefighter's known position in the building.⁴⁰

blog/2012/08/02/the-future-of-fireground-communications-a-complete-firefighter-accountability-system.

³⁹ Motorola, "Municipal CIOs and First Responders Find Common Ground in the Need for Life-Saving Technologies." Last modified 2008. Accessed March 26, 2015.

⁴⁰ Jerrard, Jane. Firefighter Nation, "Technology Meets FDNY Accountability." Last modified Nov 1, 2011. Accessed March 26, 2015.
<http://www.firefighternation.com/article/firefighter-safety/technology-meets-fdny-accountability>.

Additionally, the FDNY has begun to utilize a technology that was developed by the military. Firefighters are being outfitted with radio tags that are placed in a pocket that is sewn inside their coat. The tag then transmits a signal every five seconds that is relayed to a signal reader inside the fire apparatus. This combination of transmitter and receiver allows the IC to know who is in the vicinity the instant that they arrive. The data is also sent back to the command center where a large-scale effort needs to be established.

There are pros and cons to this system, as there are with any system. One of the selling points is that the system is relatively inexpensive. Each of the radio tags that the firefighters wear are around \$20 and the receiver is priced at a manageable \$1,100 per truck unit. These low costs enable smaller departments to purchase a fairly advanced system to tremendously boost their on-scene safety. One of the concerns for this system is the fact that it is not extremely accurate on determining an exact location for the firefighters. A six-inch shift in any direction could mean the difference of being on one side of a wall or the other, not to mention the positioning on different floors of a building. This device will need to be further developed, but so far, it appears to be on the right track.⁴¹

OnSite ERT has taken these two systems used by the FDNY and combined them into a system that provides a near hands-free tracking solution for firefighters. Wireless electronic tags are, again, placed in the turnout jackets of all individuals, which allow them to never be forgotten or lost like helmet tags so often are. The radio tags are always

⁴¹ Scola, Nancy. The Washington Post, "NYC firefighters are being tracked with military-developed radio tags." Last modified Sept 3, 2014. Accessed March 26, 2015. <http://www.washingtonpost.com/blogs/the-switch/wp/2014/09/03/nyc-firefighters-are-being-tracked-with-military-developed-radio-tags/>.

on, allowing firefighters to check-in just by arriving to the scene. This system does not rely on radio contact, allowing radio traffic to be reduced, which can be crucial when transmitting emergency messages. The software of the OnSite system allows the IC or safety officer to actively view who is on scene, who made entry into a particular zone of a structure, and who is still inside the structure. All of the data is recorded by the system in chronological order so it can easily be compiled into a run report for the incident and reviewed at a later date if needed. With all of these elements combined, the OnSite ERT system shows a promising future for fire departments when it comes to accountability.⁴²

Another company that is beginning to show rapid technological developments in accountability is Motorola. They have developed the TRX NEON Indoor Location System to track and monitor firefighters, even when GPS is not available. Instead, this system uses a tracking unit that is worn on the firefighter's waist that relays information to an anchor node that is positioned in a staging area. The anchor nodes are able to provide ranging and environmental information to the command software that would be located with the IC. This software provides the IC with a 2D or 3D view of the building with the combination of personnel information such as posture and communication status.

There are some drawbacks to this system, unfortunately. First off, this system is solely outfitted by Motorola, therefore, if a department wanted to incorporate the NEON system into their accountability toolbox, they would have to go through a complete upgrade of radios as well as the tracking units, anchor nodes, and software. A second drawback of the system is that the command software requires an Internet connection. With the advances in cellular data, Internet has become more readily available, but there

⁴² ERT Systems, "Personnel Accountability." Accessed March 26, 2015.
<http://www.onsiteert.com/wp-personnel-accountability3.htm>.

are still many places, in which firefighters would respond, that do not have the necessary signal strength to run this system. One of the largest concerns for this system is the fact that it has to incorporate imaging systems in order to accurately produce the 2D and 3D layouts for the IC.⁴³ Imaging systems have developed within recent years to allow a series of electronic images of any structure to be compiled on a computer and referenced once on the scene of a fire.⁴⁴ The use of imaging systems require the department to actively go through the buildings in their district with the tracking device to create the map that will be used during an incident. This mapping process proves to be very lengthy in order to incorporate every room in every building in a city. Smaller towns might be able to effectively perform this task, but for cities such as New York, it would be nearly impossible. It is true that Motorola has made great strides in their development of accountability systems, but there is still a ways to go for them.

The pursuit of innovative accountability systems has even found its way into academic institutions such as the University of Maryland with funding from the Department of Homeland Security. The Maryland Fire and Rescue Institute has successfully developed a prototype, known as the Sentinel System, which tracks firefighters as they move inside and outside buildings. The MFRI solution is composed of a personal locator beacon that is worn by the firefighter, a base station that collects all of the information about the scene from firefighter positions to environmental data, and a communication network that links all of the units together.

⁴³ Motorola, "Motorola and TRX Systems Indoor Location." Accessed March 26, 2015.
http://www.motorolasolutions.com/content/dam/msi/docs/business/product_lines/apx/documents/mot_trx_neon_indoor_location_data_sheet.pdf.

⁴⁴ Brunacini, *Fire Command*, 153.

Like the Motorola product, the Sentinel System can create a 3D layout of a building extremely effectively if a floor plan of the building the firefighters are in is already on file, but then the Sentinel System takes it a step further. If there is not a floor plan available, the system actively maps out the route taken by the firefighters. The system has been enhanced to not solely rely on information being relayed directly to a base station; rather, a mesh network allows information to be received and retransmitted by the PLB of another firefighter that may be closer to the base station. This improvement allows departments to operate with a lower number of base stations, which lowers the cost for purchasing this system.

Another feature that is specific to the Sentinel System is that it not only tracks the location of firefighters, but it tracks the health, equipment conditions, and various other key pieces of information throughout the fire. As personal protective equipment has developed over the years, it has allowed firefighters to experience much greater temperatures in order to perform the required duties for a much longer duration without the fear of exposure. This advancement in PPE, combined with the adrenaline experienced during the middle of a firefight often causes rescuers to not realize the danger they are in until it is too late. The Sentinel System uses sensors on the turnout jackets to determine the temperatures inside the structure, and with the use of an algorithm that computes exposure time of the jacket model, it is able to provide a warning that the firefighter should evacuate the structure. This is the first system that actively incorporates so many factors into the design, making it one of the most effective accountability systems on the market. The MFRI, with a full understanding of the need

for continuous improvement, is searching for even more advancements to incorporate into their design in order to give firefighters the most secure system possible.⁴⁵

There is one vital piece of equipment that is probably one of the most important, most iconic, and most respected within the fire service: the helmet. Firefighters can tell a great deal about each other just by a quick glance at one another's helmets. There are the gung-ho rookies that often times throw a ton of stickers on their helmets to show all of their training accomplishments; then there are the veterans of the department that do not have the flashy stickers, but what they do have are the marks that can only be described as battle scars from their fights against the dragon. Since this importance of the helmet is recognized throughout the fire service, there have been many developments and proposals to incorporate various accountability systems into them.

Several concepts, from FireCam to Google Glass to the F-35 Joint Strike Fighter Jet, are beginning to take the next steps for helmet innovations. Companies such as FireCam have created fireproof cameras that can be mounted onto firefighters' helmets in order to record the events that go on within the belly of the fiery beast. Video cameras have become a very familiar technology over the last few years and while being able to review the footage at a later date is a vital training resource, the ability to send real-time video is quickly becoming a goal for accountability systems.⁴⁶

Google is developing a device called Google Glass that allows data to be transmitted and received by the operator, with Caterpillar being one of the first

⁴⁵ Goldsman, Neil, and Gilmer Blankenship. Maryland Fire and Rescue Institute, "Indoor and Outdoor Location of Firefighters & Safety Personnel: An Integrated Approach." Last modified April 14, 2006. Accessed March 28, 2015.
http://new.everyonegoeshome.com/resources/MFRI_Report_Sentinel.pdf.

⁴⁶ Brunacini, *Fire Command*, 154.

companies selected to test the system. Google Glass is built like a regular pair of glasses that has a small viewing screen for the user to access information such as standard work instructions while simultaneously being able to take pictures and record video that can be stored and later recalled for training or verification that the work instructions were followed.⁴⁷

The F-35 Lightning II Joint-Strike Fighter Jet is the most advanced fighter jet know to exist in the world today. One of the most important components of the jet, however, is the helmet. The Helmet Mounted Display System allows the pilot to have situational awareness that is unparalleled. Information such as altitude and speed to targeting and warnings are all projected onto the pilot's helmet, establishing a compact, simple-to-use system that greatly reduces the workload and increases responsiveness. There are even infrared cameras that are mounted on the aircraft that allow the pilot to look down at his feet and be able to see the projection of the ground below him. The incorporation of these cameras, again, remove one more unnecessary piece of equipment from the crowded cockpit and allow the pilot to view his surroundings clearly, no matter the time of day.⁴⁸

Motorola took a slightly different approach when they did not look at helmet modifications; instead, they looked to incorporate accountability into the firefighter's air mask when they obtained a partnership with Scott Safety. Scott is an extremely well known producer of SCBAs. Motorola sought to integrate radio and air packs to increase

⁴⁷ Caterpillar, "Caterpillar Selected for Google Glass Explorer Program." Accessed March 29, 2015. <http://www.caterpillar.com/en/news/caterpillarNews/h/caterpillar-selected-for-google-glass-explorer-program.html>.

⁴⁸ Lockheed Martin, "The F-35 Helmet: Unprecedented Situational Awareness." Accessed March 29, 2015. <https://www.f35.com/about/capabilities/helmet>.

firefighter safety, improve situational awareness by the IC and enhance decision making in real time. Data, such as PASS alarm status, air levels, and firefighter ID, is transmitted through the same information system that was previously mentioned in reference to Motorola solutions, but these new pieces of data allow the IC to construct an even higher level of tactical forecasting.⁴⁹

Similar to Motorola, the MFRI has been attempting to incorporate their accountability solutions into SCBA masks. They are putting LED lights into the masks that will warn of possible dangers in air conditions as well as allow users to perform tasks such as navigate a smoky building and rescue a downed firefighter. The future proposal is to incorporate pre-programed text messaging and/or audio messaging into the heads up display that would be ultimately built into the mask. The HUD would finally have a potential to show the floor plan of a building as well as a map of other firefighters paths through the building.⁵⁰

These advances in helmet and SCBA mask technology are really paving the way for a much simpler accountability system for firefighters to use in the sense that the devices are integrated directly into the equipment that is used everyday. A few simple features such as flashlights and beacon strobes are already readily accessible on the market for use in the fire service. There are a great deal of innovations that can and will be made; one of the more prominent features that companies are striving toward, resemble the F-35 helmet with the incorporation of thermal imaging, and will allow

⁴⁹ Scott Safety and Motorola, "Motorola and Scott Safety Accountability Solution." Last modified Aug 15, 2013. Accessed March 29, 2015.
http://www.motorolasolutions.com/content/dam/msi/docs/business/product_lines/apx/documents/motorola_scott_safety_accountability_solution_fact_sheet.pdf.

⁵⁰ Goldsman and Blankenship, "Indoor and Outdoor Location of Firefighters & Safety Personnel: An Integrated Approach."

firefighters to easily navigate a fire with blackout smoke conditions. The only way that firefighters will ever get to most out their technological resources is to constantly train and continuously improve, because fire is, and always will be, the unrelenting beast that waits to destroy the knight, no matter how shiny his armor is.

Chapter 4: My Personal History of the Fire Service

During my high school years, the saying, “You can do anything and be anything if you set your mind it,” is something that I personally believed that I was going to take full advantage of. I had a plan to join the Army and become a scout sniper or an Apache Helicopter pilot. I saw other men and women going overseas to defend my country, and I wanted to join them. It felt like a calling, like I was meant to follow in their footsteps in order to provide safety to the nation and honor to my family. I began to meet with recruiters and discuss my options of service. Should I go to college and become an officer or leave straight from high school to jump in the trenches with the ones I would call my brothers? There were so many options I had to consider, but soon enough my decision was made for me.

On June 6, 2009, just 23 days before I would celebrate my 17th birthday, I was diagnosed with Type 1 Diabetes. I feared the worst as I looked into Dr. Will Dabbs’ eyes and asked, “Does this mean I cannot join the Military?” He did not even have to say a word; his face gave me the answer I needed. All of the thought I had devoted to my military career immediately ceased in relevance. Knowing that I would never be able to accomplish my dream of serving tore me apart. As I spent the next few days at Lebonheur Children’s Hospital trying to get my blood sugar regulated, the pain of that realization was overwhelmed by the shear volume of information I was receiving about this new lifestyle change associated with diabetes. I soon began to change my thoughts

to worrying more about college, since I was entering my senior year at Lafayette High School. After visiting several universities such as Washington University in St. Louis, I knew that my heart was set in Oxford. In August 2010, I officially began my college career as an Ole Miss Rebel.

In December of the same year, I was able to reflect on the decision I had made to attend Ole Miss. I was enjoying class, making new friends, and making the most of college, but there was something missing. I still wanted a way to serve the community in a unique way that resembled the fast paced, adventurous life of the military. Nothing really came to mind, so the void continued to reside within me. It was not until January 2011, just a few days after New Years that I finally had a realization as to what could fill the void.

On that sunny day, I found myself shooting a few left over fireworks from the festivities just a few days before. The bag of bottle rockets was dwindling when I happened to notice a small fire had started several feet away from where I was. Before I knew it, the wind had picked up and caused the fire to quickly get out of hand. Try as I might, there was no way that I could put the fire out before it could reach the woods nearby. I dialed 9-1-1, and just a few minutes later, Engine 10 from the Lafayette County Fire Department arrived. In watching the guys unload from the truck and quickly go to work putting the fire out, I noticed each and every one of them had a smile on their face. They were having such a great time doing their job while everyone watching beside me was having a mild panic attack. As soon as I saw this, I knew that I had found what I was looking for.

Before the firefighters from E-10 left the scene, I asked them if there were any openings on the department. Much to my surprise, they informed me that a new volunteer certification class was starting at the end of the month. The very next day, I drove to Central Station to fill out an application to join the department. I felt like a kid in a candy shop as I walked through the bay doors and saw the various trucks waiting to mobilize to the next inferno. This is when I met Jerry Johnson, the LCFD Administrative Officer, for the first time. He gave me a brief tour of the station and informed me when I should return for the first night of volunteer certification. I somehow managed to contain my excitement as I left the station as the newest recruit to the LCFD.

The following Tuesday, I joined the 20 guys that I would train with over the next three months. The familiar faces of Jake Clemmons and JP Nelson were comforting as I found a seat close to the front of the class. I began to look around the room and noticed several older individuals starting to gather on the side of the room near the front. Jeff Roy stepped up to the podium and announced himself as the Fire Chief, FD1. One by one, he introduced the group standing against the wall as the instructors for the class. Little did I know at the time how great of an impact that these people would have on shaping me into the man I am today.

Once the introductions were done, each student was handed a textbook, workbook, and small brass tag with a number stamped on it. We understood what the books were for, but each of us looked around, puzzled about the tags. Someone finally asked the question that we were all thinking, "What are the tags for?" One of the instructors, Matt Hinkle, mentioned they were our accountability system for the duration

of the class. I was not really sure what that meant, but soon enough it would become very clear.

After the introductions and classroom materials were handed to us, we gathered in the truck bay for one of the most exciting events that would occur during our training: getting our turnouts. Each one of us waited patiently in line as Jerry asked for our sizes. As he called my name, a giant smile appeared on my face because I viewed this as my first official step to becoming a firefighter. The helmet, boots, gloves, and Nomex hood were all brand new, but the turnout jacket and bunker pants showed obvious signs of prior use. I am sure that some of the other students wanted their jacket and pants to be brand new, but strangely, I felt like the used gear allowed me to have a connection with the firefighter that had previously worn them, even though I had no clue who that actually was.

Once we all had our gear, Larry McKinney, FD2, began to walk us step by step on how to correctly don the gear and ensure there was no skin showing that could possibly get burned once we were actually in a fire. We were in the truck bay for over an hour that night, simply putting on and taking off our gear, working to make the task second nature. Once we became fairly proficient with our personal turnout gear, we moved on to incorporate self-contained breathing apparatuses. After putting the mask on for the very first time, I knew that some people in the class were going to have trouble with claustrophobia. Our skill check-off sheet in the workbook mentioned that we had to don our turnouts in a minute or less, and don our turnouts and SCBA in two minutes or less. This seemed like a near impossible task for several of my classmates, considering some of them were taking up to five minutes on just the turnouts alone. Thankfully,

Larry was able to teach us a few tricks he had learned over the years working for the LCFD and Oxford Fire Department; while he was at OFD he completed a full dressing drill, including SCBA in only 45 seconds, so we definitely respected his methods.

As the class drew close to the end, the instructors pulled out stopwatches as they informed us that our last dressing drill of the night would be recorded in our workbooks as a base time. On your mark, get set, go. We all frantically began stumbling around as we raced the clock as well as each other to not only beat the two-minute mark, but also try and be the first one done. As the timer struck 1 minute and 35 seconds, Taylor Marks put his hands up, signaling he was done. Just a split second later, I put my hands up, soon followed by the rest of the class. Once we signaled we were done, the instructors came around and individually checked to see that everything was completely and correctly donned. I heard the instructors correcting a few minor problems with most everyone's gear as they neared Taylor and myself. I was waiting to hear my mistakes from the instructor when he informed me that I had performed a successful dressing drill with no mistakes. As I looked over and watched Taylor's inspection, I was slightly relieved to hear that he had one tiny fault of not turning on his air bottle completely. This small victory began to fuel a friendly competition between Taylor and I that would last throughout our time in the class.

Two days later, we returned to the station for our next night of cert training. The large image of a single word was being projected on the screen at the front of the class: accountability. The instructor told us to grab our helmets and the brass tags that we were issued the class before. He picked up one of the helmets, showed us a metal loop on the back of the helmet, clipped the tag onto the loop, and instructed us to do the same. We

began discussing what we thought the purpose of accountability was. Answers consisting of very similar comments began to fill the room until the instructor cut us off, admiring the fact that we had a general idea of what accountability was. It was stressed to us that we must have these tags at all times in order to participate in any of the skills that we were to accomplish within the next few weeks. In order to move into a skill station, we had to remove one of the tags and hang it on a ring at the entrance of that station. Once we completed the skill, we had to remember to retrieve our tag in order to move onto the next skill.

He went on to explain that everything within the fire service was done with teamwork of at least two people, and that there would never be a lone firefighter within our class. Several students, including myself began to smirk when the question, “What about in the bathroom?” was asked. With the most serious expression the instructor could possibly muster, he said, “Even in the bathroom.” At this point, the smirks were wiped off our faces because we started to understand just how crucial accountability in the fire service was.

We were given permission for the first and only time within the class to pull out our cell phones. The instructors wanted us to exchange numbers in order to hold each other accountable in showing up to class and making sure we reviewed the assigned material before each meeting. This was another simple, but effective, way for us to grow closer as a class and ensure everyone was on the same page. This system became a great asset to all of us because occasionally something would come up and we would need to catch up on a missed class or assignment. I can recall a few times that I personally needed to ask which chapter we were covering during certain classes that I missed for

various reasons; each and every time, there were multiple people looking out for me with near instantaneous answers to my questions.

That next class night, we were exposed to the SCBA “blackout” training for the first time. We donned our gear in another timed dressing drill that was recorded in our workbooks, proving that our times had in fact improved from the previous week. Once we had our gear on, our masks were covered with a rag to prevent us from seeing where we were going or what we were touching. With our vision cut off, our hearing and touch senses were heightened. The instructors told us that this was typically the case when working within a smoke-filled structure so we needed to get used to it. Two by two, we were selected to make our way into the truck bay where an obstacle course was set up for us to attempt to maneuver in the pitch-black confines of our masks.

Chad Killcreas was selected to be my partner for the evolution. We made our way to the door and handed our tags to the instructor. Once inside the bay, we began a left hand pattern: a rescue technique where the lead person would keep constant contact with the wall using his left hand, and the second person would keep in contact with the first person while simultaneously sweeping the surroundings for possible victims. We had not even been in the room for thirty seconds before Chad became the first victim to claustrophobia, as I had predicted the first night we each donned the SCBAs. The instructor held me in place as they quickly assigned another partner to me. We were soon navigating our way through the maze of obstacles that the instructors strategically laid out in order to try and confuse us. Much to their surprise, my new partner and I were able to navigate the course in impressive time. Unfortunately we were told that we had missed a victim, which was shown to be a hose dummy positioned under the hose rack; in

our defense, we had never seen a hose dummy to know to expect it. We then were able to exit the skill area as we once again collected our tags from the instructor.

The classroom time continued to bring us back to the station every Tuesday and Thursday in order to go through the book and learn everything from the history of the fire service to modern improvements. Once we had accomplished enough classroom lectures, we added Saturdays, known as skills days, to the itinerary. This is when the majority of the fun activities would take place because we actually got a more hands on approach to learning the specific ways the LCFD actually functioned. We began with the simple skills such as raising a ladder, rolling a hose, and connecting two sections of hose. Buster Hollowell, DC4, was our instructor for the hose sections. He had several tricks he had learned over the years while serving as a firefighter for the LCFD and OFD. One of his most memorable tricks was showing us that even when it seems like a single person cannot undo a hose coupling, simply applying pressure with your knee against a coupling that is correctly oriented on the ground could relieve pressure and cause the threads to loosen their grip.

We began to transition from simple, individual skills to complex evolutions within the heat building that encompassed everything we had learned. The instructors would divide us into teams, brief us on the “emergency” at hand, and stand back as we attempted to operate as a full fire department. During these evolutions, accountability and safety were stressed because this was the closest thing we would experience to a real fire. On one of my early evolutions within the heat building, my partner and I were performing really well, or so we thought.

We had quickly rescued two victims and finished our search of a single floor of the structure. When we exited the same door we entered, the instructor that sent us in told us to take off our masks and that we were going to perform a walk-through in order to debrief the task we had. As soon as we walked in the door, the instructor shut it, revealing a baby that was strategically placed to see if we had searched every little bit of the floor. Missing the baby, even though it was actually just a foot off the larger rescue dummy, really hit my partner and me hard, because the instructor painted a vivid picture as if we were in a real fire situation.

Once my partner and I were able to leave the building, we slowly walked back to the truck bay, where we handed our SCBAs to the next group. At the end of the day, the instructors did an overall debrief with the entire class, where some more bad news was about to come my way. After the tough realization of failing to rescue the baby, my partner and I had forgotten to grab our accountability tags from the instructor's ring. We were told that we would have to write a 500-word essay on the consequences of not using an accountability system. I got the paper done by the next class, but needless to say, I never forgot to add or remove my tags from the instructor's ring again.

One Saturday, we had just finished our evolutions and were being debriefed on how well we had performed that day when I noticed an alarm coming from within the heat building. Immediately, I realized that the alarm was a PASS device from one of the firefighters in the class. The instructors and students all had a frightened look on their face because none of them realized Brandon Woodall, the class captain, was missing. I immediately grabbed the thermal imaging camera and told Taylor to mask-up with me. We deployed as the RIT and quickly followed the alarm to discover that Brandon was

positioned under a little debris to simulate a ceiling collapse. There was no time to waste as I grabbed the straps of Brandon's SCBA and pulled him from the structure.

The instructors were very relieved to see how we handled the situation, and they expressed their respect of my leadership and quick thinking once I realized something was wrong. This became a lesson for all of us to stress the importance of accountability whether it is training or not. If that had been a real fire, we knew we would have lost a brother and would have been attending a funeral for him within the next few days. The thought of losing a fellow firefighter hit each and every person in the class hard, but at the same time, it allowed us to grow closer together and begin to really understand how the brotherhood of the fire department really was.

As the training advanced, so did our efficiency; we soon began to outperform the expectations of the instructors. They wanted to push our skills and see just how proficient we had become in our training by staging a large-scale fire ground simulation that broke us into several teams attempting to perform victim rescues and self-rescues at the same time. This night was referred to as survival night because we were told there were going to be multiple obstacles that were specifically meant to invoke problems. We would not only have to get ourselves through the perplexing labyrinth but also any victims that we encountered.

My team, comprised of Taylor and Donovan Williamson, was quickly briefed on the situation of a basement fire with possible entrapment and that our job was purely a search and rescue mission. After placing our tags on the instructor ring, we were told to enter on a right hand pattern and use any skills we needed to in order to be successful. We soon discovered that the task was going to be the most difficult we had ever faced.

Just inside the door, we were confronted with a tiny crawl space that would not allow us to enter with an SCBA on our back. We recalled a method of removing the SCBA while still keeping the mask on and connected to the bottle; we placed the bottle in front of us in the pipe and slowly wormed our way through.

On the other side of the crawl space, we found our first victim, one of the smaller rescue dummies. I crawled back through the pipe and had them push the victim to me as I pulled it toward the door. Both of them came back through the pipe behind the victim as I was placing the victim outside the structure. We looked to the instructor, thinking we were finished, but to our surprise, John Russell, who now serves as a Deputy Fire Marshall, told us we were not. We check our air levels to see how long we can work as we go back into the structure. This time we quickly moved through the pipe and onto the next room. I began to feel a tug on my air bottle but I could not figure out what was causing it. We had crawled right into the single toughest obstacle that the instructors had come up with: a wooden frame with hose and wires strung through it.

I relayed the information about the obstacle to my team as I slowly backed out of the frame to free myself. We had learned a technique that resembled a swimmer performing the backstroke. I placed my bottle in the bottom right corner of the frame and reached hand over hand to slowly pull myself through the frame, avoiding the hanging objects as much as possible. Once through, we were able to quickly move through the next room and down the stairs to the basement. We were not confronted with real fire, but the heat had sweat pouring down our bodies.

The instructors decided it was time to throw us for a loop. They pulled all three of us off the wall, eliminating our sense of direction, and told us that part of the structure

had collapsed behind us, preventing us from leaving the way we entered. One final piece of information, that proved to be the most useful, was that another team had left a charged fire hose down in the basement when they exited. We signaled a mayday and began to search for the hose, ensuring we were still in voice contact with each other. I finally grabbed hold of the one and three quarter inch hose and signaled for Taylor and Donovan to make their way to my side.

Every firefighter knows, or hopefully knows, the saying, “Smooth bump bump to the pump.” This saying references the orientation of the hose couplings in a manner that the female end has a smooth section and a raised section and the male section only has a raised section. I knew that if I followed the correct orientation, from female to male of the combined couplings, my team would safely make our way out of the structure. That is exactly what happened as seconds later we emerged on the opposite side of the structure, but the point is we were out of the danger zone.

As the skills days were drawing to an end, we knew the written test for the Mississippi Fire Academy was right around the corner. Several members of the class decided to meet at Central Station one night to get in some last minute studying, but less than a hour in, our efforts were halted with the drop of a tone. The majority of my class responded to our first structure fire that night, where even though we did not get to make the initial attack, just being on scene and helping with some of the smaller tasks allowed us to see what we had been training for so long.

Test day finally arrived, but none of us were worried; we had been trained by some of the best in the business. About a week after taking the test, the results were in. All of the class showed up to the station, stood in a line, and anxiously waited for Jerry to

tell us our grades. When he got to me, he had a smile as he said, “Congrats, you made one of the highest grades: 95.” I was excited beyond explanation. I had finally gotten done with the written section of volunteer cert, and the only thing standing in my way was skills day at the fire academy.

The day before we were scheduled to go to Jackson, Mississippi, I went up to the Central Station to verify the driving arrangements of the class. I was sitting down on the couch when the tone dropped. I ran out to my truck, grabbed my gear, and got on E-10 with several of the experienced firefighters, including Officer Wes Anderson. The call was for a structure fire on County Road 104, just a couple miles away from where we were stationed. As I sat in the back seat, with only my turnouts on, I will never forget Wes turning to me and yelled, “What the hell are you waiting for? Put your mask on.” Dumbfounded, I did not question his authority and clamored to unhook the SCBA from the seatback.

When we arrived on scene, he told me to pull the hose and get ready. “Get ready for what?” I thought to myself. Within a split second, I knew what I was supposed to get ready for as he grabbed me and we entered the house. As quickly as we could, we climbed over piles of clothes and other household items to get to the back bedroom in the house where the fire was spreading. Wes handed me the nozzle and told me to put it out. Within a minute, I had put 150 gallons of water into the bedroom, but the fire was out; I had made my first interior attack.

As we gathered our gear, the guys that were on E-10 started laughing at Wes’ words to me on the way to the fire. This is where the story of the young knight originated in my mind. I was scared to death going into the unfamiliar territory in search of the

dragon. I did not know what to expect in my first face-to-face experience with such a monster. Wes proved to be that comforting hand that allowed me to feel comforted knowing that I was not alone, that an older knight was there looking out for me. This was it: the beginning of my love of fighting fire. At that very moment, I felt like I was finally apart of something bigger than myself.

The next day my class gathered at the station at 5am. We set out on the way to the academy, still slightly worried as to what was to come. On the way, I could not help but tell my story of the previous day's fire, knowing good and well that I was provoking jealousy in everyone. When we arrived to the academy, we uniformly entered the auditorium, where we would have a rundown of the day's testing schedule. Just before we were dismissed to go get our turnout gear, the head instructor read a short list of names, including my own, to acknowledge the firefighters who scored the highest on the written test.

Our group was split up and mixed in with members of another department. We donned our gear, not even in a dressing drill manner, as everyone had been stressing, and headed toward the first station. We moved from evolution to evolution, performing tasks such as tying a clove hitch knot around an object, to simulating cutting into a garage door. The guys in my class were performing to our high expectations, but the people from some of the other departments scared me in how clueless they were in so many of the tasks. I was glad to have the fortune to be with one of the top volunteer departments in the state as opposed to a department where members were struggling to simply roll a hose.

After lunch was the big event of the day, performing a fire attack in the academy's live fire building. JP Nelson was my partner as we grabbed an SCBA, climbed the stairs to the tower door, and heard the instructor's commands. We entered on a left-hand pattern with me on the nozzle. After a quick ten feet down the hall, I turned into a room where a bed was on fire. I quickly opened up the nozzle and extinguished the flames with the instructor sitting in the corner of the room. JP and I exited and gathered with our class. Not long after that, the good news came: everyone in my class had passed with flying colors. With our certificates in hand, we could now officially call ourselves Lafayette County Firefighters.

Once we got back to Oxford, we turned in our class materials including the small, numbered brass accountability tags. In the next couple days we were issued new brass tags that had our names stamped into them. These accountability tags allowed our training efforts to flow seamlessly into the actual fire ground operations with the LCFD. Unfortunately, I soon began to realize that the only ones who were consistently utilizing the accountability system were the guys from my class. Slowly but surely, even those guys, and myself, began to falter on utilizing the system.

Flash-forward to today, I have become one of the most experienced firefighters on the department. There have since been three new classes of volunteers and one current volunteer certification class. I have been through numerous trainings from storm spotting to communication efficiency. Looking back to my departmental resume, I am now a certified Rope Rescue Technician, Confined Space Technician, and Emergency Medical Responder. I took the continuous improvement aspect and applied it to my fire training

because I never wanted to be the one who could not perform an emergency task when it was asked of me.

My can-do attitude has allowed me to aid in training the younger firefighters because I am able to tell them my stories of being in their position just a few years ago. Being close in age to the new guys, along with the respect from the older guys provided me a chance to take the next step in the department. In Fall 2014, I was elected as the youngest Lieutenant to ever serve the Lafayette County Fire Department, as a 22 year old with not quite four full years of experience under my belt. This position has gained me a great deal of respect not only within the LCFD, but also from the fire service at large. When I visit other departments, such as ones in Washington D.C. or Nashville, I feel a sense of pride when I receive congratulations of my position from firefighters who have devoted twenty or more years to the service.

In the same sense that Wes was my guiding knight, so too was I becoming the guiding knight for the young warriors. I was able to pass down several of the tips and tricks that I had learned from Buster and several other guys. Several of my friends from high school and college ended up coming to me and asking about joining the department. I was able to provide recommendations for them, which allowed some of them to join and complete the training. Turner Ables, a member of my fraternity, is one of the guys that I helped through training and some of his early fires. I specifically took him and a couple other guys under my guidance in order to keep them interested in the department, hoping they would have the same experience I did where the love for fighting fire would simply spark up.

Today, we still utilize the same accountability system as before, but our tags have been improved from brass to anodized aluminum, and they now have a little more information on them. We still do not use them as much as we should, but I constantly try to show others that I am active in the utilization of the system so they will hopefully begin to do the same. I believe that as the new electronic systems begin to develop in much more cost effective solutions, the LCFD will need to actively seek to purchase one. Being a volunteer department, the issue is always trying to find money to fund various projects from purchasing new apparatus to hopefully purchasing these new systems.

My department is fairly lucky in the fact that we have a great network of fundraising that takes place alongside the grants and governmental funding that we receive. Members such as Douglass Sullivan-Gonzalez have been at the forefront of the fundraising efforts, which was duly noted by the department when he was chosen as Firefighter of the Year. His continual efforts, combined with Jerry Johnson's ability to find grants for the department allow the future of the LCFD to seem very bright. I only hope that we are able to establish an effective accountability system in our department before it is too late, because right now, it is only a matter of time before something happens.

When I look back to the start of my second semester of college, I am not entirely sure what all was running through my mind that would inevitably cause me to choose the path of becoming a firefighter. I think of one of my very early birthdays at Avent's Park, where my uncle, who worked for OFD, was able to bring Truck 1 and put on a demonstration for my friends. When the firefighters stepped off the truck in their gear, including SCBAs, I was scared to death and hid behind my mom. I also recall a fire that

I started around ten years ago while my friend Morgan Klepzig and I were shooting fireworks in his back yard when there was nobody supervising us. That was my first time calling 9-1-1 and one of the moments that Scott Stewart, who was my youth minister, and is now under my supervision as Lieutenant, always jokes about. Lastly, I think back to that early January day when I started my second fireworks fire. Looking back now, I cannot help but laugh about each of these instances.

Could this series of events associated with fire really be the reason that I inevitably became the firefighter that I am today? Ironically, I think it could possibly be a factor, but in the end, what you see is what you get from me. I am the same as everyone else who wakes up and goes to work or school in the morning. I eat, drink, and sleep the same way as the people who walk beside me. I do however belong to a calling: a calling to serve others. This serving is not seeking the glory of being called a hero, because that is not what I am. I am, and will always be, a firefighter.

Bibliography

- Brunacini, Alan V., *Fire Command: The Essentials of Local IMS*, (Jefferson City, MO: Von Hoffmann Corporation, 2002).
- Caterpillar, "Caterpillar Selected for Google Glass Explorer Program." Accessed March 29, 2015.
<http://www.caterpillar.com/en/news/caterpillarNews/h/caterpillar-selected-for-google-glass-explorer-program.html>.
- ERT Systems, "Personnel Accountability." Accessed March 26, 2015.
<http://www.onsiteert.com/wp-personnel-accountability3.htm>.
- Firefighter's Handbook: Essentials of Firefighting and Emergency Response*, (Clifton Park, NY: Thomson and Delmar Learning, 2004).
- Goldsman, Neil, and Gilmer Blankenship. Maryland Fire and Rescue Institute , "Indoor and Outdoor Location of Firefighters & Safety Personnel: An Integrated Approach." Last modified April 14, 2006. Accessed March 28, 2015.
http://new.everyonegoeshome.com/resources/MFRI_Report_Sentinel.pdf.
- Herold, Brenda. Fresh Ideas in Public Safety, "The Future of Fireground Communications - A Complete Firefighter Accountability System." Last modified Aug 2, 2012. Accessed March 26, 2015.
http://communities.motorolasolutions.com/community/north_america/fresh_ideas/blog/2012/08/02/the-future-of-fireground-communications-a-complete-firefighter-accountability-system.
- Jerrard, Jane. Firefighter Nation, "Technology Meets FDNY Accountability." Last modified Nov 1, 2011. Accessed March 26, 2015.
<http://www.firefighternation.com/article/firefighter-safety/technology-meets-fdny-accountability>.
- Klaene, Bernard J. and Sanders, Russell E., *Structural Fire Fighting*, (Quincy, MA: National Fire Protection Association, 2000).
- Lockheed Martin, "The F-35 Helmet: Unprecedented Situational Awareness." Accessed March 29, 2015. <https://www.f35.com/about/capabilities/helmet>.

- Martin, Gary. The Phrase Finder, "Fight fire with fire." Accessed February 28, 2015.
<http://www.phrases.org.uk/meanings/fight-fire-with-fire.html>.
- Motorola, "Motorola and TRX Systems Indoor Location." Accessed March 26, 2015.
http://www.motorolasolutions.com/content/dam/msi/docs/business/product_lines/apx/documents/mot_trx_neon_indoor_location_data_sheet.pdf.
- Motorola, "Municipal CIOs and First Responders Find Common Ground in the Need for Life-Saving Technologies." Last modified 2008. Accessed March 26, 2015.
- National Fire Protection Association, "NFPA 1561: Command Safety." Last modified 2014. Accessed March 15, 2015. <http://catalog.nfpa.org/2014-NFPA-1561-Standard-on-Emergency-Services-Incident-Management-System-and-Command-Safety-P1433.aspx>.
- National Institute for Occupational Health and Safety, "A Career Lieutenant and Fire Fighter/Paramedic Die in a Hillside Residential House Fire." Last modified March 1, 2012. Accessed March 26, 2015.
<http://www.cdc.gov/niosh/fire/reports/face201113.html>.
- National Institute for Occupational Health and Safety, "Commercial Building Fire Claims the Lives of Two Volunteer Fire Fighters." Last modified March 19, 1999. Accessed March 26, 2015. <http://www.cdc.gov/niosh/fire/reports/face9821.html>.
- Robertson, Homer. Firefighter Nation, "Drilling on Accountability." Last modified March 31, 2010. Accessed March 26, 2015.
<http://www.firefighternation.com/article/firefighter-safety-and-health/drilling-accountability>.
- Rounds, Scott M. "Firefighter Safety: Fire Leaders' Perspectives." *Fire Engineering*, Dec. 20, 2013, 77-83.
- Scola, Nancy. The Washington Post, "NYC firefighters are being tracked with military-developed radio tags." Last modified Sept 3, 2014. Accessed March 26, 2015. <http://www.washingtonpost.com/blogs/the-switch/wp/2014/09/03/nyc-firefighters-are-being-tracked-with-military-developed-radio-tags/>.
- Scott Safety and Motorola, "Motorola and Scott Safety Accountability Solution." Last modified Aug 15, 2013. Accessed March 29, 2015.
http://www.motorolasolutions.com/content/dam/msi/docs/business/product_lines/apx/documents/motorola_scott_safety_accountability_solution_fact_sheet.pdf.
- Union County Fire Department, "Accountability Training." Accessed March 16, 2015.
www.marysvilleohio.org/DocumentView.aspx?DID=453.