

Fire Engineering

Surviving The Battleground In Structural Firefighting

By Lt. Mike Mason

Based upon repetitive behaviors in aggressive structural firefighting we need to start adjusting are thinking regarding our decision process and our actions at structural fires that will help eradicate and reduce injuries and fatalities to firefighters. That being said we should be paying closer attention to hard lessons learned and begin the process of preparing our firefighters, officers and commanders in the true merits of our operational aggressiveness that may result in the injury or death to one of our own. It is with true understanding though that this is sometimes the price we pay due to the nature of the sometimes unpredictable fireground and our willingness to give our lives in the effort to save others. In short we must refine our strategic and tactical operations as they relate to the modern day fireground and the structural fire behaviors that happen within modern day lightweight construction and the modern day contents inside these structures producing ever increasing heat release rates.

Sheer determination and our aggressive attitudes is what make the American firefighter fight the fight in this modern day built environment. Tradition has paved the way for our aggressive operations and now we must begin to modify and adjust our strategies and tactics into a better model of the initial risks, safety and survivability for both civilian and firefighter alike. This initial risk assessment and profiling must be ingrained into all ranks so the dynamic fireground can be integrated with sound tactical operations along with a safety conscious proactive strategic process. The initial considerations and questions when engaging firefighting at structural fires are the following:

- **How are you basing your Rules of Engagement at fires?**
- **How effective are the tasks and strategies being performed minute by minute?**
- **Are your operating guidelines driven by aggressive actions or is there some measured control integrated within them?**
- **Are accurate size-ups by first arriving companies being established?**
- **Do all ranks account for risks and adjustments to the risks presented in a given moment?**

- **Are company officers in true control of the tactical actions?**
- **Are the fireground strategies correlating with the occupancy type?**
- **Is there a sufficient force to overcome the demands?**

In essence we must learn to provide an understanding of predictable performance when applying our tactical and strategic actions to any building as well as its relationship to occupancy types. We must provide some form of tactical and strategic patience within our instincts to perform something immediately through our aggressive nature. Each fire and the host of building types and their occupancies put in front of us propose unique challenges. These challenges reveal certain degrees of risk which should help establish the right tactical and strategic choices being made. Many times firefighters and those in charge hedge their bets on past performance of basic tactical and strategic principles that are continually performed from one structure fire to the next. This is providing for a recipe for disaster because the reality is that structures, their fuel loads and construction are no longer predictable due to lightweight construction technologies and their ability to hold in heat. These elements many times exceed in our ability to perform under conventional past practices which can produce results in unsafe practices. Usually the unsafe practice is revealed down at the company level but it has also reared its ugly head at the command level. It is usually a lack in not recognizing or reacting to dynamic risks that are presenting themselves in a fast passed fire dynamic fireground. Providing some simple steps in accountability of one's actions on the fire ground can help dramatically reduce unsafe practices.

- **Avoid engaging in any known practice or tactic that supports personal risk.**
- **Avoid being distracted or diverted from an assignment unless told to do so by those understanding the tactical mode and its consequences.**
- **Avoid disregarding or making light of the overall action plan or strategy**

Of all the building types and their occupancies the importance of today's firefighter is his or her ability in understanding the relationships of building types, occupancy types, construction features and their relationship to fire behavior and also the risk analysis of actions at the tactical as well as the strategic level of the decisions being made. The need to acquire the ability to respond to changing conditions and adjusting operational tasks in order to enhance safety especially at the company level is of tremendous importance to the overall safety to firefighters as well as the strategic victory sought.

Fire Control and Extinguishing the Fire Threat through Spirit and Training

It is important to note that when engaging and conducting firefights that fire behavior in the modern day built environment threatens our ability consistently in succeeding in our mission. Many times fire departments and their ability to win and prevail are caught short when thinking that arriving on the scene and implanting an offensive attack with little resources when more is needed is a common mistake made by many. At any given firefight the fire only responds in our favor when sufficient manning and force is applied to it. Showing up with four firefighters and one or two pieces of apparatus when ten or 15 are needed ends in unsafe practices and pushing the envelope into sustained injuries and possibly death to one of our own. Firefighters and those especially arriving as first-in should be aware of what they are confronted with the resources immediately available to them. The fireground and the firefight present formidable resistance to many of our actions and tasks at structural fires. This resistance is created many times by indecision or poor decision making by first-in companies as well as first-in commanders. The firefight can present itself with further obstacles such as poor operating procedures, uncoordinated efforts and poor communications not to mention weather and the terrain around many structures. Other resistive problems such as forcible entry, below grade fires, high rise structures and lightweight construction all create resistance to our efforts in being successful. The resistive factors can affect any given firefight on any given day making for far greater difficulties to be overcome.

The only way we can prevail is many times through our collective training which should approximate the way we play at the real deal. It should also be realized that our training can never duplicate the true realities that may present themselves at any given firefight. Training should be taken seriously and should be approached with a life and death mentality. We still see and hear of serious injuries and deaths many times from urban to suburban departments that are responding with less than adequate staffing and more importantly less than adequate training coupled with many times increased response times in many areas of the country. So training should approximate the true nature of the battleground we engage in. Many departments throughout the country due to low frequency events are pulled into a sense of complacency from long periods of being disengaged from actual structural fires. Departments should provide a sincere mentality that when you step into the firehouse the engagement with the enemy could be just around the corner which has life and death consequences. So being mentally and physically prepared to do battle at all times is paramount.

The structural fire when it is presented to us upon arrival brings uncertainty and initial disorder of which many times impose uncontrolled events even with the best of plans to control it. Our SOG's should account for this by being flexible to help direct the course of actions which should help the initial disorder into something manageable. Through sound and applicable training of our members regarding combating fires we can avoid commanders getting caught up in the trap of micromanaging its members and trying to control every disorder that may occur at any given structural fire.

Looking at the big picture and its outcome is the goals of the IC as well as every member supporting it. IC's need to trust and delegate authority to execute what needs to be done and the only way to provide that trust is through training the troops repeatedly and consistently. It requires a department to ensure that same page principles are understood by everyone from first due engine to first-due trucks and so on. Freeing up the IC's to manage incidents more efficiently through well trained troops is the end goal along with issuing orders that don't micromanage but instead clearly define the intent of commanders through the use of flexible SOG's. On the other end of the spectrum is the ability to change direction when the battleground dictates change so flexibility is even more crucial especially in this fast paced fireground dynamic. Again training in order to execute the tactics and strategies intended will provide most of what may be needed in controlling disorder on the fireground. Another very important realization that should be noted by IC's is that any participation in micromanaging a fireground can result in delays in allowing fire to grow, delay rescue efforts, delay VES or ventilation which degrades our ability to overcome and adapt. Your members should know their job from the tools used and their applications down to their assignments well before the response.

Experience is what firefighters and their officers need both gained through not only facing the real deal but also through training. A solid foundation of both produces courage on the battlefield in structural firefighting. This along with the will to win and strong leadership by company officers will bring the unknown which is fear into what is known and how to deal with it. The respect of these company officers is given by those through trust and is one of the cornerstones of winning at nearly each and every incident. Even losing at times is a trust builder and lessons learned through experience and respect for those who lead as well as those who follow.

Unit Cohesiveness, Self Confidence and Spirit

By now it should go without question that actual experience along with realist training is what any department needs to prevail and bring our members home safely after each fire.

Without it our members can become incapable of recognizing all the inherent dangers presented at structural fires. Many departments due to few fires and little experience should not be training themselves necessarily but more importantly should be bringing in those individuals from outside their jurisdictions with the down and dirty experiences of fighting fires whenever possible. This lends itself to true and credible experience providing realistic training associated with the battleground in structural firefighting. Training provided through paper documents and YouTube clips will never guarantee winning on the fireground. Solid training delivered through greater percentages from experience will enhance a departments overall morale which has a tremendous influence on prevailing and winning on the battleground.

There are many officers on departments as well as commanders who lead through coercive power and strong egos that simply end in mission failure because they never quite grasped the concept of cultivating spirit within those they lead. Officers and commanders should lead through humility and respect for those who fight the fight.

The science and understanding of fire behavior is essential to all firefighters within our profession. Just as the science of fire behavior can dictate out comes on the fireground what it can't provide is the human behavior surrounding the actions taken at firefights which cannot be explained by science and yet these actions and outcomes are the true differences in winning and losing. Firefighting is an art believe it or not and is a human activity with many variables and factors that affect our ability in prevailing on the fireground. The decisions made on the fireground especially those by first-in companies and their officers at structural fires base their decisions many times without knowing all the facts to make the best decision possible and this will always be the case due to the nature of battle. It is at first unknown whether the decisions made can be carried out by those crawling the hallways so to speak. We are many times left to chance on the fireground in hopes that a well trained firefighter or company of firefighters can accomplish any given certain task at any given time under what sometimes can be described as unpredictable severe conditions. Fire departments must have the means and flexibility to deal with whatever may be thrown at them large or small. A department needs to be able to manage fire whether in a high rise structure or a 900 ft. ranch home of which the entire picture or spectrum of any given firefight can create unbelievable management issues.

Departments and their members must understand and know their limitations as well as their effectiveness and preparedness. If departments are ill equipped, poorly trained, under staffed then they should realize that certain threats are beyond their capabilities to control let alone prevail at any given battle. Firefighters lose their lives every year whether the battles are small or large, whether incidents are controlled or uncontrolled so we should make sure that we are prepared to our capabilities no excuses.

A room and contents fire in a large municipality occurring 4 to 5 times a week has risks but to the rural departments responding to 1 or 2 a year carries with it a higher risk due to lack of being confronted with it on a regular basis. The offensive and defensive strategies used by are members impose control while the other is just holding ground protecting ourselves. It is ultimately important for every member and those commanding that we can identify when we should be on offence versus when we should be on defense.

Do first arriving forces recognize that reasonably there are lives to save or property worth saving that does not risk lives whether civilian or firefighter? This decision process will always expose us in carrying out actions that may be increasing our risk whether recognized or unrecognized. Departments should ensure that well trained firefighters and their officers are capable of recognizing risks when making quick decisions in undertaking offensive actions.

Making offensive commitments when defensive strategies are more appropriate we will lose lives especially when property has no value to the risks being taken.

Impact on Fire Ventilation Practices

It is by now well known that the fire service through the efforts of Underwriters Laboratories has examined ventilation practices at structural fires. The considerations for ventilation practices are affected by new construction methods and home building layouts that have affected the residential fire environment over the past few years. The use of open floor plans along with larger homes and increased fuel loads have impacted fire behavior as well as firefighter ventilation practices and tactics. The Underwriters Laboratories has conducted numerous tests and scenarios incorporating various techniques which are helping shape current strategies and tactics.

Fire Development: It is increasingly apparent that fire development approaches faster decay periods prior to arrival just before flashover conditions occur. This emphasizes the need for ventilation.

The Front Door: All forcible entry should be thought of as ventilation induced actions. Air is being forced inward with time becoming a factor regarding getting to and extinguishing fire or the situation grows to untenable conditions exposing firefighters anywhere within the structure to possible flashover conditions.

Reading Smoke: Fires that are ventilation limited upon arrival may reveal themselves to size-ups with no smoke showing or diminished smoke showing. The potential conditions inside should make aware to firefighters that ventilation could produce untenable conditions and preparedness to allow the structure to breath before entry should be considered.

Coordinated Fire Attack: Providing air to the fire without timely application of water will produce larger fires quickly while decreasing safety to those preparing for an offensive procedure. Many times the onset of firefighting or advancing hose lines until flashover resulted were happening in seconds. Vent locations already existing in distant areas while creating additional vent openings may increase temperatures within the structure.

Rapid Air Movements through the Front Door: Offensive procedures through the front door should be observed for the type of flow through the front door. Rapid inward smoke movements are indicative of ventilation limited fires.

VEIS: All vent, enter and search maneuvers should place high importance on controlling/closing the door to the room being searched. This eliminates any unwanted open venting within the structure as well as the room being searched lifting the smoke out of the contained room.

Ventilation Flow Paths: Any additional ventilation openings created provide new ventilation flow paths for fire spread where ventilation limited fires exist.

Creating Multiple Ventilation Openings: A ventilation location open may still create a ventilation limited fire with additional ventilation openings created may still increase faster and hotter fires which allow the fire to maintain a higher temperature versus if the ventilated area were closed.

Occupant Tenability and Firefighter Tenability: Closing the door provides tenability relating to oxygen and temperature thresholds. Closing the door between occupant or firefighter to the fire can increase the chances of survivability. Any action hose line advancement, VES, Search when presented with unplanned conditions by closing a door will increase protection and survivability.

Existing Open Vent: An already existing ventilation opening will provide air to the fire allowing its growth faster and hotter. Flashover conditions can still exist.

Water Application/Pushing Fire: Any water application does not necessarily produce increased temperatures or fire to adjacent rooms. In most cases fire was slowed down along with heat release rates whether applied externally or interiorly. Water application in these methods had no negative impact on occupant survivability.

The above considerations are just a small portion regarding considerations in surviving the battleground at structural fires. The full scope in surviving the fireground is every ones responsibility regardless of rank. We are all students of the game and our profession throughout our entire careers and it is hoped that this will in the end save lives for both civilian and firefighter alike.