

Managing Our Risk at Fires Involving Vacant Structures

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CEAS - Applied Science

Abstract

On November 21, 2008, I had the honor of attending the funeral service for Detroit Fire Fighter Walter Harris. Fire Fighter Harris was killed when roof of an abandoned building collapsed while fire fighters were overhauling the second floor of the structure. The collapse injured 4 fire fighters and trapped Fire Firefighter Harris. He was extricated by fellow fire fighters and subsequently pronounced dead at the hospital. This incident really made me think about the unnecessary risks that we fire fighters take by conducting aggressive interior fire attack in known abandoned or vacant buildings, and the injuries that can be prevented, and the lives that can be saved by changing our approach to battling these fires using a risk versus benefit approach. I will be basing my recommendations on statistics, line of duty death reports, and fire service publications. I hope this paper will persuade my fire department to develop a standard operating guideline that restricts interior fire attack to situations that involve a known life hazard.

Abandoned buildings have long been a problem in urban areas of the United States. Urban sprawl has caused a shift in the population from the center of the city to outlying, formerly rural areas. This movement of population tends to leave vacant buildings in various states of disrepair behind, attracting criminals and vandals and creating a public nuisance. What once was a primarily urban problem, has now spread to the suburbs and rural America. With the current state of the economy, and current/pending (depending on who you get your news from) recession, we are seeing large numbers of foreclosures nationwide. From housingdoom.com, U.S. foreclosure filings jumped 57% and bank repossessions more than doubled in March from a year earlier as adjustable mortgages increased and more owners gave up their homes to lenders. (<http://housingdoom.com/2008/04/15/foreclosure-rate-in-us-accelerating/>) As the lenders and banks take possession of the homes, they are sitting empty. In my jurisdiction, I have heard estimates of 10 to 15% of the homes are in or are undergoing foreclosure. All of these are of lightweight construction, including truss roofs and engineered I-beams. Fires in these buildings pose extreme risk to firefighters due to delayed detection and notification, and the possible lack of maintenance or upkeep of the building coupled with the early failure of lightweight structural members. To prevent fire fighter injuries and death, the Orange Township Fire Department should work to aggressively identify vacant buildings in the Township and should develop a Standard Operating Guideline that limits interior fire attack to situations that involve a confirmed or known life hazard.

In 1999 six Worcester MA fire fighters died in a fire in an abandoned cold storage warehouse. In 2008 Detroit firefighter Walter Harris died when the roof of an abandoned home collapsed on him during overhaul. In 2007 Buffalo fire fighter Mark Reed was critically injured when a chimney collapsed on him while battling a fire in a vacant home. On firefighternearmiss.com, vacant is mentioned in 23 different near miss reports. There is no doubt that vacant structure fires pose an increased risk to fire fighters. In 2004, the injury rate for fires

in vacant properties was 33 fire fighters per 1000 fires. This injury rate made these properties one of the most dangerous for fire fighters in 2004¹. Overall these fires account for a small percentage of fires each year in this country. In 1999, just 2.2% of all fires occurred in vacant, idle, or properties under construction, and accounted for 1.8% of civilian fire deaths, and 0.4% of civilian injuries.² Fires in vacant structures account for a small percentage of fires and civilian casualties each year yet cause a large number of firefighter injuries.

The Orange Township Fire Department serves a suburban area with approximately 20,000 residents. The majority of our response area consists of planned residential communities of densely packed, single family residences, of lightweight construction. Currently my area is experiencing a high number of foreclosures, resulting in a large number of empty homes. Although these homes are not yet dilapidated, some are not being maintained and are beginning to show signs of wear and tear. These homes have also been the targets of vandals and thieves, and potentially could become targets of arsonists. The Orange Township Fire Department should develop a standard operating guideline that addresses operations involving known vacant buildings. We should also train our officers and incident commanders to integrate risk management into the functions of command. We should also consider implementing a system to mark vacant structures that are damaged and unsafe, to warn responding fire fighters of the potential dangers of interior attack in that building.

In Flint Michigan, a study was conducted to examine fire fighter injuries from vacant structure fires. The study found that although vacant structure fires accounted for 40% of the department's structure fires, they accounted for 62% of the fire ground injuries. During a 12 month period the department responded to 179 vacant structure fires. Only two of these fires involved civilian life safety. In the first fire the 2 story structure was fully involved, and the

¹ *Fire Related Firefighter Injuries in 2004*, U.S. Fire Administration, February 2008

² Ahrens, Marty, *Selections From the U.S. Fire Problem Overview Report, Leading Causes and Other Patterns and Trends, Properties that are Vacant, Under Construction, Renovation, or Demolition*, NFPA, June 2003

deceased victim was found in the basement following extinguishment. In the second fire, two victims were rescued from the second floor of the structure. The study also found that 21 fire fighters were injured during operations at 20 vacant structure fires, 19 of which involved interior operations. 100% of those structures are either demolished or are still vacant.

Vacant structures present many hazards to fire fighters. Structural members may be deteriorated from repeated exposure to the elements. Scavengers and vandals may strip the structure of pipe and wiring, creating avenues for fire to spread and holes for fire fighters to fall into. Vacant structures are often the targets of arsonists who may use multiple fire sets or delayed ignition to trap fire fighters. All of these elements create a lose/lose situation for responding fire fighters. Fire fighter safety should be our first priority. The National Fire Academy has a sample risk policy in its curriculum that states: *“We will take great risk to save life, we will take minimal risk to save property, and we will risk nothing for lives and property already lost.”* A well involved vacant building is property already lost, yet fires in these properties account for a high number of firefighter injuries. I am not ruling out interior fire attack on vacant buildings. I am just saying it should only be done after a thorough size up, and when specific conditions have been met. The incident commander needs to conduct a risk analysis of the structure, and determine if it is worth risking the lives of his fire fighters by committing them to an offensive attack. More often than not, our efforts are better directed at protecting exposures, than offensive fire attack in vacant structures.

I have often heard that we cannot assume that a structure is unoccupied, and that we must do an interior search so we can get an “all clear” on the structure. In the case of vacant buildings, we should consider them unoccupied unless it is proven otherwise. We should look for extension cords run into the building from neighboring buildings, unsecured openings, bystander or witness statements reporting trapped victims, and pre-fire planning to determine whether or not the building is occupied. If we do suspect that someone may be trapped in the

structure, then we need to carefully evaluate the fire conditions, structural stability, and the victim survivability prior to committing our personnel to offensive operations. Some may also argue that we could be sued if we don't try and aggressively fight the fire, and it results in property damage or civilian casualties. I argue that the fire department is protected by governmental immunity and fire fighters are protected by qualified immunity. To be found liable, it would have to be proven that the fire fighters were grossly negligent and caused the death or injury. In *Love v. City of Detroit*, the trial court dismissed the lawsuit alleging gross negligence in the death of four children. The plaintiff claimed the fire department took "40 to 60 minutes" to respond with fire trucks. The Michigan Court of Appeals upheld the trial court based on governmental immunity.³

My jurisdiction does not contain vacant buildings of ordinary or balloon construction. Our vacant homes are of lightweight construction, with wood trusses and engineered lumber. These structures are dangerous to operate in when not vacant. One of these structures sitting empty not maintained, and the target of vandals and thieves is even more dangerous. Also there is likely to be a delay in reporting the fire, resulting in advanced fire conditions and probable failure of structural members at about the time an attack or search crew is making entry. Due to the high risk of death and injury to fire fighters, my department should adopt a risk management plan that addresses fires in vacant buildings. An SOG should be developed that sets forth strict criteria that should be met prior to initiating an offensive fire attack. We should work to aggressively identify vacant buildings in our jurisdiction, and mark on the exterior of the building so responding firefighters know of any dangers present in the building.

Our risk management plan should say, "The level of risk we put our fire fighters in should be appropriate for the potential to save lives and property. When there are no lives at risk, then we should base our level of risk on the ability to save worthwhile property. When no lives are at

³ *Scheherazde C. Love v. City of Detroit*, Court of Appeals of Michigan, 2006 Mich. App. LEXIS 1097

risk or property is not savable, then risk to our fire fighters should be minimal. A defensive attack would be the most prudent strategy. This risk management plan would not only apply to fires in vacant structures, but would be applicable to all facets of our operation.

An SOG should be developed that spells out when offensive fire attack in vacant buildings is appropriate. Factors such as bystanders reporting a person trapped, a person that is trapped making themselves known on arrival, prefire plans that indicate the building is structurally intact, the presence of extension cords run into the house, or vehicles/bikes on the property. Also a fire in the incipient state or relatively unobscured visibility inside the structure may make offensive attack feasible. A fully staffed RIT on scene would be required prior to any personnel making entry for offensive fire attack. The SOG would require multiple designated safety officers on scene to monitor conditions at any working fire in a vacant structure. Once the fire is knocked, the incident commander would have to evaluate the structural integrity and weigh the benefits of sending fire fighters inside to conduct overhaul. The SOG should recommend hydraulic overhaul from the exterior, and the posting of a fire watch to monitor for rekindles. The department should have after hour's contacts for county building inspectors, so we can obtain emergency demolition orders quickly if needed. In addition the SOG should address conditions in which interior attack is prohibited. These may include a building with known structural hazards, moderate to advanced fire conditions upon arrival, no RIT on scene, and boarded up buildings that do not have multiple means of egress. All personnel should be trained on the SOG, and it should be reviewed annually by all members. We should also look at other department's SOG's concerning operations at vacant buildings to see how they manage their risk at incidents involving vacant structures. Fire departments such as FDNY, Fulton County Georgia, and Phoenix all have SOG's on operations at fires involving vacant structures.

We should implement company inspections of all known vacant buildings in our jurisdiction, and note them in our mapping system and on prefire plans. Companies should

drive through their district on a regular basis so that they may identify any new vacant buildings, or note any change in hazards to buildings that have previously been identified. We should also develop a system to mark buildings, so that on arrival firefighters know of any hazards present within the building, and whether an offensive attack is prohibited within the structure. This would include a standardized system of symbols to indicate structural damage, and whether offensive fire attack is strictly prohibited, or can be undertaken provided all other criteria in the SOG has been met. These markings should be in a standardized location on the building, and be of fluorescent paint. FDNY, Jersey City, New Jersey, and Newark Ohio all have programs in place to mark vacant buildings. We also need to have a system in place to insure information about our vacant structures and our SOG's are disseminated to automatic and mutual aid companies.

Fires in vacant buildings pose great risk to our fire fighters with no rewards to be gained. We must remember "Risk a lot to save savable life, take minimal risk to save property, and risk nothing to save lives and property already lost. The Orange Township Fire Department should implement steps to manage these risks that include SOG's, a written risk management plan, prefire planning, and training on the hazards of vacant buildings and signs of impending collapse. We must remember that the only life hazard at fires involving vacant buildings are the fire fighters we are putting inside.

References

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