Handout 1-1 Group 1:

Nine Career Fire Fighters Die in Rapid Fire Progression at Commercial Furniture Showroom — South Carolina

2017 18

Death in the line of duty...

NIOSH Fire Fighter Fatality Investigation and Prevention Program

Fire Fighter Fatality Investigation and Prevention Program

A summary of a NIOSH fire fighter fatality investigation

February 11, 2009

Nine Career Fire Fighters Die in Rapid Fire Progression at Commercial Furniture Showroom – South Carolina

SUMMARY

On June 18, 2007, nine career fire fighters (all males, ages 27 – 56) died when they became disoriented and ran out of air in rapidly deteriorating conditions inside a burning commercial furniture showroom and warehouse facility. The first arriving engine company found a rapidly growing fire at the enclosed loading dock connecting the showroom to the warehouse. The Assistant Chief entered the main showroom entrance at the front of the structure but did not find any signs of fire or smoke in the main showroom.

Incident Scene

(Photo courtesy of Alexander Fox, Associated Press.)

He observed fire inside the structure when a door connecting the rear of the right showroom addition to the loading dock was opened. Within minutes, the fire rapidly spread into and above the main showroom, the right showroom addition, and the warehouse. The burning furniture quickly generated a huge amount of toxic and highly flammable gases along with soot and products of incomplete combustion that added to the fuel load. The fire overwhelmed the interior attack and the interior crews became disoriented when thick black smoke filled the showrooms from ceiling to floor. The interior fire fighters realized they were in trouble and began to radio for assistance as the heat intensified. One fire fighter activated the emergency button on his radio. The front showroom windows were knocked out and fire fighters, including a crew from a mutual-aid department, were sent inside to search for the missing fire fighters. Soon after, the flammable mixture of combustion by-products ignited, and fire raced through the main showroom. Interior fire fighters were caught in the rapid fire

progression and nine fire fighters from the first-responding fire department died. At least nine other fire fighters, including two mutual-aid fire fighters, barely escaped serious injury.

The National Institute for Occupational Safety and Health (NIOSH), an institute within the Centers for Disease Control and Prevention (CDC), is the Federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. In fiscal year 1998, the Congress appropriated funds to NIOSH to conduct a fire fighter initiative. NIOSH initiated the Fire Fighter Fatality Investigation and Prevention Program to examine deaths of fire fighters in the line of duty so that fire departments, fire fighters, fire service organizations, safety experts and researchers could learn from these incidents. The primary goal of these investigations is for NIOSH to make recommendations to prevent similar occurrences. These NIOSH investigations are intended to reduce or prevent future fire fighter deaths and are completely separate from the rulemaking, enforcement and inspection activities of any other Federal or state agency. Under its program, NIOSH investigators interview persons with knowledge of the incident and review available records to develop a description of the conditions and circumstances leading to the deaths in order to provide a context for the agency's recommendations. The NIOSH summary of these conditions and circumstances in its reports is not intended as a legal statement of facts. This summary, as well as the conclusions and recommendations made by NIOSH, should not be used for the purpose of litigation or the adjudication of any claim. To request additional copies of this report (specify the case number shown in the shield above), for other fatality investigation reports, or further information, visit the Program Website's article Fire Fighter Fatality Investigation and Prevention or call toll free **1-800-CDC-INFO** (1-800-232-4636). (This link is also accessible at the following URL: www.cdc.gov/niosh/fire).

NIOSH investigators concluded that, to minimize the risk of similar occurrences, fire departments should:

- ***develop, implement and enforce written standard operating procedures (SOPs) for an occupational safety and health program in accordance with NFPA 1500***
- ***develop, implement, and enforce a written Incident Management System to be followed at all emergency incident operations***
- ***develop, implement, and enforce written SOPs that identify incident management training standards and requirements for members expected to serve in command roles***
- ***ensure that the Incident Commander is clearly identified as the only individual with overall authority and responsibility for management of all activities at an incident***
- ***ensure that the Incident Commander conducts an initial size-up and risk assessment of the incident scene before beginning interior firefighting operations***
- ***train fire fighters to communicate interior conditions to the Incident Commander as soon as possible and to provide regular updates***

- *ensure that the Incident Commander establishes a stationary command post, maintains the role of director of fireground operations, and does not become involved in fire-fighting efforts*
- *ensure the early implementation of division / group command into the Incident Command System*
- *ensure that the Incident Commander continuously evaluates the risk versus gain when determining whether the fire suppression operation will be offensive or defensive*
- *ensure that the Incident Commander maintains close accountability for all personnel operating on the fireground*
- *ensure that a separate Incident Safety Officer, independent from the Incident Commander, is appointed at each structure fire*
- *ensure that crew integrity is maintained during fire suppression operations*
- *ensure that a rapid intervention crew (RIC) / rapid intervention team (RIT) is established and available to immediately respond to emergency rescue incidents*
- *ensure that adequate numbers of staff are available to immediately respond to emergency incidents*
- *ensure that ventilation to release heat and smoke is closely coordinated with interior fire suppression operations*
- *conduct pre-incident planning inspections of buildings within their jurisdictions to facilitate development of safe fireground strategies and tactics*
- *consider establishing and enforcing standardized resource deployment approaches and utilize dispatch entities to move resources to fill service gaps*
- *develop and coordinate pre-incident planning protocols with mutual aid departments*
- *ensure that any offensive attack is conducted using adequate fire streams based on characteristics of the structure and fuel load present*
- *ensure that an adequate water supply is established and maintained*
- *consider using exit locators such as high intensity floodlights, flashing strobe lights, hose markings, or safety ropes to guide lost or disoriented fire fighters to the exit*
- *ensure that Mayday transmissions are received and prioritized by the Incident Commander*
- *train fire fighters on actions to take if they become trapped or disoriented inside a burning structure*
- *ensure that all fire fighters and line officers receive fundamental and annual refresher training according to NFPA 1001 and NFPA 1021*
- *implement joint training on response protocols with mutual aid departments*

- *ensure apparatus operators are properly trained and familiar with their apparatus*
- *protect stretched hoselines from vehicular traffic and work with law enforcement or other appropriate agencies to provide traffic control*
- *ensure that fire fighters wear a full array of turnout clothing and personal protective equipment appropriate for the assigned task while participating in fire suppression and overhaul activities*
- *ensure that fire fighters are trained in air management techniques to ensure they receive the maximum benefit from their self-contained breathing apparatus (SCBA)*
- *develop, implement and enforce written SOPS to ensure that SCBA cylinders are fully charged and ready for use*
- *use thermal imaging cameras (TICs) during the initial size-up and search phases of a fire*
- *develop, implement and enforce written SOPs and provide fire fighters with training on the hazards of truss construction*
- *establish a system to facilitate the reporting of unsafe conditions or code violations to the appropriate authorities*
- *ensure that fire fighters and emergency responders are provided with effective incident rehabilitation*
- *provide fire fighters with station / work uniforms (e.g., pants and shirts) that are compliant with NFPA 1975 and ensure the use and proper care of these garments.*

Additionally, Federal and state occupational safety and health administrations should:

- *consider developing additional regulations to improve the safety of fire fighters, including adopting National Fire Protection Association (NFPA) consensus standards.*

Additionally, manufacturers, equipment designers, and researchers should:

- *continue to develop and refine durable, easy-to-use radio systems to enhance verbal and radio communication in conjunction with properly worn SCBA*
- *conduct research into refining existing and developing new technology to track the movement of fire fighters inside structures.*

Additionally, code setting organizations and municipalities should:

- *require the use of sprinkler systems in commercial structures, especially ones having high fuel loads and other unique life-safety hazards, and establish retroactive requirements for the installation of fire sprinkler systems when additions to commercial buildings increase the fire and life safety hazards*

- ***require the use of automatic ventilation systems in large commercial structures, especially ones having high fuel loads and other unique life-safety hazards.***

Additionally, municipalities and local authorities having jurisdiction should:

- ***coordinate the collection of building information and the sharing of information between building authorities and fire departments***
- ***consider establishing one central dispatch center to coordinate and communicate activities involving units from multiple jurisdictions***
- ***ensure that fire departments responding to mutual aid incidents are equipped with mobile and portable communications equipment that are capable of handling the volume of radio traffic and allow communications among all responding companies within their jurisdiction.***