City of Charleston
Joseph P. Riley, Jr.
Mayor

May 8, 2008

This afternoon, the City received a draft report from the National Institute for Occupational Safety and Health (NIOSH) regarding its Firefighter Fatality Investigation into the Sofa Super Store fire. We, of course, are studying this report and are preparing our comments and suggestions, as requested by NIOSH.

Last Friday, I called NIOSH to express our desire to receive the agency's report as soon as possible. When I spoke with a representative from NIOSH, he stated that the draft was still being developed and would not be released before the May 15th release date of the Phase 2 Report. Therefore, we were surprised when we received the draft NIOSH report this afternoon. I then contacted a NIOSH representative to understand how the report was produced so quickly. NIOSH Investigator Timothy R. Merinar indicated that after my call to him last week, members of the agency worked diligently and put in long hours to get the draft report concluded.

The purpose of the draft report being sent to the City and also to the International Association of Firefighters is for comment on the report's content and its usefulness for preventing future firefighter deaths. NIOSH has stated that specific suggestions for changes and clarification would be appreciated. The City and the Union will have an opportunity to provide input before the final NIOSH report is released. Apparently this report, which is pre-decisional and has not been finalized by NIOSH, is a report that normally is not publicly distributed. My belief is that because of the understandable immense interest in the Sofa Super Store fire that it is very important that everyone be aware even of this draft document so that this process is public and transparent. Therefore, I advised NIOSH and the Union that this draft report was being released immediately.

The process from this point is that the City and the Union will send their comments back to NIOSH by June 10. NIOSH will consider all comments, after which the draft will be reviewed by a peer review panel assembled by NIOSH. The report then will be finalized and released by NIOSH. The final report also will include a recommendations section.

Most sincerely yours,

Joseph P. Riley, Jr.
Mayor, City of Charleston

CHARLESTON All America City

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2007 18

NIOSH Fire Fighter Fatality Investigation and Prevention Program

Death in the line of duty...

A summary of a NIOSH fire fighter fatality investigation *May 16, 2008*

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 initial responding engine company found a rapidly growing fire at the loading dock connecting the main 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. He observed fire inside the structure when a door connecting the rear of the showroom to the loading dock was opened. Within 5 minutes, the fire rapidly spread into the main showroom area and 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 quickly outgrew the available suppression water supply and the interior crews became disoriented as the heat rapidly intensified and visibility dropped to zero as the thick black smoke filled the showroom from floor to ceiling. The interior fire fighters realized they were in trouble and began to radio for assistance. One fire fighter activated the emergency button on his radio. Once the incident commanders realized that fire fighters were trapped inside, the front showroom windows were ordered to be 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 six fire fighters, including the two mutual-aid fire fighters, barely escaped serious injury.

Incident Scene: Photo courtesy of Alexander Fox, Associated Press.

The Fire Fighter Fatality Investigation and Prevention Program is conducted by the National Institute for Occupational Safety and Health (NIOSH). The purpose of the program is to determine factors that cause or contribute to fire fighter deaths suffered in the line of duty. Identification of causal and contributing factors enable researchers and safety specialists to develop strategies for preventing future similar incidents. The program does not seek to determine fault or place blame on fire departments or individual fire fighters. To request additional copies of this report (specify the case number shown in the shield above), other fatality investigation reports, or further information, visit the Program Website at www.cdc.gov/niosh/fire/ or call toll free **1-800-CDC-INFO** (1-800-232-4636).

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

Final Recommendations will be listed here in Final Report

INTRODUCTION

On June 18, 2007, nine male career fire fighters (the victims), aged 27 to 56, died when they became disoriented in rapidly deteriorating conditions inside a burning commercial furniture showroom and warehouse facility. At least six fire fighters, including the two mutual aid fire fighters, barely escaped serious injury.

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research, Fire Fighter Fatality Investigation and Prevention Program learned of the incident on June 19, 2007 through the national news media. On June 19, 2007, the U.S. Fire Administration (USFA) notified the National Institute for Occupational Safety and Health (NIOSH) of the fatalities. That same day, a Safety Engineer and a General Engineer from NIOSH, traveled to South Carolina to initiate an investigation of the incident. The NIOSH investigators traveled to the incident site and met with representatives of the Bureau of Alcohol, Tobacco and Firearms (ATF), National Institute of Standards and Technology (NIST), South Carolina State Law Enforcement Division (SLED), and South Carolina Occupational Safety and Health Administration (SC-OSHA). The NIOSH investigators were on-site June 20-22, and the NIOSH General Engineer returned June 24th to work with representatives of NIST to collect data related to the structure's construction for the NIOSH investigation and for a comprehensive fire reconstruction model. *Note: The National Institute of Standards and Technology (NIST), Building and Fire Research Laboratory is developing a computerized fire model to aid in re-constructing the events of the fire. When completed, this model will be available at the NIST website...* http://www.bfrl.nist.gov/.

On July 9, 2007, three NIOSH investigators (Safety Engineer, General Engineer, and Safety and Occupational Health Specialist) returned to South Carolina. Meetings were conducted with the Fire Chief, Assistant Chief, the city's Manager of Safety and the city's insurance carriers. During the course of the ensuing investigation, the NIOSH investigators met with chief officers and fire fighters from the initial responding department, two local mutual aid departments, NIST, the County Coroner, the County Emergency Response dispatch center, city building inspectors, city water system officials, representatives of the International Association of Fire Fighters (IAFF) labor union, and the U.S. Fire Administration.

Interviews were conducted with officers and fire fighters who were on-duty and dispatched to the incident scene as well as fire fighters who were off-duty and came to the scene to offer assistance. Fire fighters from two mutual aid departments were also interviewed.

NIOSH investigators returned to South Carolina a number of additional times during the course of this investigation. The NIOSH investigators reviewed the victims' training records, incident commanders' (IC) training records, and floor plans and photographs of the structure. The incident site was visited and photographed. NIOSH investigators visited the city's fire training academy and reviewed the training curriculum. The department's maintenance and repair facility was visited. The city's fire and police dispatch center was visited as well as the dispatch center for the first responding mutual aid department. NIOSH contracted with a leading expert in personal protective clothing to evaluate the clothing and personal protective equipment worn by the victims. *Note: Some photographs used in this report have been altered to remove names and other identifiers.*

FIRE DEPARTMENT

At the time of the incident, the career fire department was an ISO[1] Class I rated department with 19 fire companies located throughout the city. A company typically consists of a captain, engineer (driver / fire apparatus operator) and two fire fighters. The fire department serves a population of approximately 106,000 in a geographic area of about 91-square miles. In June 2007 the fire department consisted of approximately 240 uniformed fire fighters and fire officers. The department operates 16 engines and 3 ladder trucks at 13 stations in the city. Each apparatus is staffed with four fire fighters but routinely operate with three fire fighters per apparatus depending on the manpower available each shift. A standard work shift is 24 hours on-duty and 48 hours off-duty with fire fighters assigned to one of three rotating shifts. Each shift is supervised by an Assistant Chief. On the day of the incident, the department had 61 fire fighters, 4 battalion chiefs and an Assistant Chief working on-duty. The fire department maintains its own 911 dispatch center in cooperation with the city police department.

The local county also maintains an Emergency Services (EMS) communication / dispatch center which two small fire departments utilize. Some mutual aid fire departments within the county maintain their own dispatch centers.

[1]ISO is an independent commercial enterprise which helps customers identify and mitigate risk. ISO can provide communities with information on fire protection, water systems, other critical infrastructure, building codes, and natural and man-made catastrophes. Virtually all U.S. insurers of homes and business properties use ISO's Public Protection Classifications (PPC) to calculate premiums. In general, the price of fire insurance in a community with a good PPC is substantially lower than in a community with a poor PPC, assuming all factors are equal. ISO's PPC program evaluates communities according to a uniform set of criteria known as the Fire Suppression Rating Schedule (FSRS). The FSRS has three main parts – fire alarm and communications (10%), the fire department (50%), and water supply (40%). The FSRS references nationally recognized standards developed by the National Fire Protection Association (NFPA) and the American Water Works Association. More information about ISO and their Fire Suppression Rating Schedule can be found at the website http://www.isogov.com/about/.

The first mutual aid department to respond to the scene was a career department that employs 60 fire fighters and officers. It maintains four stations and serves a population of approximately 24,000 residents in an area of approximately 30 square miles. Jurisdictional boundaries between this mutual aid department and the municipal department and were not clearly defined. This led to incidences of "jumping calls" where a department would be the first responding department to a working fire outside its jurisdiction.

The second mutual aid department to respond to the scene was a combination department with 44 fire fighters that serve a rural population of 14,000.

TRAINING and EXPERIENCE

This municipal fire department requires that fire fighters receive NFPA Fire Fighter I and II certification from the South Carolina State Fire Academy before they are hired. The South Carolina Fire Academy is accredited by the International Fire Service Accreditation Congress to provide a number of NFPA level courses.

Once hired, the recruits are then sent to the department's training center for 10 days of hands-on training after which the new fire fighters are assigned to companies throughout the city. The department's training focuses on equipment use, self-contained breathing apparatus (SCBA) use, ladder drills, hydrant hookup, hose lays, hose pulls, rescue drills, and live-burn exercises. A Battalion Chief supervises the recruit training and oversees the department's training program. Individual companies normally train from 0930 to 1130 hours each day with each company's captain responsible for the training. Training on hydrant location and hook-up is done once per month.

Training records provided by the city for the nine victims consisted of verification of the weekly in-station training, certificates indicating training on subjects such as National Incident Management System (NIMS), weapons of mass destruction (WMD) and emergency medical services – medical first responder. Facepiece fit test records were also provided. Minimal training records for the incident commanders were provided, consisting mainly of NIMS certifications.

VICTIMS

Note: Throughout this report, the 9 victims are identified by the order in which they were located at the scene, identified by the County Coroner, extricated and transported. The following table identifies the victims.

Victims (Order located)	Rank	Apparatus	Age	Experience(yrs)
1	Engineer	Engine 19	37	9
2	Fire fighter	Engine 19	56	32
3	Fire fighter	Engine 16	46	2
4	Assistant Engineer	Ladder 5	27	1.5

5	Captain	Engine 16	49	20
6	Captain	Engine 19	48	30
7	Acting Captain	Ladder 5	40	12.5
8	Captain	Engine 15	34	11.5
9	Fire fighter	Ladder 5	27	4

EQUIPMENT and PERSONNEL

The municipal fire department initially responded to the alarm with 3 apparatus and 9 fire fighters including Engine 11 (E-11 acting captain, engineer and fire fighter), Engine 10 (E-10 captain, engineer and fire fighter), Ladder 5 (L-5 acting captain, engineer, and fire fighter), a battalion chief (BC-4) and an Assistant Chief (AC). *Note: Fire department procedures stated that where structures are 5 stories or less in height, the first alarm assignment is 2 engines, 1 ladder truck, a battalion chief and the Assistant Chief. For structures over 5 stories in height, the first alarm assignment is 3 engines, 1 ladder truck, a battalion chief and the Assistant Chief. Once on-scene, the incident commander can request additional resources as deemed necessary. Procedures also stated that a confirmed report of "smoke showing" automatically sends an additional engine before a second alarm. When a ranking officer arrives on-scene, that officer automatically becomes incident commander.*

Engine 16 (E-16 captain, engineer, and fire fighter) was dispatched after BC-4 (the initial Incident Commander (IC)) radioed dispatch to confirm smoke was showing at the incident site. E-16 is designated as the third-due engine responding to all structure fires in the western district where the incident occurred. Chief Officers requested Engine 15 (E-15), Engine 19 (E-19), Engine 6 (E-6), Engine 3 (E-3), Engine 13 (E-13), Engine 9 (E-9), and Ladder 4 (L-4) as the incident escalated. Additional responders included the battalion chief from the neighboring district (BC-5) and the battalion chief of training (BC-T). A large number of off-duty officers and fire fighters also responded to the incident scene. Some of the off-duty fire fighters responded with turnout gear. Others did not.

Only the units directly involved in the operations preceding the fatal event are discussed in this report. Additional mutual aid departments were dispatched after the structure collapse.

TIMELINE

The response, listed in order of arrival (time approximate) and key events, includes:

- **1907 hours**
  Dispatch for possible fire behind furniture store

- **1909 hours**
  BC-4, E-10, E-11, L-5, AC enroute
  BC-4 confirms smoke showing while enroute

E-10, L-5, E-16 acknowledge hearing BC-4 confirm fire

- **1910 hours**
  E-16 enroute as third-due engine
  E-15 relocates to western district
  BC-4 arrives on scene and reports trash fire at side of building.
  BC-4 radios for E-10 to come down side of building

- **1911 hours**
  AC on scene
  E-10 and E-11 on scene

- **1912 hours**
  AC radios for E-16 to come inside building to him when they arrive on-scene.
  (Showroom clear with no fire/smoke showing)
  Ladder 5 on scene
  Chief radios E-15 to relocate to Station 11
  Car 2 radios dispatch to send Engine 12
  BC-4 radios Car 2 and says he knows fire is inside building
  Engine 12 dispatched to scene

- **1913 hours**
  BC-4 radios E-12 that he needs E-12 to lay a supply line to E-10
  E-11 acting captain radios "I need an 1 ½ inside this building"
  (Door connecting showroom to loading dock opened by AC showing heavy fire in loading dock)
  AC radios E-15 to "come on"
  AC radios E-15 and says to bring 1 ½" hose line inside to right rear of building
  E-6 begins relocating to the west side

- **1914 hours**
  AC radios BC-4 and says fire is inside the rear of the building and its walking its way into the showroom.
  AC radios dispatch to send E-6
  E-6 dispatched to scene
  Chief radios dispatch to send E-19 and have E-6 relocate to Station 11
  E-13 radios they are in service

- **1915 hours**
  AC radios E-16 to bring 2 ½" hose line in front door
  E-16 radios AC to confirm assignment
  E-16 on-scene

L-5 engineer radios E-11 to charge line (1 ½" line pulled by L-5 / E-11 crews)

- **1916 hours**
  E-19 enroute
  L-5 engineer again radios E-11 to charge hose line
  L-5 again requests E-11 to charge hose line
  Chief on scene

- **1917 hours**
  E-12 on scene - assigned to lay supply line to E-10
  E-15 on scene

- **1919 hours**
  Chief radios E-6 and tells them to come to scene and come in front door
  E-6 responds they are enroute
  Chief radios dispatch to call the power company
  E-16 captain radios "charge that 2 ½"

- **1920 hours**
  E-11 engineer radios the E-11 acting captain to see if he wants the 2 ½" hose line charged.
  AC replies "not until the supply line is charged"
  E-19 on scene
  E-12 radios E-10 … "water coming 10"
  E-12 engineer radios dispatch that the police department is needed because cars are running over hoses. Dispatch replies that PD is enroute

- **1921 hours**
  AC radios E-16 engineer about supply line. E-16 engineer replies he is looking for a hydrant.
  E-6 on scene

- **1922 hours**
  E-11 engineer radios E-16 that tank water is down to half-full
  E-16 engineer replies he is looking for hydrant

- **1924 hours reference timeline to photo #7**
  Battalion Chief 5 (BC-5) on scene
  Chief radios E-12 to boost water pressure on supply line by 50 pounds
  E-12 acknowledges
  AC radios.. "We need that 2 ½"
  E-3 is relocated to Station 16/19
  Mutual aid department # 1 on-scene

- **1925 hours**
  E-10 radios that tank water is down to one quarter-full
  Chief radios E-12 to boost supply water pressure to E-10 by 50 more pounds
  E-12 acknowledges
  Mutual aid department # 1 radios the fire department with no response

- **1926 hours**
  E-16 engineer radios that "water coming"
  Dispatch radios Chief and informs him that dispatch has received a phone call from a civilian saying he is trapped at the rear of the building
  Chief acknowledges

- **1927 hours**
  Inaudible radio traffic – possibly "lost inside" or "trapped inside"
  Chief radios AC and says that the warehouse door has been opened and a 2 ½ hose line is in operation. Chief also asks about the rescue attempt of the trapped civilian and tells AC to do what he can do.
  Dispatch radios AC to inform him that the trapped civilian is banging on exterior wall with a hammer

- **1928 hours**
  AC radios for E-11 and gets no response. *Note: this may be when AC is looking for fire fighters to assist with rescue of the civilian and mutual aid fire fighters are pressed into action.*

- **1929 hours**
  Broken radio traffic of fire fighter in distress asking "which way out" then "everyone out"

- **1930 hours**
  E-11 radios that 2 ½" hose line is charged
  Several different fire fighters in distress radio "need some help out", "need help getting out", also "lost connection with the hose"
  AC radios Chief that they are attempting to free civilian trapped in warehouse

- **1931 hours – 1934 hours (reference photo #9 and #10)**
  More broken radio traffic from fire fighters in distress
  Chief asks for E-3 to come to scene and lay supply line to L-5
  BC-5 reports civilian is out of building
  E-16 engineer radios dispatch that police department is needed to prevent traffic from running over supply line.
  FF calls Mayday; another FF heard praying; another FF says "I love you"
  Chief asks AC "is everyone out?" AC responds the civilian is out

E-15 FF exits building (out of air) – reports he didn't call the mayday
Chief radios "who called mayday"
Dispatch tells Chief that the L-5 engineer emergency button (on radio) has been activated
Chief radios for E-15 captain with no response
E-15 FF changes air cylinder and goes back inside

- **1935 hours**
  Chief orders front windows to be knocked out
  E-6 crew (captain, engineer, and FF) along with E-15 engineer and FF exit showroom

- **1936 hours (reference photo # 10)**
  Chief orders mutual aid crew to search for missing fire fighters
  Chief continues to radio for E-15 captain and crew with no response
  Chief instructs everyone else to stay off radio
  Conditions at front of showroom change dramatically – turbulent thick dark smoke rolls out windows

- **1937 hours**
  Chief continues to radio for E-15 captain and crew with no response
  E-13 is dispatched to scene
  E-7 relocates to Station 13
  Fire rolls out windows at front of showroom

- **1938 hours (reference photos # 14)**
  Mutual aid crew exits building
  Chief continues to radio for E-15 captain and crew with no response
  Chief radios for everyone to abandon the building
  BC-T radios for E-15 captain
  BC-T radios E-16 engineer to boost water supply pressure to E-11.

- **1939 hours**
  AC radios E-16 to "give me some more water"
  BC-T also radios E-16 for more water pressure
  E-16 engineer acknowledges and water pressure is boosted to 200 psi

- **1940 hours**
  E-3 on scene
  Mutual Aid Department # 2 enroute to lay water supply line to L-5

- **1942 hours**
  BC-T continues to radio for E-15 captain (no response)
  Chief radios that no one is to go inside

E-13 on scene

- **1943 hours**
  Chief asks if everyone is out of front
  BC-T radios E-16 engineer that he needs more water pressure. Engineer responds the entire hose bed has been stretched out plus two sections of 3" hose. Additional radio communications about pedestrian traffic driving over the supply line.
  BC-T radios E-16 engineer and says "I need all you can give me!"

- **1944 hours**
  AC radios dispatch to call the city water department to increase water pressure in the area.
  Chief radios for E-15 captain
  E-3 engineer radios that water is coming (water supply established to L-5)

Additional crews continued to arrive on-scene and contributed to the fire suppression efforts. Engine 13 began laying a supply line to L-5 at 1947 hours. The Chief radioed dispatch to send Ladder 4 to the scene at 1948 hours. The Chief radioed dispatch and requested that the Mayor be notified at 1950 hours. The roof over the showroom collapsed causing the front façade to begin collapsing at 1951 hours. Ladder 4 was put into operation in the front parking lot at approximately 2005 hours. The fire was not brought under control until after 2200 hours. Recovery operations continued until after 0400 hours the next morning.

PERSONAL PROTECTIVE EQUIPMENT

The fire department issues each fire fighter a set of black turnout gear and station uniforms when they are hired and sent to the recruit training class. The fire department does not issue flash hoods. The department issues helmets, gloves, and boots. The Chief Officers (Battalion Chief rank and higher) wear a set of brown turnout gear from a different manufacturer. Each fire fighter is allowed to purchase and wear his own turnout gear, or bring gear from other departments they serve in, if they desire.

Following the incident, the personal protective equipment (PPE – turnout clothing, self-contained breathing apparatus, radio, hand tools, etc) worn by each of the nine victims was secured by the city police department. The PPE was examined in detail, documented and photographed through a systematic process on August 29, 2007. The county coroner's office coordinated the PPE examination at the request of NIOSH. The PPE was examined by a personal protective clothing expert contracted by NIOSH to do the examination. Representatives of the police department, county coroner's office, the fire department, NIST and NIOSH were present during the examination. Each victim's PPE was severely damaged by fire and heat exposure due to the length of time it took to locate and recover the victims. The evaluation indicated melting of polyester station uniforms (non-NFPA 1975 compliant) in the areas where the turnout clothing was degraded by the fire exposure. The complete PPE inspection and evaluation report is attached (see Appendix I [**Jeff Stull's report**]).

The city fire and police departments utilize a type 2 trunked radio system (computer-aided) that automatically assigns radio frequencies as needed to different "talk groups." Each apparatus riding position is assigned a radio so that each on-duty fire fighter has access to a radio. Each radio contains an emergency notification button that, when activated, sends a signal to the dispatch center with the radio's identity. On the day of the incident, radios were available but not all fire fighters carried their assigned radios. The county in which this incident occurred maintains its own dispatch center for emergency medical services (EMS) and the smaller outlying volunteer fire departments. Some smaller fire departments operate as public service districts (PSDs) and operate their own dispatch centers. Thus not all fire departments who were on scene could communicate directly with the city fire department.

STRUCTURE

The structure involved in this incident was a one-story, commercial furniture showroom and warehouse facility totaling over 51,500 square feet that incorporated mixed-construction types. The structure was non-sprinklered. The facility had been renovated and expanded a number of times over the past 15 years. The original structure was constructed in the 1960's as a 17,500 square foot grocery store with concrete block walls and lightweight metal bar joists supporting the roof to create an open floor plan. After being converted to a furniture retail store, the original structure was expanded by adding a 6,970 square foot addition on the left side in 1991 and a 7,020 square foot addition to the right in 1996. Both additions were attached to the original exterior walls and consisted of steel beams supporting the walls and roof. To provide access between the original structure and the two additions, the exterior walls on the B and D sides of the original structure were penetrated in 3 locations to form 8' X 8' openings that were equipped with metal roll-up fire doors. These fire doors were equipped with fusible links designed to automatically close in the event of a fire. In 1996, a 15,800 square foot warehouse was added to the rear of the main showroom. The main showroom and the warehouse were connected by an enclosed wood-framed loading dock of approximately 2,250 square feet. Double metal doors connected the rear of the right-side addition to the loading dock area. These metal doors swung outward (opened into the loading dock). Additional access to the loading dock area was available from the rear of the original structure. (See Diagram 1)

At the time of the incident, the main showroom included painted sheet-metal siding on the B and D side exterior walls with a combination of sheet metal and concrete block in the rear and a front masonry and block façade. The roof was constructed of sheet-metal roof over insulation. The warehouse was a free-standing, clear-span structure with sheet-metal walls and roof. Both structures contained concrete floors. The main showroom measured 9 feet from the floor to a suspended drop ceiling and approximately 14 feet to the roof, creating almost 5 feet of void space above the suspended ceiling. The warehouse measured 29 feet from the floor to the roof. The warehouse contained rows of metal storage shelving that contained a variety of furniture items including couches, chairs, mattresses, etc. (see Photo 5 showing storage racks in warehouse).

According to the city building officials, the structure was annexed into the city in 1990 and was determined to be a "non-code compliant" building after the fire. At the time of the incident, city ordinances required commercial structures over 15,000 square feet to be equipped with a sprinkler system. The original structure was grandfathered (exempt from this requirement) while the left and right additions did not meet the threshold requirement.

The structure had been inspected by the fire department on a number of occasions. A building pre-plan form obtained from the fire department dated April 26, 2006 did not mention any unusual hazards (See Appendix II).

It was reported to NIOSH investigators that trash from the furniture business including packing materials, cardboard, broken furniture and other flammable materials were routinely stored against the building near the loading dock on the D-side (north side).

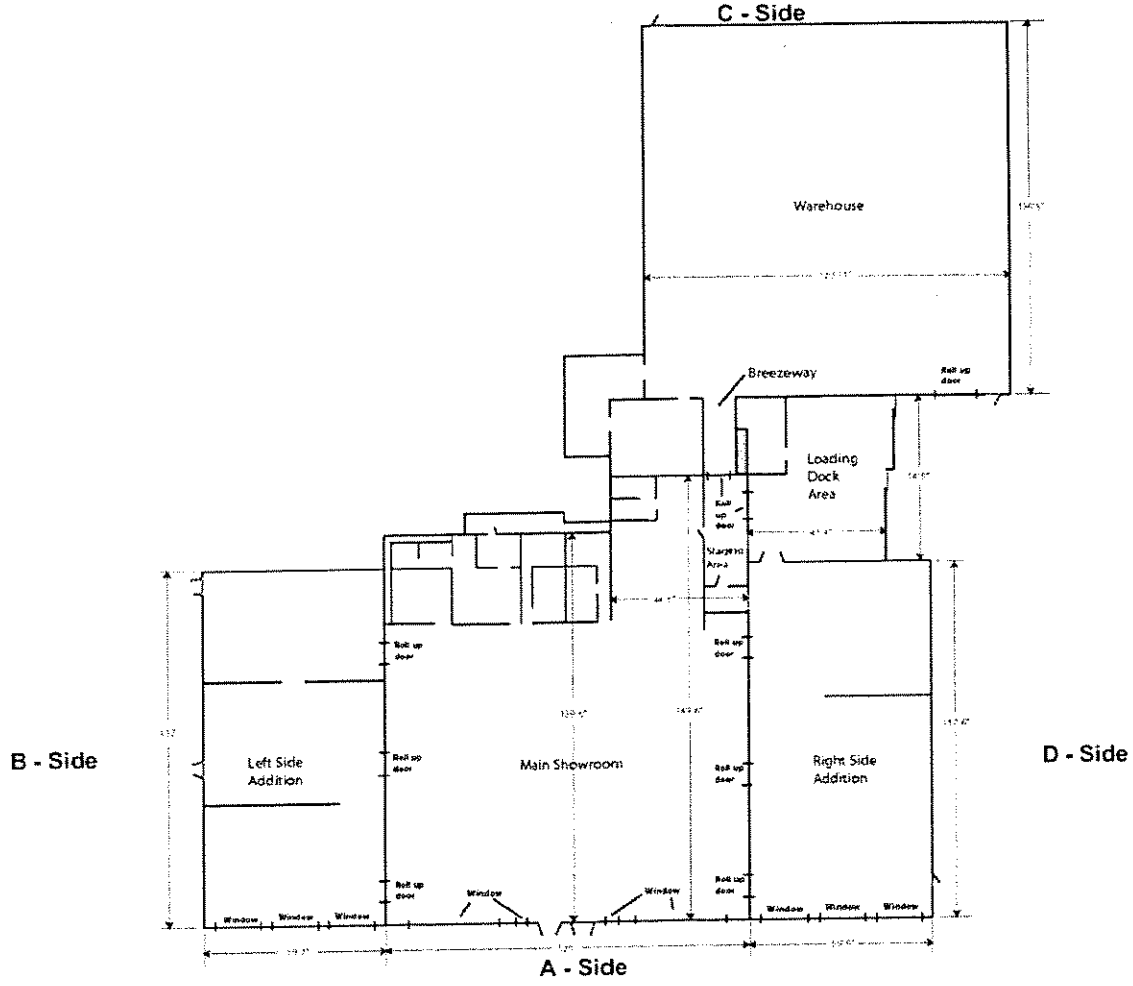


Diagram 1: Courtesy of NIST

WEATHER
At the time of the incident, the temperature was approximately 86 degrees Fahrenheit (F) with a dew point of 72 degrees F and a relative humidity of 63 percent. The sky was partly cloudy with light winds blowing from the south up to 11 miles per hour.[1]

INVESTIGATION
The furniture store fire on June 18, 2007, was originally dispatched as a possible fire behind the commercial retail furniture store. The initial incident commander radioed dispatch that the fire was a "bunch of trash free-burning against the side of the structure." The fire very rapidly grew into an incident of major proportions (see NIST Fire Model).

Summary of Initial Sequence of Events

On June 18, 2007, at approximately 1909 hours, the fire department was dispatched to a possible fire behind a large commercial retail furniture store. Two engines (Engine 11 and Engine 10), one ladder truck (Ladder 5), and the battalion chief (BC-4) were dispatched per department procedures. The on-duty Assistant Chief (AC) was at Station 11 and responded to the scene. While enroute, BC-4 observed heavy dark smoke rising into the air and radioed dispatch that smoke was coming from the direction of the store. Per department procedures, this initiated the third-due engine (Engine 16) being dispatched to the scene.

BC-4 arrived on scene driving north to south, pulled past the store and drove down the alley to the loading dock located on the D-side of the structure. BC-4 observed fire burning from ground level to the roofline of the covered loading dock. *Note: The covered loading dock connects the front showroom area to the rear 15,800-square foot warehouse facility.* BC-4 radioed dispatch that the fire was a "bunch of trash free-burning against the side of the structure". The dispatcher asked the responding units if they heard BC-4's report on the fire conditions. E-10, L-5, and E-16 acknowledged. The Chief advised the dispatcher to relocate Engine 15 (E-15) to Station 11.

When the AC arrived on-scene, he parked in the parking lot in front of the main showroom and entered the store through the main entrance located in the center of the front of the structure (A-side). The AC walked down the center of the showroom to the rear (in the original structure) then went back outside. He did not observe any smoke or fire in the main showroom. BC-4 drove his car to the front of the showroom and observed the AC coming out of the showroom's main entrance. The AC and BC-4 briefly discussed their observations and directed Engine 10 to back down the alley to the loading dock area. The AC remained at the front of the store while BC-4 returned to the D-side.

While the E-11 crew looked for a hydrant to establish water supply, the AC and the E-11 acting captain re-entered the main showroom. The AC radioed E-16 to come inside the front door when they arrived on scene. E-16 acknowledged. Ladder 5 (L-5) arrived on-scene at 1912 hours and parked on the highway in front of the furniture store. BC-4 radioed the AC and informed him that the fire was now inside the structure. The AC radioed Dispatch and requested that Engine 12 (E-12) be sent to the scene. BC-4 radioed E-12 and instructed them to lay a supply line to E-10. E-12 acknowledged. Fire was detected inside the main building when the Assistant Chief opened a door connecting the rear of the showroom to the loading dock area. The E-11 acting captain radioed that he needed a 1 ½" hand line inside the building. When E-15 radioed that they had relocated to the west-side, the AC instructed E-15 to come to the scene. The AC also instructed E-15 to bring a 1 ½" hand line inside to the rear right-side of the structure. The AC radioed that the fire was inside the structure "walking its way toward the showroom". The E-11 acting captain went outside and met the L-5 crew pulling a 1 ½" hand line off E-11. The AC radioed dispatch and requested Engine 6 (E-6) be sent to the scene. E-6 was dispatched at 1914 hours. The Chief (enroute) radioed dispatch to change the assignment to have Engine 19 dispatched to the scene and have E-6 relocate to Station 11. E-16 radioed the AC to ask if they were to go to the rear of the building. The AC instructed E-16 to come to the front door and bring a 2 ½" hand line inside. The Chief arrived on-scene at 1916 hours. *Note: Beginning at approximately 1916 hours, the L-5 fire fighter # 1 (ladderman 1) is heard over the radio asking for the 1 ½" hose line from E-11 to be charged.* Diagram 2 shows the location of Engine 10 and Engine 11 in relation to the structure and how the attack lines were initially deployed.

DRAFT

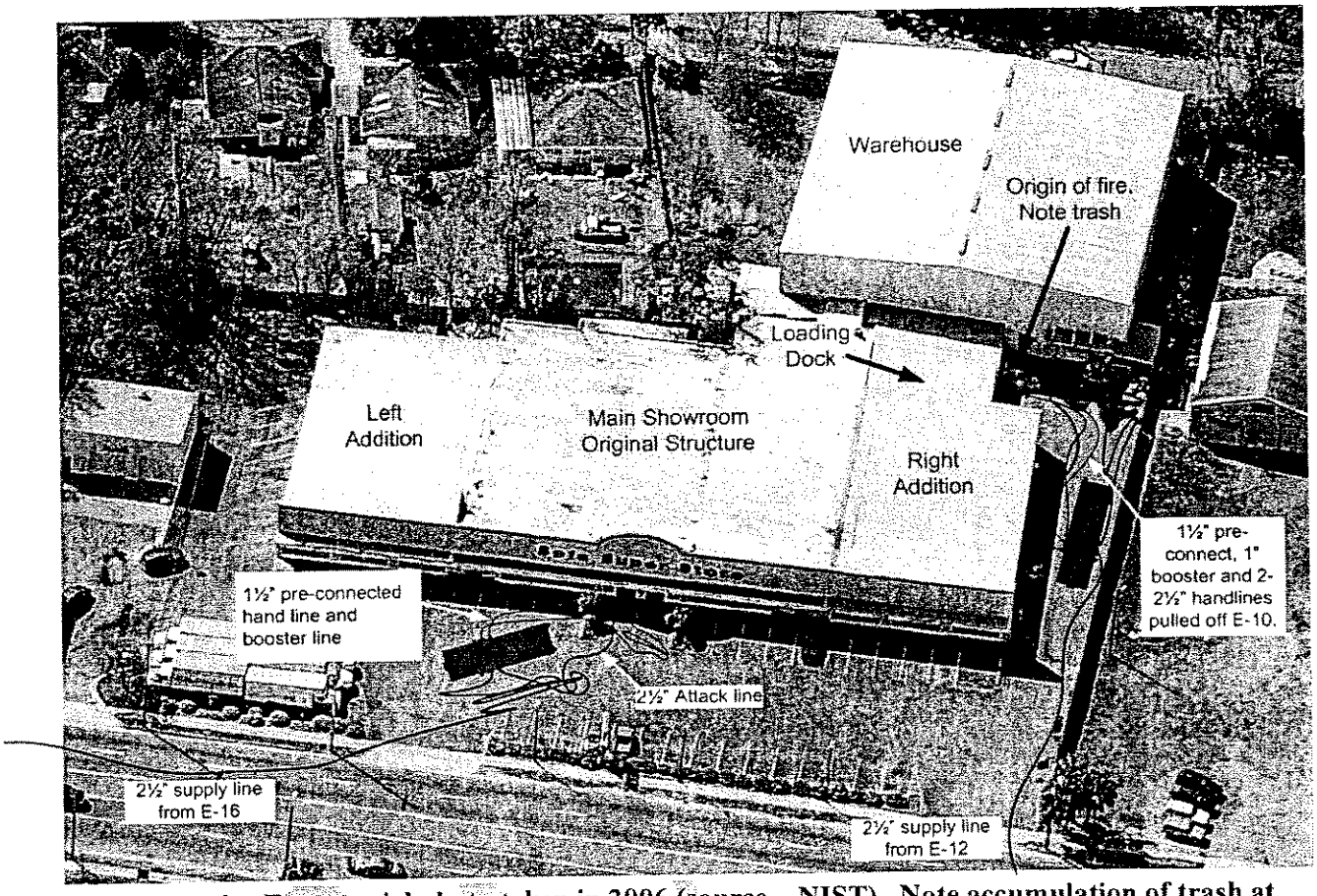


Diagram 2 – From aerial photo taken in 2006 (source – NIST). Note accumulation of trash at loading dock on the day photo was taken. Note the absence of ventilation ductworks or other roof penetrations over the showroom, thus no path or smoke and hot gases to escape.

A mutual aid department noticed heavy black smoke in area and self-dispatched to the scene. After some discussion with the Chief, the mutual aid department sent its apparatus to the rear of the warehouse and began fire suppression at the C-side of the warehouse.

The fire rapidly spread into the main showroom area and the burning furniture quickly generated a huge amount of toxic and highly flammable gases along with soot and products of incomplete combustion. At approximately 1926 hours, a store employee called the city's 911 Dispatch center and reported that he was trapped inside the back of the building. *Note: The employee was actually working in the front of the warehouse near the covered loading dock.* The employee stated he was banging on the exterior wall with a hammer. The dispatcher told the employee to continue banging on the wall and to stay calm and stay as low to the floor as he could. The dispatcher radioed the Chief and informed him of the situation. This information was also relayed to the city police dispatcher and a police officer on-scene verbally informed some fire fighters of the situation. The city Assistant Chief and a Battalion Chief (BC-5) quickly instructed a crew of four fire fighters from the mutual aid department to initiate the rescue attempt on the B-side of the warehouse. This crew quickly located

the point where the trapped civilian was banging on the exterior wall. They were able to cut through the exterior wall (metal siding) using a haligan bar and axe. The fire fighters were able to safely extricate the civilian at approximately 1933 hours. The mutual aid fire fighters assisted the employee to the front parking lot where he was checked by EMTs.

As the civilian was being rescued, the fire in the main showroom rapidly accelerated and quickly outgrew the available suppression water supply. The interior fire attack crews could not contain the spread of the fire. *Note: At this point, three hose lines were inside the main showroom – the initial 1½ inch hose line, a 2½ inch hose line and a 1" booster line. All three hose lines were pulled off Engine 11 which was being supplied by Engine 16 through a single 2 ½" supply line of 23 sections. Water supply from Engine 16 to Engine 11 was established at approximately 1926 hours.* The interior crews from Engine 11, Ladder 5, Engine 16, Engine 15, Engine 19, and Engine 6 became disoriented as the heat rapidly intensified and visibility dropped to zero as the thick black smoke filled the showroom from floor to ceiling. The interior fire fighters realized they were in trouble and began to radio for assistance. At least one mayday was called. Another fire fighter radioed that he had lost contact with the hose line and needed help. One fire fighter activated the emergency button on his radio. The Engine 6 crew and three fire fighters from E-15 were able to find the front door and exit the showroom. Once the chief officers realized that fire fighters were trapped inside, the front showroom windows were ordered to be knocked out to improve visibility. Fire fighters, including two fire fighters from the mutual aid crew who extricated the trapped civilian were sent inside to search for the missing fire fighters at approximately 1936 hours. The two mutual aid fire fighters made brief contact with two of the disoriented city fire fighters just as the flammable mixture of gases and combustion by-products in the showroom ignited, filling the showroom with flames. The two mutual aid fire fighters lost contact with the two city fire fighters and were driven back by the intense heat and flames. (See photo 2) One of the rescuers received second degree burns on his face, neck, hands, and arms.

While fire fighters were known to be trapped inside, the number and their identities were not known. Interior fire fighters were caught in the rapid fire progression and nine fire fighters from the first-responding fire department were killed.

Photo 2: Time approximately 1938 hours. Photo shows conditions at front of showroom just before the interior search and rescue attempts were halted due to the interior conditions. Photo courtesy of Bates.

The details of each responding apparatus company are listed below. Per department procedures, chief officers request additional apparatus as the need is identified. A second alarm was not formally initiated.

Engine 10 – D Side Activities

The E-10 crew (consisting of a captain, engineer, and fire fighter) were at a grocery store when the fire dispatch came in. The crew could see smoke billowing from the incident scene as they pulled out into the highway and they heard BC-4 report over the radio a trash fire on the side of the structure. *Note: E-10 and Ladder 5 are quartered at the same station. The fire fighters on E-10 and L-5 switched positions so that another fire fighter could train pumping E-10.*

The AC and BC-4 were already on-scene when Engine 10 arrived. The AC directed E-10 to back down the alley parallel to the D-side of the store toward the loading dock. The crew observed smoke and flames inside the loading dock area and the E-10 captain pulled a booster line (1" red hose) and the E-10 fire fighter pulled a 1 ½" pre-connected hand line to the loading dock. BC-4 returned to the loading dock after meeting with the AC and observed fire burning inside the structure so he radioed dispatch to report that the fire was now inside the building. The E-10 captain decided to use the 1 ½" hand line for the interior attack. The E-10 engineer pulled some sections of 2 ½" supply line off the engine but a hydrant was not readily visible so he charged the 1 ½" hand line from the engine's tank-water supply. By this time the Chief was on scene. Fire was readily visible inside the loading dock area as the E-10 fire fighter and captain advanced the hoseline inside the loading dock about 20 to 25 feet. At their furthest point of entry, the E-10 crew could just see the door connecting the enclosed loading dock to the showroom. This area became fully involved in flames as the E-10 crew directed water onto the fire. The water pattern produced by their fog nozzle just pushed the flames around the room as the crew attempted to extinguish the fire. The flames appeared to float in the air and burned floor to ceiling. Little smoke was observed. The water didn't appear to have any effect on the fire so the crew started to retreat. *Note: After the fire, 28 gallon cans of extremely flammable solvents were found inside the loading dock suggesting that at some point a vapor fire was burning inside the loading dock.* As they were backing up, the hose either burst or was burned through by the fire. Water spraying from the ruptured hose aided the fire fighters (improved visibility and provided a protective water curtain) in locating the door and moving outside.

When the E-10 attack crew exited the loading dock, they asked fire fighters from Engine 12 (E-12), just arriving on-scene, to repair the damaged 1 ½" hand line. The E-10 captain and fire fighter got the 1" booster line that they had previously pulled off E-10 and advanced the booster line into the loading dock. *Note: While getting ready to advance the booster line, the E-10 captain heard radio traffic about a civilian being trapped at the rear of the structure.* The booster line did not have any effect on the fire so they backed the line out, switched back to the 1 ½" hand line and moved back into the loading dock a third time. The Chief came to the loading dock and yelled inside to tell the E-10 captain not to advance any further. A few seconds later, the Chief ordered the E-10 crew outside. (See Diagram # 2) *Note: The E-10 crew was inside the loading dock approximately 15 minutes total.* BC-4 returned to the front of the building and asked the manager if he had keys for the warehouse at the rear of the loading dock. The manager said no so BC-4 returned to the loading dock and directed the E-12 crew and off-duty fire fighters who had responded to the scene to cut through the warehouse's roll-up door with a power saw. The crews experienced trouble with getting the saw to run properly so axes were also used to cut holes in the warehouse walls. BC-4 also directed the E-10 crew to assist with opening up the warehouse. BC-4 then directed the E-10 crew to get a 2 ½" hand line with stack-tipped nozzle from E-10 and pull it to the warehouse door. By this time, the warehouse was fully involved (See Picture 3)

Photo 3: Time approximately 1942 hours. Engine 10 and Engine 12 crews battle fire in warehouse from outside. Photo courtesy of police department.

BC-4 was able to look inside the warehouse and he observed a large amount of fire inside. BC-4 went back to the front of the building and directed 2 off-duty fire fighters to move Ladder 5 to the D-side and set it up for aerial water pipe operation. BC-4 also met with an off-duty captain and asked him to take over getting L-5 set up for operation. *Note: This off-duty captain is also an Assistant Chief at a neighboring mutual aid fire department located about 20 miles away. A crew from the mutual aid department responded and the captain used this mutual aid crew to assist with establishing to establish water supply to L-5 by supplying it with tank water and then stretching supply lines to Engine 12. Per department procedures, off-duty fire fighters are allowed to respond to working fires and become involved in fire suppression activities. Off-duty fire fighters are supposed to check in with the incident commander, give the IC their ID card or driver's license, and get an assignment.* The civilian owner of a small yellow frame building located next to the D-side of the furniture warehouse advised BC-4 that his building was full of vehicles, gasoline, oil, and other flammables (see Diagram # 2). BC-4 talked to the deputy chief of the first mutual aid department about the building and asked him to get a hand line to protect the yellow building. Once L-5 was put into operation at approximately 1944 hours, it also was used to protect the building.

Engine 11

The Engine 11 (E-11) crew (acting captain, engineer, and fire fighter) was in quarters at Station 11 when the fire dispatch was initiated. The AC and BC-4 were also at station 11. E-11 should have been the first due engine but Engine 10 was in the immediate area and arrived on-scene first. While enroute to the scene, the E-11 crew heard BC-4 radio smoke coming from the location of the furniture store. The original fire dispatch stated the fire was at the rear so E-11 turned left off the highway and drove behind the building. The AC radioed for E-11 to come back to the front of the store and pull into the second entrance to the parking lot (east side). E-11 circled around and turned right into the parking lot in front of the store (A Side) just as E-10 backed down the alley on the D side. E-11 got on scene at 1911 hours just before BC-4 radioed that the fire was inside the structure. The acting captain on E-11 directed the E-11 engineer and fire fighter to take a supply line to E-10. The E-11 fire fighter (suction man) started running down the street looking for a hydrant and the E-11 engineer followed driving E-11. They did not see a hydrant nearby and returned to the parking lot in front of the showroom, facing southwest. While the E-11 crew was looking for a hydrant, the E-11 captain entered the main showroom doors and walked down the center aisle to the rear of the showroom. The showroom was clear with no smoke visible inside. The AC had preceded the E-11 acting captain inside the showroom and the two walked into the right addition and walked to the rear of the right showroom addition. The AC reached to open the double metal door connecting the showroom to the loading dock area. They both observed a small wisp of light smoke visible at ceiling level in this area. They were not immediately alarmed by this smoke and the AC opened the door. They could see dark black smoke and lots of fire beyond the door. The AC attempted to pull the door shut but he could not shut the door due to the air rushing from the showroom toward the fire. The E-11 captain helped pull the door shut and the AC told the captain to get a 1 ½" hand line. At 1913 hours, the E-11 acting captain radioed that he "needed an inch-and-a-half inside the building". The E-11 acting captain then went outside and met the acting captain from Ladder 5 (L-5) pulling hose off E-11. They both pulled the 1 ½" pre-connected hand line through the center doors and down the center aisle. The hand line just reached the rear of the center showroom. The E-11 acting captain told the L-5 captain he was going to go outside to add in another section of hose. The E-11 acting captain added 5 more sections of 1 ½" hose (the second pre-connected hose line on E-11) and dragged it inside. The L-5 acting captain and L-5 fire fighter were at the nozzle at this time. The L-5 crew pulled the nozzle toward the rear of the right side addition (the line was still not charged at this point). The E-11 acting captain went outside to find out why they didn't have water pressure. The E-11 acting captain and engineer were able to get the pump in operation by cycling the engine transmission to get the pump in gear. *Note: Fire fighters interviewed by NIOSH stated that E-11 was notorious as being "touchy" and required experience to properly operate the pump system. On the day of the incident, the E-11 engineer was serving as the acting captain so E-11 was driven and operated by a fire fighter less experienced in its operation. Also note that at this point, E-11 was pumping tank water. A water supply was still not established.* The E-11 acting captain then re-entered the structure. He had to put on his facepiece and go on air because smoke was starting to accumulate in the center of the showroom. The smoke was grayish and still no big concern to him. Fire was still not visible in the showroom at this point. The E-11 fire fighter came inside flaking

more slack in the hose line. The E-11 acting captain asked him to go find out why there were still problems with the water pressure on the 1 ½" hose.

The Engine 16 (E-16) captain and fire fighter entered the showroom with a 2 ½" hose line that also was not charged at this point. The E-11 acting captain told the E-16 captain he would go find out why they still had no water and he followed the E-11 fire fighter outside to E-11. As he was exiting the showroom the inside conditions changed very rapidly. The smoke turned very thick and grayish black. The E-11 acting captain had to find the 1 ½" hose and follow it outside. E-11 still had no supply water at this point. After talking with the E-11 engineer about the water supply situation, the E-11 acting captain walked around to the loading dock area to look for the E-11 fire fighter. While at the D-side, BC-4 asked the E-11 acting captain to help with setting up a 2 ½" hose line to the warehouse. *Note: This 2 ½" hose line was pulled from E-10.* The E-11 acting captain was just stepping up to the warehouse door when the Chief ordered everyone out of the warehouse. The E-11 acting captain observed that the other fire fighters in this area had things under control so he went back to the A-side. When the E-11 acting captain returned to the front, fire was blowing out the front windows. He heard the Chief give an order to evacuate. The E-11 acting captain told the Chief someone needed to sound airhorns for an evacuation signal so the E-11 acting captain got into the E-11 cab and sounded the airhorn 3 times.

Ladder 5

Ladder 5 (L-5) was the third apparatus to arrive on-scene and initially staged in the front parking lot in front of the furniture store just south of E-11. The L-5 crew included an acting captain (Victim # 7), an assistant engineer (Victim # 4) and a fire fighter (Victim # 9 - who had switched assignments with the E-10 fire fighter). *NOTE: This fire department typically dispatches ladder trucks as extra manpower, so the crew would have focused on going in through the main entrance and not on ventilation activities. The ladder trucks do not have their own pumps and must be supplied by an engine in order to flow a master stream.* It is believed that the L-5 acting captain heard the E-11 acting captain radio for a hand line inside the structure so the L-5 crew started to pull a 1 ½" hose line off of E-11. When the L-5 crew took this hand line inside, they met the E-11 acting captain coming outside to get a hose line. The L-5 crew took the 1 ½" hose line to the rear of the right-side addition and after some delay in getting water, worked the nozzle putting water into the loading dock through the double doors connecting the showroom to the loading dock. This was the last confirmed location of the L-5 crew.

From approximately 1932 to 1934 hours, L-5 was repositioned from the front of the showroom to the D-side by off-duty fire fighters who had responded to the scene. Fire fighters from a mutual aid department along with off-duty fire fighters worked to establish water supply to L-5. Engine 3 arrived on scene at approximately 1940 hours and also worked to get a water supply established. Water supply was established at approximately 1944 hours.

Engine 16

At the time of the incident, Engine 16 (E-16) was designated as the 3rd due engine on all confirmed structure fires in the department's western district. *Note: Per department procedures, the 3rd due engine is designated as the "Safety Team" and should have been held on stand-by. However, the crew was instructed to engage in fire suppression activities before they arrived on-scene.*

The crew was in quarters when the fire dispatch was initiated. The E-16 crew consisted of a captain (Victim # 5), an engineer, and a fire fighter (Victim # 3). E-16 started to move toward the scene when BC-4 reported smoke in the area. E-16 arrived on scene driving south to north and pulled into the parking lot near E-11. At approximately 1915 hours, the AC radioed E-16 to bring a 2 ½" hose line in the front door. The E-16 captain and fire fighter dismounted the engine and went to talk to the AC. They took a 2 ½" hose line with a stacked-tip nozzle (uncharged) into the main showroom and met up with the acting captain from E-11 who was coming outside to see why there were problems with the water pressure on the 1 ½" handline. This was the last confirmed location of the E-16 crew.

The E-16 engineer was instructed to lay a supply line for E-11 so he drove back onto the highway heading north, then turned down a side street to where a hydrant had been previously located. This hydrant had been removed in 2004 because it had received damage from heavy truck traffic in the immediate area. He had to back out onto the highway and continue north to the next hydrant located approximately 1,200 feet away. *Note: It was reported that 23 50-foot sections of 2 ½" supply hose were stretched from E-11 to the hydrant.* The E-16 engineer reported hearing the radio traffic about the civilian worker being trapped in the rear of the building just as he was pulling up to the hydrant . (see Diagram # 1)

Traffic on the highway began to drive over the supply line from E-16 to E-11. The E-16 engineer radioed dispatch that the city police were needed for traffic control. As crews attempted to battle the escalating fire, water supply became an issue. At approximately 1919 hours, the E-16 captain radioed to charge the 2 ½" hoseline (inside the building). The E-11 engineer radioed the E-11 acting captain to ask if he wanted the 2 ½" hoseline charged. The AC responded to not charge the 2 ½" hoseline until the supply line from E-16 to E-11 was charged. *Note: Water supply from E-16 to E-11 was not yet established at this point. Water supply from E-16 to E-11 was established at approximately 1926 hours. Later, during the time period from 1937 hours to 1941 hours, chief officers in front of the showroom repeatedly called the E-16 engineer to boost water pressure to E-11 as the fire escalated out of control. At approximately 1941 hours, the E-16 engineer was instructed to switch to another radio channel to clear up the main channel for rescue purposes.*

Engine 12

The Engine 12 (E-12) crew, consisting of an acting captain, assistant engineer, and two fire fighters were in quarters at the time of the initial dispatch. At approximately 1912 hours, the AC radioed dispatch to send E-12 to the scene. While enroute, BC-4 radioed E-12 and instructed them to lay a

supply line down the alley on the D-side of the building to E-10. Engine 12 acknowledged this assignment. The Chief also radioed the same instructions. Engine 12 arrived on-scene at approximately 1917 hours and backed down the D-side alley to Engine 10 to hook up a 2 ½" supply line, then drove across the highway and down a side street to a hydrant, laying out 15 sections of supply line. The E-12 engineer hooked up to the hydrant and operated the pumps supplying E-10 throughout the incident. Water supply to E-10 was established at approximately 1920 hours. The E-12 acting captain and fire fighters assisted the E-10 crew by repairing the 1 ½" hoseline that had burst, then forced open the walk-thru door at the front of the warehouse and advanced a 2 ½" hoseline inside the warehouse about 10 feet before being ordered to withdraw. The 2 ½" hoseline was then operated at different locations along the D-side of the showroom, the loading dock area and the warehouse. The fire was reported to be burning so hot that the water immediately turned to steam and did little good in suppressing the fire. The E-12 crew also cut holes in the metal siding along the D-side walls for ventilation and to direct water streams inside the building. They reported experiencing problems with a gasoline powered saw that had the wrong type of blade and also wouldn't run properly because the air filter was clogged. Crews had to use axes to cut thru the metal siding since the power saw wouldn't run. Later in the incident, additional supply lines were stretched to E-12 so that E-12 could pump to E-11 and L-5 and L-4. Chief Officers radioed E-12 to boost the water pressure to E-10 at least 3 times during the incident. The E-12 engineer also radioed dispatch to have the city police department stop traffic on the highway from running over the supply lines.

Engine 15

The Engine 15 crew was in quarters when the first alarm crews were dispatched. The E-15 crew consisted of a captain (Victim # 8), engineer, and two fire fighters. One of the E-15 fire fighters was newly hired and was responding to his first working structure fire with the department. Per department procedures, E-15 began to relocate from downtown to the west side. The E-15 crew reported that smoke was visible from a couple of miles away as they relocated so they began running hot (Code 3 - lights and sirens on). At approximately 1912 hours, the Chief radioed dispatch to have Engine 15 relocate to Station 11. Almost immediately, the AC radioed for E-15 to come to the scene. Then the AC radioed E-15 to bring a 1 ½" hose line to the right rear of the building. Engine 15 arrived on-scene at approximately 1917 hours just as Engine 16 began dropping supply line for Engine 11. The E-15 captain instructed the E-15 engineer to get dressed to go inside the building. *NOTE: Per department procedures, most fire fighters responding after the first alarm would be expected to enter a structure fire for additional manpower.* The E-15 captain and two fire fighters donned their SCBA and proceeded to Engine 11. One fire fighter took a pike pole and haligan bar while the other fire fighter took an axe. They briefly talked with the E-11 engineer. They observed two hose lines going through the front entrance and followed the hose lines (one 1 ½" and one 2 ½") inside. Visibility at the front of showroom was still good at this time and the crew did not go on air until they were about 10 feet inside the door. As the E-15 crew advanced further, the visibility decreased. They were aware of other crews working to their right. The E-15 captain discussed with his crew that he wanted to work a hose line to the center and left rear of the main showroom to cut

the fire off from spreading in that direction (contain fire to the right rear corner). The E-15 captain instructed fire fighter # 2 to go outside and get a booster line.

Fire fighter # 2 went outside and pulled the booster line as far as he could down the center of the main showroom. By this point, the visibility had decreased to where it was difficult to distinguish other fire fighters moving nearby. Fire fighter # 2 moved as far as he could and then began to flow water from the booster line toward a red glow overhead. *Note: Several fire fighters interviewed by NIOSH reported observing the roof trusses in the main showroom area glowing red from the intense heat.*

The E15 engineer donned his PPE and went to the front door where he assisted fire fighter # 2 in pulling the booster line through the front door. The E15 engineer advanced inside the showroom about 10 feet where he encountered thick black smoke from ceiling to floor. He could see a red glow at the rear of the showroom but no distinct flames. He ran low on air and went outside and changed his SCBA cylinder then re-entered the main showroom. It was noticeably hotter inside the showroom as the E15 engineer entered the second time. The engineer heard three airhorn blasts then heard radio traffic about evacuating the building so he followed the hose line outside.

After the E-15 captain and fire fighter # 1 moved deeper into the showroom, the E-15 captain instructed fire fighter # 1 to go get another hose line. *Note: This was the last confirmed location of the E-15 captain.* Fire fighter # 1 proceeded out and found a charged 1 1/2" hose line near a door way and dragged this hose as far as he could in the direction of where he had last seen the E-15 captain. Fire fighter # 1 did not encounter the E-15 captain or his other crew members when he returned to the rear of the showroom. Fire fighter # 1 opened the hose line nozzle a couple of times but couldn't see much fire. Fire fighter # 1 noticed that it was starting to get really hot and the thickening smoke was reducing visibility to near zero. His low air alarm began to go off so he started to follow the hose line outside. He came to a point where the hose line ran underneath furniture and he couldn't follow the hose line any further so he jumped over the furniture. Once on the other side of the furniture, he searched for the hose line but could not locate it. As he searched for hose lines, he saw the bright flashing light of a PASS device and moved toward the light. He encountered the engineer from Engine 6 who was looking for his crew. The E-6 engineer guided the E-15 fire fighter to the front of the showroom and when they got close enough to the front entrance to hear the sound of Engine 11 running outside, the E-15 fire fighter bolted thru the door (shortly after 1931 hours). The E-15 fire fighter went to Engine 11 and asked the E-11 engineer to switch out his SCBA cylinder. At approximately 1934 hours, while changing his cylinder, the E-15 fire fighter was asked if he had radioed a mayday and he reported that he did not. *NOTE: During this timeframe, the Chief ordered fire fighters outside the main entrance to knock out the showroom windows to improve visibility inside the building.* While changing cylinders, the E-15 fire fighter heard that other fire fighters were still missing inside the building. After changing cylinders, he followed the hose lines back inside the main showroom to search for his crew. He advanced about 50 feet into the showroom and encountered intense heat and could see fire burning everywhere around him. He met the E-6 crew (captain, engineer, and fire fighter) following the hoseline to exit the showroom. The E-6 engineer told the E-15 fire fighter he couldn't go any further and he needed to get out. These four

fire fighters exited the showroom with the E-15 fire fighter jumping through a showroom window to the right of the doorway. The E-15 captain did not exit the building.

Engine 19

The Engine 19 crew was in quarters when the fire dispatch was initiated. The Engine 19 crew consisted of a captain (Victim # 6), engineer (Victim # 1), and one fire fighter (Victim # 2). Engine 6 had just been dispatched to the scene when, at approximately 1914 hours, The Chief radioed dispatch to send Engine 19 to the scene and to have Engine 6 relocate to Station 11. Engine 19 arrived on scene at approximately 1920 hours and parked in the middle of the highway in front of the furniture store. The E-19 crew entered the main showroom thru the front entrance. There are few details about their activities after this point.

Engine 6

The Engine 6 crew, consisting of a captain, engineer, and one fire fighter were in quarters when they heard the initial fire dispatch. Engine 6 is the second engine to relocate to the western district per fire department procedures. At approximately 1914 hours, the AC radioed dispatch to send Engine 6 to the scene. When Engine 6 was dispatched, the Chief 1 radioed for Engine 6 to relocate to Station 11 and for Engine 19 to come to the scene. At approximately 1919 hours, the Chief radioed for Engine 6 to come to the scene and to come in the front door. Engine 6 was already enroute (relocating to the west side) and acknowledged that they were enroute. Engine 6 arrived on scene at approximately 1921 hours. The E-6 captain and E-6 fire fighter went to the front door and donned their SCBA masks. The E-6 engineer also donned his turnout gear, SCBA, and grabbed a pike pole from E-6. They observed one 1 ½" hose line and one 1" booster line going in the front door and followed the 1 ½" hose line into the building. The E-6 captain observed light smoke coming out the front door and also at the connection of the main showroom and the right side addition. Visibility was initially about 5 to 10 feet. There was little heat and the E-6 captain and fire fighter were able to walk into the showroom standing upright as they followed the hose line to the rear of the main showroom then into the right side addition. The E-6 engineer entered the showroom a couple of minutes later and reported the smoke at the front of the showroom was intensifying and beginning to bank down. He followed the 1 ½" hose line to the rear of the main showroom. The booster line reached only to the right rear side of main showroom. He could hear other fire fighters talking in the direction the 1 ½" hose line was running (into the right addition) and began opening up the walls and pushing up ceiling tiles to look for fire extension. The E-6 captain and fire fighter met the E-11 crew near the double doors to the loading dock. The E-11 crew turned over the nozzle to the E-6 captain and stated they were going to get another hose line. The E-6 captain worked the nozzle for approx 5-6 minutes while the E-6 fire fighter attempted to pull slack in the hoseline so they could advance closer to the fire in the loading dock area. The water pressure on the 1 ½" hose line fluctuated and at one point water pressure dropped to near zero. The E-6 captain attempted to radio outside to ask what happened to the water pressure but the on-off button on his radio was broken off so he couldn't turn on his radio.

The E-6 crew noticed that the interior conditions suddenly deteriorated very rapidly with visibility decreasing and in less than 30 seconds, the heat became unbearable.

As the E-6 engineer was opening the walls at the rear of the main showroom, three or four fire fighters approached him and frantically stated that they were running out of air and couldn't find the way outside. The E-6 engineer heard their low-air alarms sounding as they pulled away from him and disappeared into the smoke. This happened in a matter of seconds. During the short contact with the other fire fighters, the E-6 engineer was turned around several times and became separated from the hoseline. He moved in short circles until he found the hose line and began following it. Almost immediately, the E-6 engineer encountered another fire fighter (later identified as the E-15 fire fighter) who also stated he was out of air and couldn't find his way outside. The E-6 engineer led the E-15 fire fighter along the hose line (at one point having to reverse directions) until they got within a few feet of the front door. They could hear the sound of Engine 11 running outside and the E-15 fire fighter ran outside, followed by the E-6 engineer. After checking on the condition of the E-15 fire fighter, the E6 engineer re-entered the main showroom.

As the E-6 fire fighter was pulling slack in the 1 ½" hose line, another fire fighter, searching for the way out, ran into him and momentarily knocked him off the hose line. As the E-6 fire fighter regained the hose and stood up, water pressure in the hose was lost. At this point, the heat began to intensify and the E-6 fire fighter decided it was time to retreat. At the same time, he began hearing radio traffic of the mayday followed by attempts by the Chief and the dispatcher to identify who was calling mayday and who had activated their emergency button.

As the heat rapidly intensified, the E-6 captain began following the hoseline outside. His low air alarm started to sound and he burned his hands feeling for the hose line. His facepiece began to pull down onto his face as he exhausted his remaining air supply. He encountered the E-6 fire fighter who told the E-6 captain he had the hose line and they began moving toward the front of the building. By this time, the E-6 captain was almost completely out of air and he bolted toward the front of the building. The E-6 engineer was following the hoseline back into the showroom looking for his crew and encountered the E-6 captain who was desperately low on air and becoming disoriented. The engineer grabbed his captain and guided him toward the front door until they could hear the sound of Engine 11 running outside. They made their way outside followed seconds later by the E-6 fire fighter and the E-15 fire fighter # 1. The front showroom windows were just being knocked out when the E-6 crew exited the showroom (See Photo 4).

Photo 4: Last surviving crews exit showroom at approximately 1935 hours. Photo courtesy of police department.

Engine 9

The Engine 9 (E-9) crew, consisting of a captain, engineer, and fire fighter were in quarters at Station 9 when they heard the fire dispatch. The crew monitored the fireground radio traffic and knew that something bad was happening. They heard the Chief calling for additional manpower and Engine 9 was dispatched to relocate to Station 10 and arrived at 1946 hours. At 1951 hours, E-9 was directed to drive past the incident site and stretch a 2 ½" supply line from the hydrant west of the site back to the site to Engine 13 to supply Ladder 4 before it arrived. After stretching the supply line, the E-9 crew worked on the D-side of the structure supporting fire suppression activities.

Engine 13

The Engine 13 (E-13) crew consisting of a captain, engineer, and fire fighter were in quarters when they heard the fire dispatch. E-13 was dispatched to the scene at approximately 1937 hours and arrived on-scene at 1942 hours. The E-13 crew worked to help establish water supply to Ladder 5 by stretching a 2 ½" supply line from E-12 to L-5. The E-13 crew then assisted with fire suppression activities.

Engine 3

The Engine 3 (E-3) crew consisting of a captain, engineer and fire fighter was out of service at a special event several miles outside of the city when they heard radio traffic about the fire. When they heard the incident was a confirmed structure fire, they began moving back to the city. At approximately 1924 hours, E-3 was directed to relocate to cover Station 16/19. At approximately 1931 hours, the Chief called dispatch and requested the next closest engine company. E-3 was still enroute to Station 16/19 so the Chief requested that E-3 come to the scene and lay a supply line to Ladder 5. At approximately the same time, L-5 was repositioned from in front of the structure to the D-side by off-duty fire fighters who had arrived at the scene. E-3 arrived on-scene at 1940 hours. The E-3 suction man (fire fighter) took their 5" adaptor to connect to the hydrant, but E-19 (driven by the acting captain of E-11) arrived at the hydrant first. E-3 stretched a 2 1/2" supply line from E-19 (the next hydrant west of the structure) to L-5 and water supply was established at 1944 hours. After establishing water supply, the E-3 engineer stayed at the engine and the rest of the E-3 crew worked on the D-side of the structure operating a 2 ½" hand line. Fire fighters cut holes into the sheet metal siding and at one point, the E-3 fire fighter and an off-duty fire fighter attempted to advance a hoseline inside the showroom by crawling under the metal shelving located along the D-side wall. They were only able to advance 5 or 6 feet and had to withdraw because of the intense fire and heat inside the burning showroom.

Ladder 4

The Ladder 4 crew consisting of an acting captain, engineer, and fire fighter were in-quarters at the time of the initial dispatch. The crew monitored the radio traffic and knew things were escalating. The Chief radioed dispatch at approximately 1948 hours and requested that Ladder 4 be dispatched to the scene. At approximately 1952 hours, the Chief radioed dispatch and requested Engine 9 be sent from Station 10 to lay supply line for L-4. Ladder 4 was on scene at approximately 1956 hours and BC-4 directed the crew on where to position in the front parking lot. The showroom roof had already collapsed when L-4 got set up. Engine 19 began supplying water to L-4 at approximately 2002 hours through one 2 ½" supply line. At approximately 2006 hours, L-4 radioed the Chief and requested another supply line be set up to L-4 so that both nozzles on the bucket could be put into operation. The mutual aid department laid a 4" supply hose to Ladder 4. Ladder 4 initially operated with 300 gpm flowing through one nozzle. L-4 operated at 750 gpm when the second supply line was set up.

Mutual Aid

Jurisdictional boundaries separating the municipal fire department from surrounding fire departments were irregular and often poorly defined. As commercial areas were annexed into the city, jurisdictional boundaries often split blocks. For example, the furniture store involved in this incident was within the city's jurisdiction. Residential structures directly behind the furniture store property that were within the same block were in the jurisdiction of a mutual aid fire department that operates as a public service district (PSD). This fire department had 60 fire fighters operating from 4 stations and served a population of approximately 24,000 in an area of approximately 30 square miles. *Note: This fire department operated its own dispatch system.* This fire department routinely used positive pressure fans for ventilation purposes and routinely deployed thermal imaging cameras at structure fires.

Two crews from the mutual aid department were in close vicinity to the incident scene for a special event and noticed heavy smoke showing. The acting battalion chief (BC) for the mutual aid department radioed his dispatch and said the mutual aid crews were going to the scene. The dispatcher reported that the municipal fire department was already on scene. The acting battalion chief (BC), Engine 2 (E-2) with a crew consisting of an acting captain and an engineer / fire fighter, and Rescue 1 (R1) with a crew of an engineer and a fire fighter, proceeded to the scene and arrived at approximately 1924 hours. The BC radioed dispatch that they were on-scene and also requested that Engine 1 be dispatched. The BC immediately went to the D-side of the furniture showroom and talked with the city Chief. The BC informed the Chief he had two crews on scene and another crew on the way. The BC also offered the use of their thermal imaging camera and their large diameter (4") supply hose (LDH). The city Chief initially told the BC that the mutual aid department's assistance would not be needed. The BC asked the Chief if he wanted the mutual aid department to cover the rear of the warehouse and the Chief said "yes". At approximately 1925 hours, the BC directed E-1 to drive down the street at the rear of the warehouse and set up operations there. The BC also radioed dispatch to send Truck 1 (T-1). Engine 1 arrived on scene at approximately 1926 hours with a captain, engineer, and two fire fighters. Engine 1 connected to a hydrant located just west of the warehouse. The E-1 captain and fire fighters advanced a 1 ¾" preconnected hand line inside the warehouse through a door located on the B-side at the rear near the B-C corner at approximately 1930 hours.

Engine 2 and Rescue 1 parked in the middle of the highway in front of the main showroom (See Photo 8). The two crews (two fire fighters on each apparatus) donned their turnout gear and proceeded to the D-side of the showroom to join up with their BC when a city police officer stopped them and said a male employee was trapped in the rear of the structure and had telephoned 911 for assistance. They proceeded to the front of the showroom and were directed by the city AC and BC-5 to assist them in rescuing the trapped employee. They radioed their dispatch at approximately 1928 hours that the city fire department wanted them to assist in rescuing the employee, then proceeded

around the B-side of the showroom to the rear after knocking a lock off a wooden gate at the B-C corner to gain access. The fire fighters located the area where the employee was banging on the exterior wall. The fire fighters used a haligan bar and axes to cut thru the metal siding and opened a hole large enough for the employee to crawl through. The mutual aid department's dispatch was notified at approximately 1931 hours that the employee had been rescued. The fire fighters assisted the employee to the front parking lot and walked him to an ambulance. The fire fighters returned to the front entrance and observed heavy black smoke filling the showroom and pushing out the door but no visible fire. They observed city fire fighters frantically yelling about fire fighters missing inside the structure. By this time, the city Chief was in front of the showroom and he ordered the front showroom windows to be knocked out to improve visibility inside the showroom. The E-2 acting captain and R-1 engineer knocked out the windows to the right of the doorway while the city BC-5 knocked out the windows to the left of the doorway. The fire fighters noted that air rushed inside the showroom after the windows were knocked out. The E-2 acting captain cut his hand (requiring time off) while knocking out the windows. The E-6 and E-15 fire fighters (from the city department) exited the building at approximately 1935 hours while the windows were being knocked out. Some of the city fire fighters were completely out of air. They were yelling that fire fighters were down inside the showroom. At approximately 1936 hours, the Chief instructed the mutual aid fire fighters to go inside and search for the missing city fire fighters. The R-1 engineer and the E-2 fire fighter teamed up and followed the hoselines inside the front door a short distance. They encountered two city fire fighters who were in distress. One was down on his hands and knees screaming for help and also attempting to drag the other city fire fighter. The R-1 engineer attempted to assist the city fire fighters while the E-2 fire fighter guided them back to the hose line. The showroom erupted in flames and the heat knocked the fire fighters to the floor, causing them to become separated. The E-2 fire fighter found the door first and assisted the R-1 engineer outside at approximately 1938 hours. They both reported hearing PASS devices going off inside the structure. The R-1 engineer received second degree burns to his face, hands, and arm.

The R-1 engineer stated that other fire fighters were just inside the door so another rescue attempt was made. An off-duty captain from the mutual aid department, along with two city fire fighters attempted to advance a 2 ½" hose line back inside the door, but their progress was quickly halted by the intense heat and fire and they were forced to retreat. A third attempt to enter the front entrance was stopped at the doorway by the intense fire and heat. At 1938 hours, the city Chief radioed for everyone to stay outside and to abandon the building.

At approximately 1935 hours, the mutual aid BC requested that Engine 7 be dispatched and come to the rear of the warehouse with E-1. At approximately 1943 hours, the mutual aid BC requested Engine 4 come to the scene. The BC directed E-4 to go the rear of the warehouse and set the deck gun. At approximately 1948 hours, the BC requested Truck 1 (T-1) to come to the scene. The mutual aid BC radioed E-4 to hold up at the highway to let T-1 come down the back street first. T-1 arrived on scene at approximately 1950 hours and was set up at the rear of the warehouse to direct a master stream of water down onto the roof of the warehouse. At approximately 1952 hours, E-4 radioed BC that the city fire department wanted E-4 to set up water supply to the city fire

department's Ladder 4 (L-4) in the parking lot at the front of the main showroom. At approximately 2000 hours, the E-4 acting captain announced E-4 is pumping water to the city's L-4.

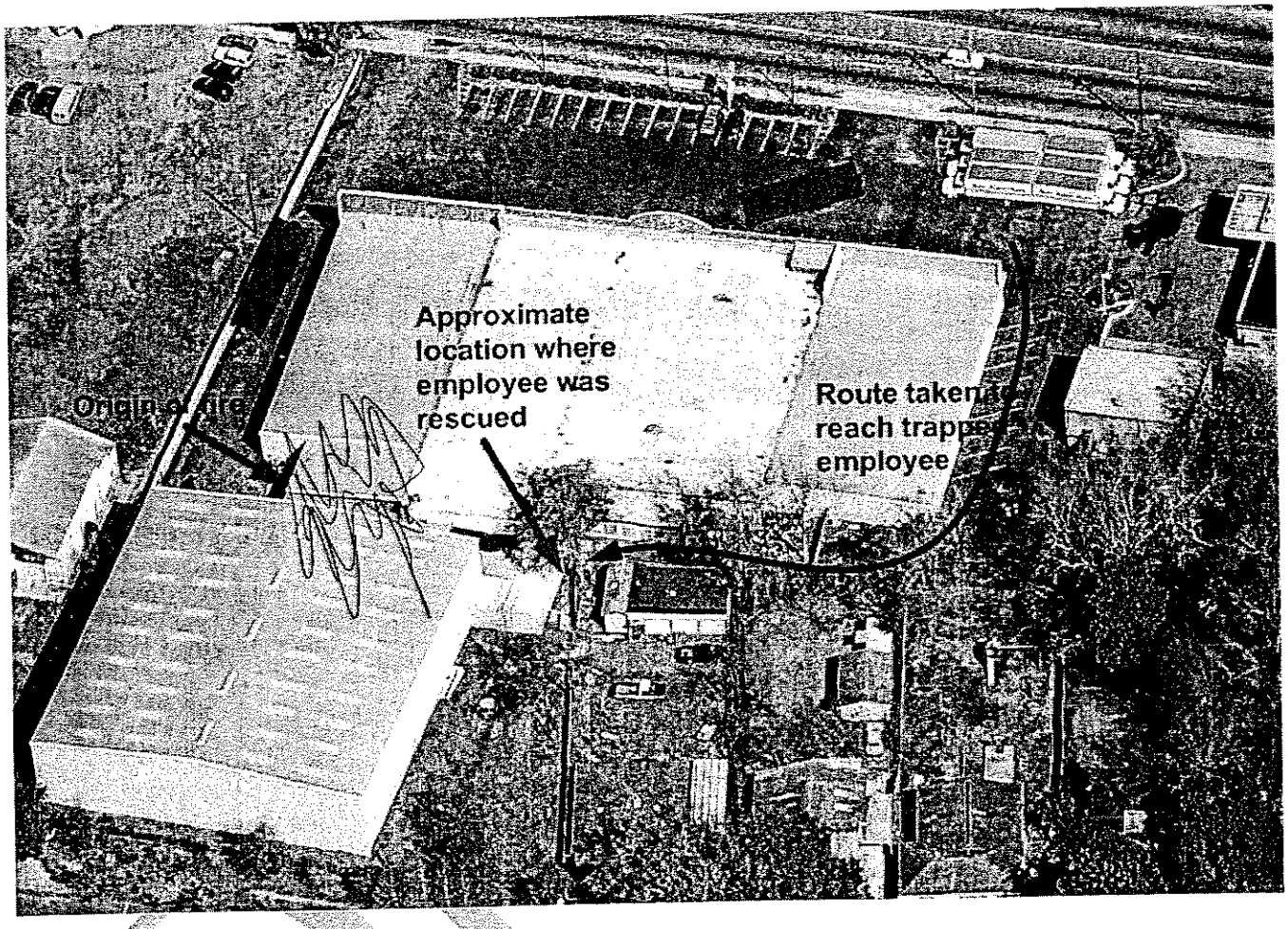


Diagram 3: From aerial photo taken in 2006 (source – NIST). Location where mutual aid crew cut through exterior wall to extricate male employee trapped inside the warehouse.

Water Supply

Water supply was a critical factor in the sequence of events leading up to the nine fatalities. Engine 10 should have been the second due engine and established the water supply to Engine 11. However, E-10 arrived first and was directed to back down the alley to the loading dock on the D-side of the structure since that was where visible fire was located. Engine 11 positioned in front of the main showroom and the E-11 acting captain went inside the showroom while the E-11 crew looked for a hydrant. They did not see a hydrant close by and returned to the parking lot in front of the showroom.

Engine 12 was dispatched at 1912 hours and directed to lay a single 2 ½" supply line to Engine 10. Engine 16 was already enroute as the third-due engine. Engine 16 arrived on scene at 1915 hours and Engine 12 arrived on scene at 1917 hours. Engine 12 stretched approximately 600 feet of 2 ½" supply line and had water supply established to E-10 at approximately 1920 hours. Engine 16 laid approximately 1,150 feet of supply line and had water supply established to E-11 at approximately 1926 hours. Both E-10 and E-11 put 1 ½" pre-connected hand lines into operation using tank water while waiting for supply lines to be established. Both engineers experienced problems with their respective pumps cavitating. Pressure had to be boosted by both E-12 and E-16 well above the 200 psi working limit of the supply hoses being used in order to accommodate for the friction losses and low water volume.

Adequate water supply for the size of the structure and fuel loads inside was never established and adequate hose lines capable of attacking the fire with adequate fire streams were not deployed. Ladder 5 was not put into operation until after the fire had escalated, trapping the victims inside. Additional supply lines for Engine 11, Ladder 5 and Ladder 4 were laid after it was known that fire fighters were trapped inside the structure.

E19 / E3 laid a second 2 ½" supply line to L-5 at approximately 1944 hours. BC-5 directed the acting captain on E-11 to drive E-15 west to the next hydrant to lay another supply line back to E-11. Then BC-5 told him to take E-19 instead. Engine 3 arrived on scene just as E-19 was positioning to the hydrant.

A small mutual aid department (mutual aid # 2) supplied L-5 with tank water at approximately 1940 hours until a supply line was established at approximately 1944 hours. A second supply line from E-12 to L-5 was also put into service after 2000 hours.

Ladder 4 was put into operation at approximately 2001 hours with a 2 ½" supply line laid by E-9. The first responding mutual aid department (mutual aid # 1) stretched a 4" supply line to L-4 at approximately 2005 hours so that both fire nozzles could be put into operation.

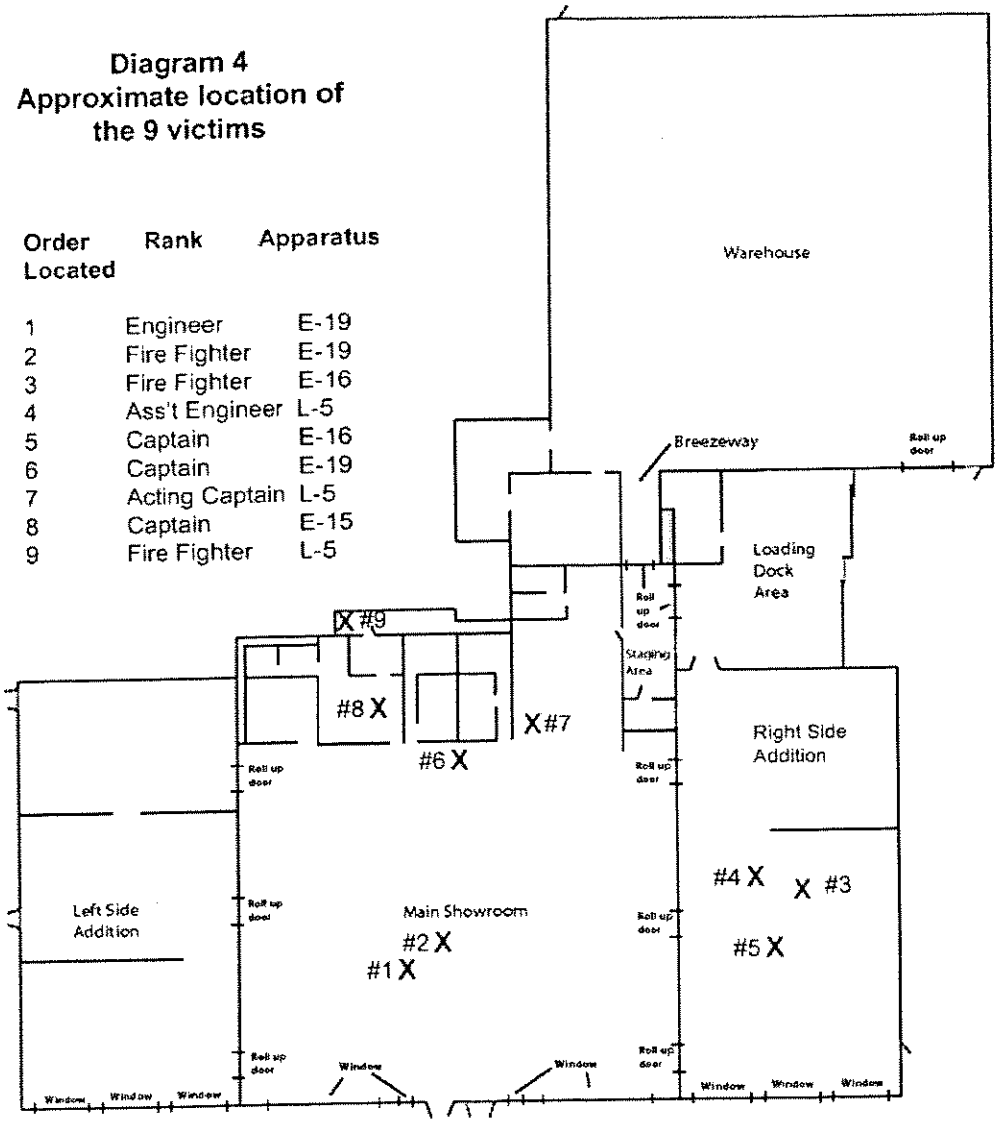
The mutual aid departments utilized 4" supply lines. After the larger diameter supply lines were put into service, the water pressure issues with L-4 and L-5 were reduced.

CAUSE OF DEATH

According to the County Coroner's report, the cause of death for all nine victims was carbon monoxide toxicity, smoke inhalation and thermal injury due to fire. Diagram 4 shows the approximate location where each of the nine victims was located inside the structure.

Diagram 4
Approximate location of the 9 victims

Order Located	Rank	Apparatus
1	Engineer	E-19
2	Fire Fighter	E-19
3	Fire Fighter	E-16
4	Ass't Engineer	L-5
5	Captain	E-16
6	Captain	E-19
7	Acting Captain	L-5
8	Captain	E-15
9	Fire Fighter	L-5



RECOMMENDATIONS

Final Recommendations will be discussed here in Final Report

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INVESTIGATOR INFORMATION

This investigation was conducted by Timothy Merinar, Safety Engineer, Matt Bowyer, General Engineer, Jay Tarley, Safety and Occupational Health Specialist, and J. Scott Jackson, Occupational Nurse Practitioner, with the NIOSH, Fire Fighter Fatality Investigation and Prevention Program, Surveillance and Field Investigations Branch, Division of Safety Research, NIOSH. Stacy Wertman, Safety and Occupational Health Specialist, NIOSH, provided literary support. Jeffrey O. Stull, President, International Personnel Protection, Inc. conducted a forensic evaluation of the personal protective equipment (PPE), protective clothing and station uniforms worn by the victims. An expert technical review was provided by ..... This report was authored by Timothy Merinar. Special thanks to Nelson Bryner, Paul Fuss, and Glen Fortney of the National Institute of Standards and Technology (NIST) for their assistance during this investigation. The investigators would also like to

thank the fire department, local mutual aid departments, county coroner, city safety manager, and city police department for their assistance during this investigation.

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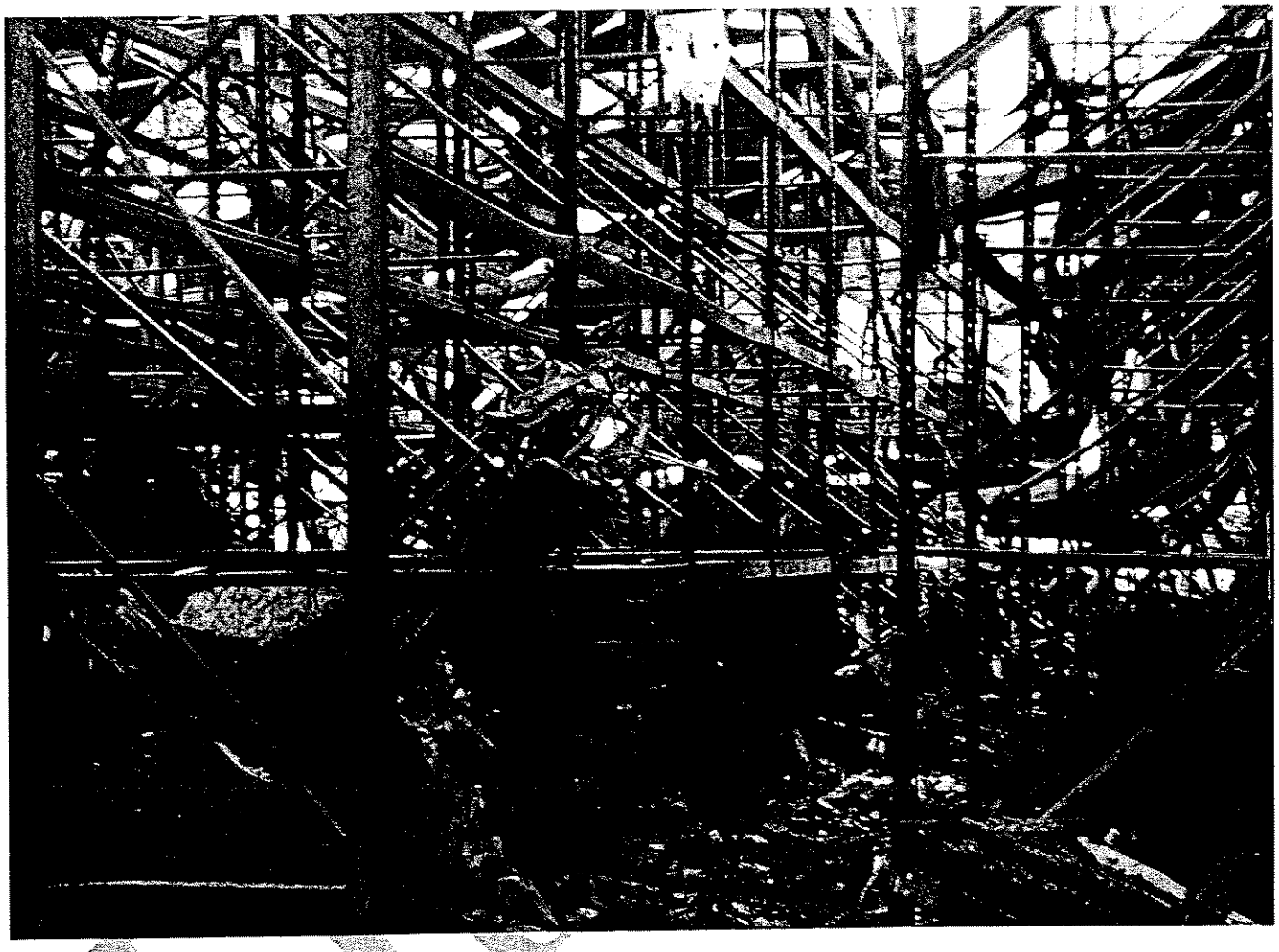

Photo 5: Storage racks in warehouse post fire. Storage racks were filled with various furniture and mattress items. Note the extent to which the storage racks filled the warehouse which gives an indication of the volume of merchandise and the fuel load inside the 15,600 square foot warehouse. The warehouse measured approximately 130 ft. by 120 ft. and was 29 ft from floor to roof. Photo – NIOSH.

Photo 6: Time is approximately 1923 hours. Fire is visible over showroom roof. Smoke is dark gray in color and becoming turbulent. The flames may not have been visible from front parking lot or close to the building on the D-side. Photo courtesy of Folk,

Photo 7: Time Approximately 1924 hours. Fire continues to grow above the loading dock and showroom roof. Photo courtesy of Folk.

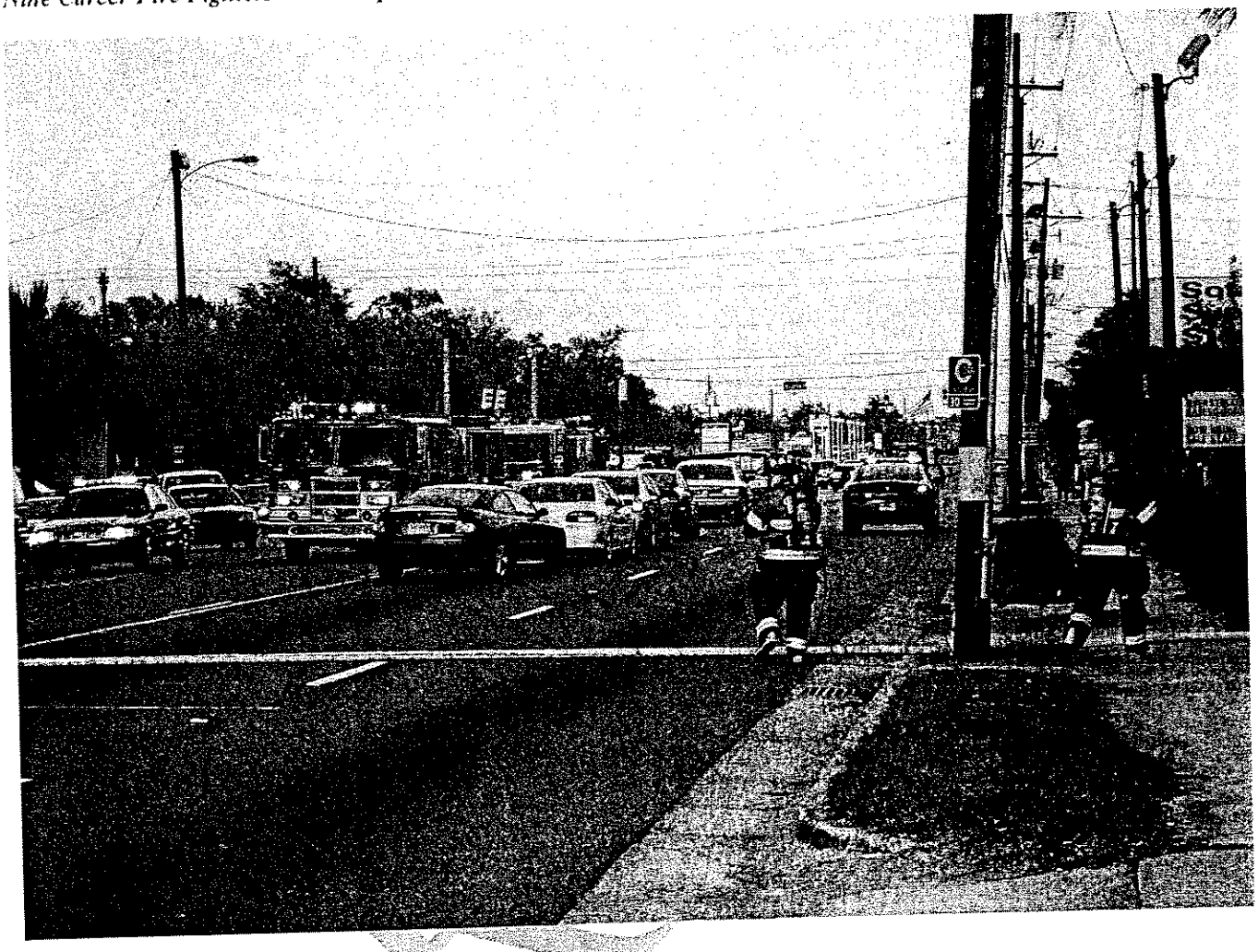

Photo 8: Time Approximately 1925 hours. Note traffic on major highway in front of incident site driving over 2 ½ inch supply line. Hose line runs from Engine 12 (to left of photo) to Engine 10 (to right of photo. Photo shows mutual aid crew members arriving on scene. Photo courtesy of Folk.

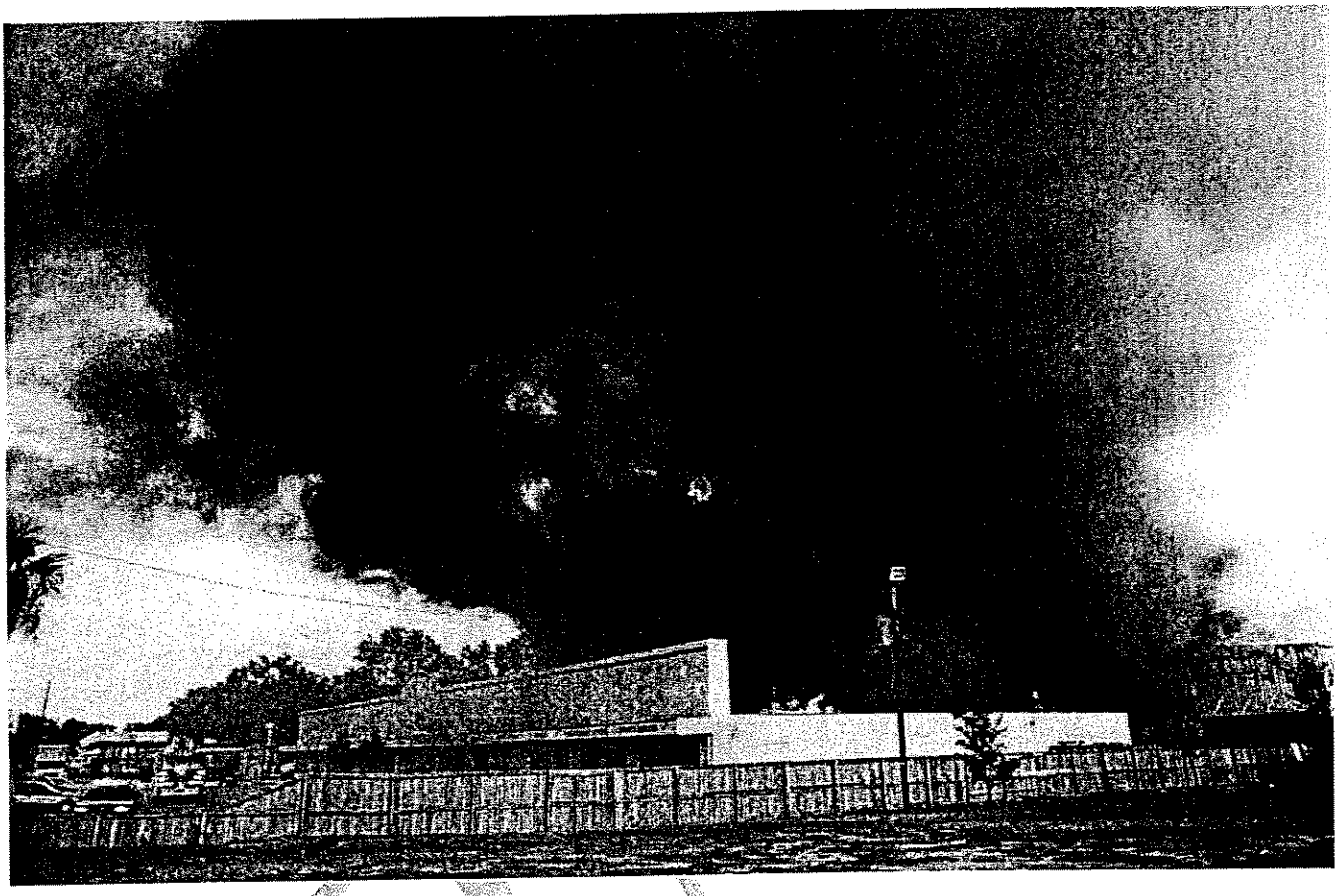

Photo 9: (193011 Fox). Time approximately 1930 hours. Note how smoke has changed to dark black color indicating it is rich with products of incomplete combustion. Photo courtesy of Associated Press, Alexander Fox photographer,

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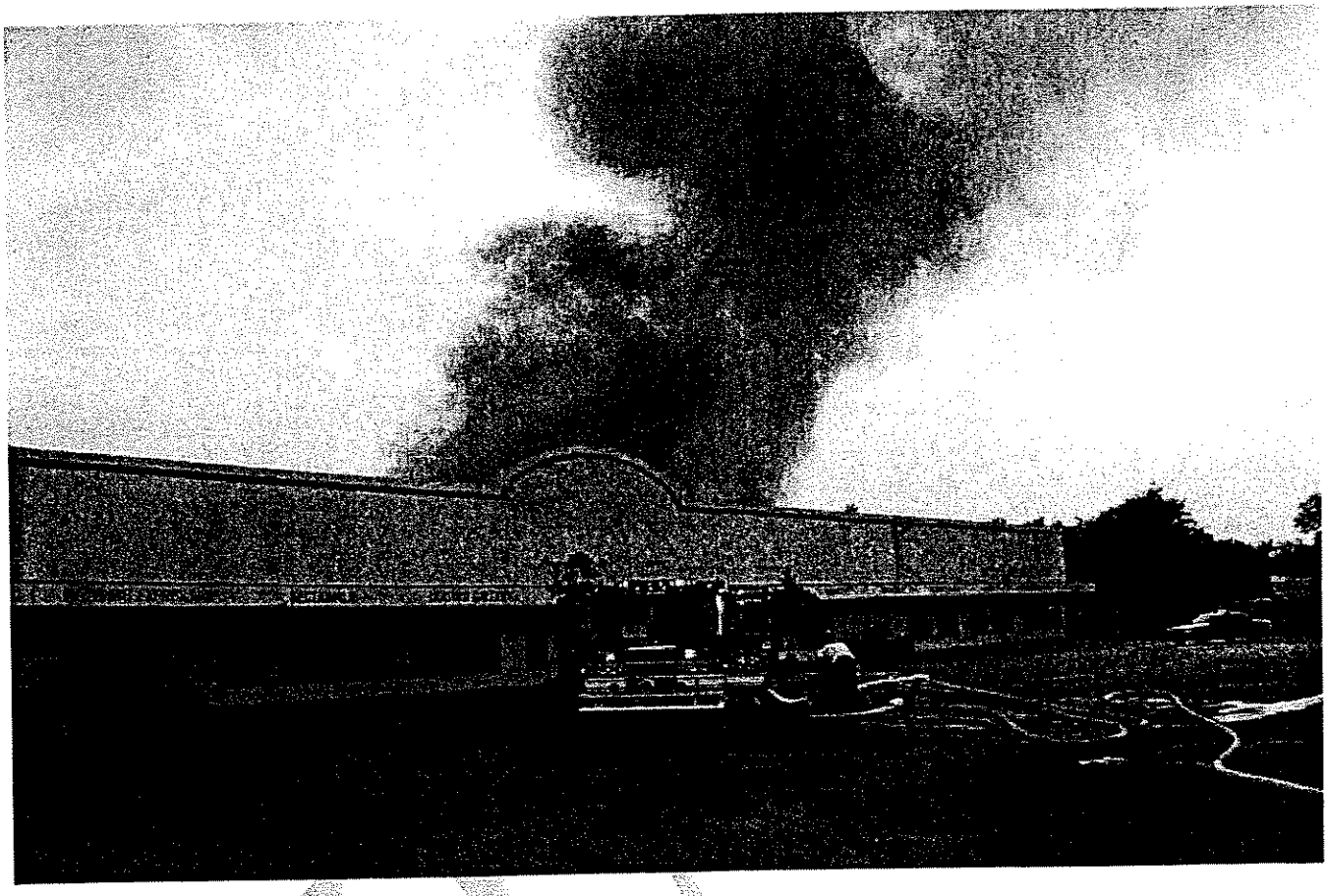

Photo 10: Time approximately 1934 hours. Note almost all on-duty fire fighters dispatched to the scene are inside showroom. Note lack of any fire personnel in front of structure. At this point, the E-11, L-5, E-16, E-15, E-19, and E-6 crews are inside the showroom. Also note how the color of smoke column appears different from previous photo. Photo courtesy of Police Department, Bill Murton, photographer.

Photo 11: Time is approximately 1934 hours. Loading dock area approximately 20 minutes after first crews arrived on scene. Note heat damage to metal siding on loading dock and warehouse. Photo courtesy of police department. Photo courtesy of Police Department, Bill Murton, photographer.

Photo 12: Time approximately 1935 hours. Photo taken just prior to mutual aid department making rescue attempt in front showroom. Note the heavy tar stains on the windows indicating the smoke inside the showroom is rich with flammable products of incomplete combustion. Photo courtesy of Police Department, Bill Murton, photographer.

Photo 13: Time approximately 1936 hours. Note turbulent dark gray smoke rolling out of the showroom as the front windows are being knocked out. Mutual aid crew is assembling for search and rescue attempt. Photo courtesy of Associated Press, Alexander Fox, photographer.

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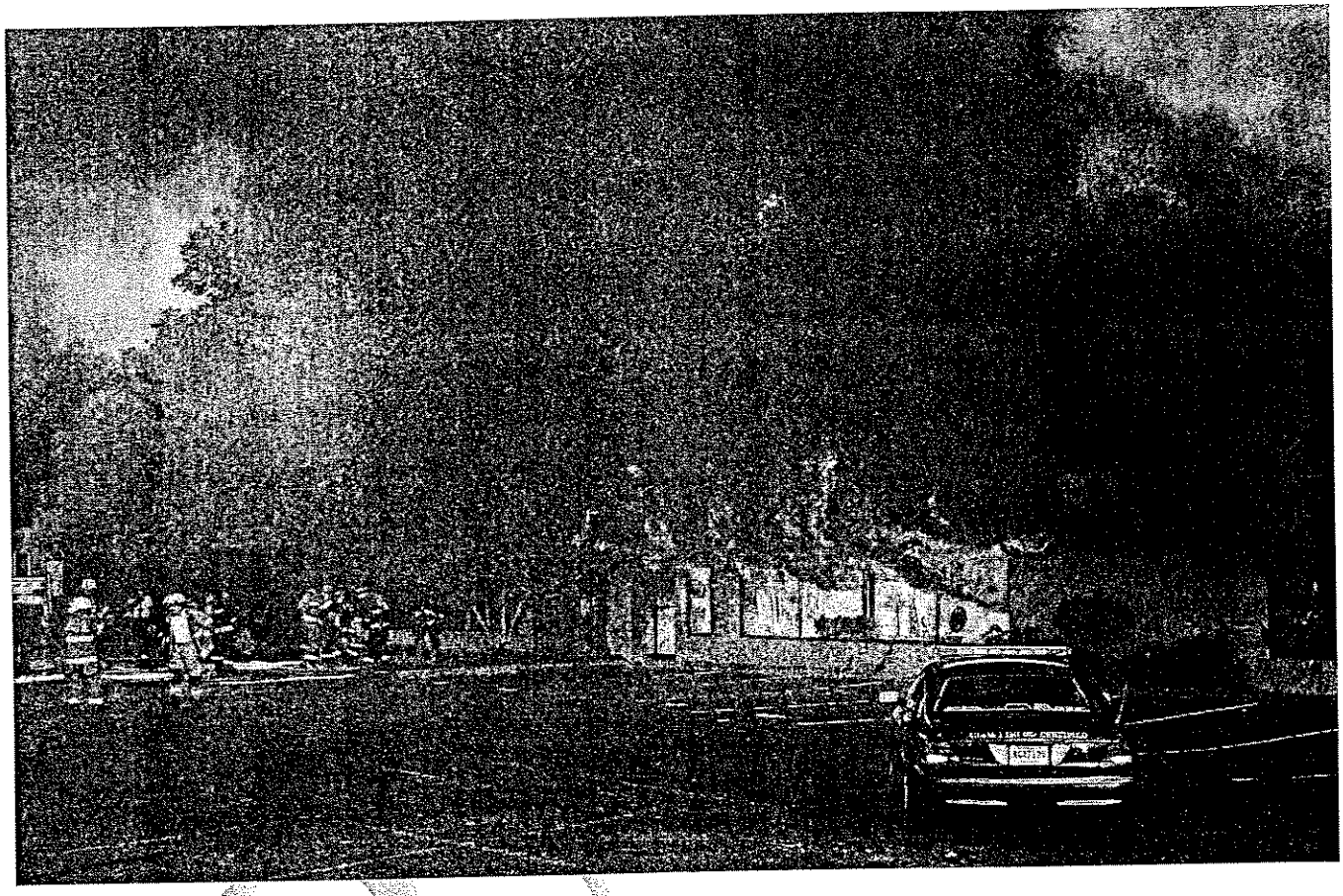

Photo 14: Time approximately 1938 hours. Photo taken less than a minute after mutual aid rescue crew is forced out of the showroom by the interior conditions. Note fire rolling out the showroom windows. Photo courtesy of Bates.

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Photo 15: Time approximately 1939 hours. Crews are preparing to make second rescue attempt. Note lack of water pressure on the booster line and the 2 ½" hand line. Also note lack of gloves and hood. Photo courtesy of Bates.

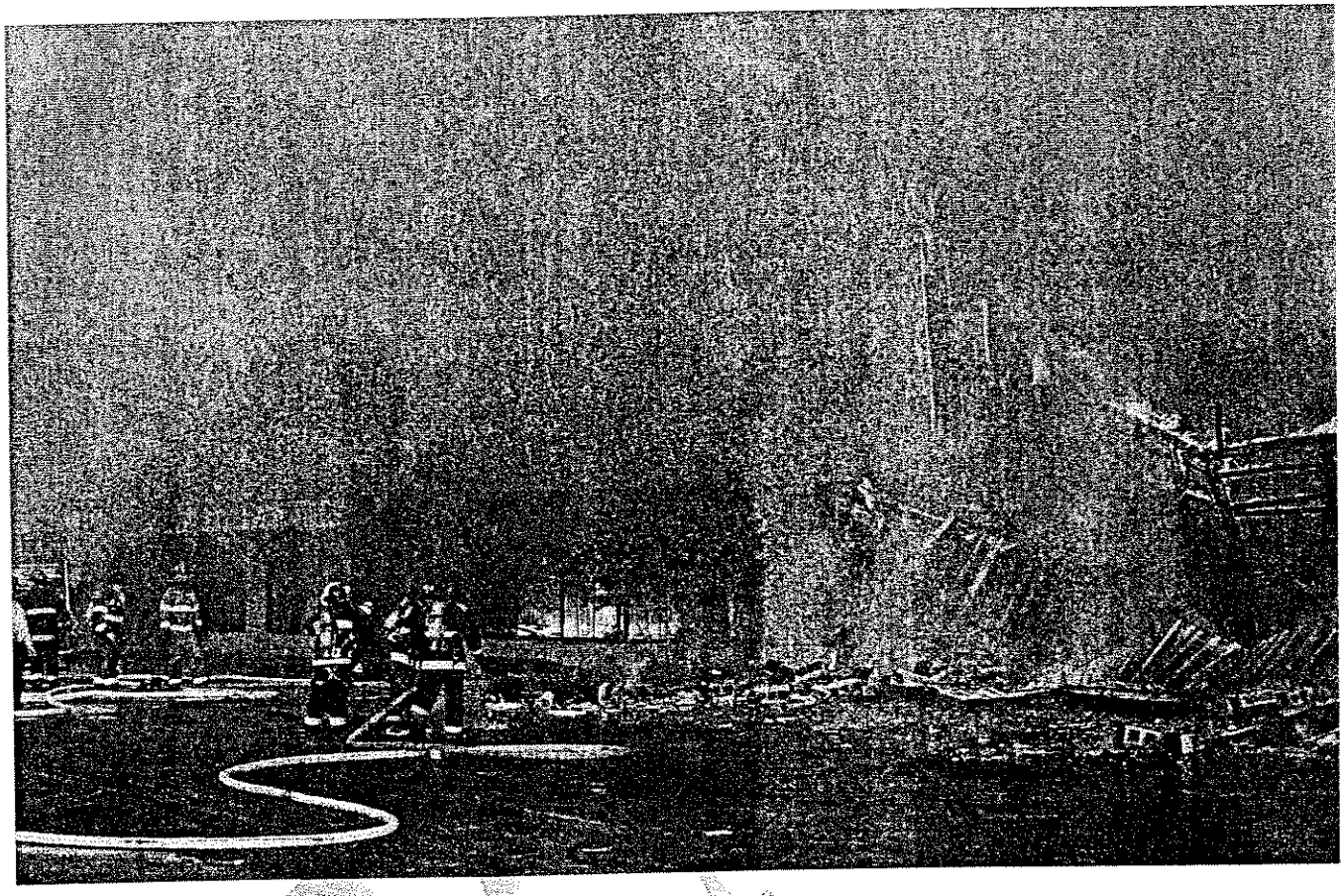

Photo 16: Time approximately 1951 hours. Front façade beginning to collapse as roof over main showroom collapses. Photo courtesy of Bates.

Appendix I

PPE Evaluation Report

DRAFT

Appendix II

Preplan Inspection Form

DRAFT

Preplan inspection form for the incident location. Note that names, addresses, and phone numbers have been removed.

City of [redacted] Fire Department [redacted]

PRE-PLANNING BUILDING INSPECTIONS

Company Eng 11, Eng. 10 & L5 Date 04/24/06 Officer [redacted]

Address [redacted]

Occupant [redacted]

Owner [redacted]

Emergency # (Key Holder) [redacted] [redacted] [redacted]

Lives Involved: Day 15-18. Night 0

Type of Building Metal, Block No. Floors 1

Type of Roof Comp. Construction Metal Block

F.D. Connections N/A Standpipes N/A

Auto Sprinkler N/A Location Main Valve N/A

Fire Alarm Indicator N/A

Location Main Elec. Switch left Rear of Building

Location Main Gas Shut-Off Right Rear of Building.

Stairways N/A

Elevators N/A

Fire Escapes N/A Scuttle Holes N/A

Vertical Openings ~~N/A~~ 7 Hallways 1

Fire Doors 11 Exits 8

Best Way To Enter Building: Day Front Night Front

Hydrant Location Pebble at Sarah Rd.

Contents Household furniture + office Equipment

Exposures to be Covered Texaco gas station + Car dealership

Date of Last Extinguisher Recharged May 2006

CO2 ______ Dry Chemical ✓

Additional Comments and/or Concerns Warehouse in Rear Taller Racks Approx. 30' ~~hight~~ high.