

STATE FIRE MARSHAL'S OFFICE

Line of Duty Death Investigation



Investigation Number 02-50-10

Captain Jay Jahnke

Houston Fire Department
October 13, 2001

Texas Department of Insurance
Austin, Texas

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- Houston Fire Department
- Texas Fire Chief's Association
- Houston Association of Fire Fighters
- Texas Commission on Fire Protection
- Texas State Association of Fire Fighters
- Harris County Medical Examiner's Office
- U.S. Bureau of Alcohol, Tobacco and Firearms
- National Institute for Occupational Safety and Health

Summary

A six-alarm high rise condominium fire claimed the life of a civilian and a veteran Houston firefighter that was attempting to rescue him.

At 4:43 AM on October 13, 2001, the Houston Fire Department received a report of a fire from employees working in the West building of the Four Leaf Towers Condominiums, located at 5110 San Felipe in Houston, Texas. Initial reports to the fire department communications division were of a fire alarm with smoke on the fifth floor and a person trapped.

HFD Engine Company 2, a three-man company commanded by Captain Jay Jahnke, was dispatched at 4:48 AM to the scene as part of the first alarm assignment, arriving at 4:54 AM. Captain Jahnke, firefighter Michael Phillips, and Engineer/Operator Jimmy Johnson traveled to the fifth floor. Shortly afterward, Captain Robert Green and firefighter Dan Matt of Ladder 28 joined them. E/O Johnson returned to L28 and brought a thermal imaging camera to the floor, then returned to his engine to assist in establishing a water supply. The four personnel from E2 and L28 made entry to Unit 52 at approximately 5:03 AM to begin initial firefighting and rescue operations in Unit 52 on the fifth story of the 41-story high-rise condominium building.

As the initial attack crew entered Unit 52, they were met with moderate heat and heavy smoke conditions. An initial search of the foyer area of Unit 52 did not locate the male resident that was reported trapped. Firefighters Phillips and Matt respectively reported their breathing apparatus air supply was running low on air and they exited the fifth floor one at a time. Jahnke and Green then withdrew from Unit 52 into the corridor to make their way to the exit stairs after Jahnke stated he would probably be low on air soon. The self-closing door to Unit # 52 was held open by the abandoned hose line as the firefighters retreated. Heat and smoke were pushed into the north to south exit access corridor by gusty north winds entering broken windows of the north and west sides of the condominium and exiting through the corridor door.

Visibility in the corridor at that time was near zero. Jahnke and Green followed the fire hose as they left Unit 52. Jahnke was disoriented and stated they were going the wrong direction. Green encouraged Jahnke to continue following the hose. As they reached a tangle of hose near the hose cabinet connection, Jahnke became separated from Green. At 5:10 AM Jahnke called for help on his portable radio and stated he was running out of air. Jahnke's last recorded transmission was at 5:13 AM.

Approximately 5:34 AM, Jahnke was located by a rescue team in the elevator lobby, halfway between Unit 52 and the exit stair door. Captain Jahnke's SCBA air supply had been depleted, his SCBA mask and helmet were off, and his personal safety alarm was sounding and flashing. With some difficulty, the rescue team removed Jahnke from the fifth floor and carried him down the stairs to the outside of the building at about 5:36 AM. After aggressive resuscitative efforts at the scene, Jahnke was taken to Memorial Hermann Hospital, arriving about 6:03 AM. Jahnke was pronounced dead shortly after his arrival at the hospital.

The Harris County Medical Examiner attributed the cause of Captain Jay Jahnke's death to asphyxia due to lack of oxygen.

Introduction

On the morning of October 13, 2001 the Houston Fire Department (HFD) notified the State Fire Marshal's Office (SFMO) of the line of duty death (LODD) of a firefighter. Two Deputy State Fire Marshals were sent to the scene and arrived later that morning. Deputy Richard Bishop was designated as the SFMO Incident Coordinator. Upon arrival, the SFMO Deputies met with HFD investigators in the fire building. The investigators stated that Captain Jay Jahnke had been injured at the fire and had been pronounced dead at Hermann Hospital. Jahnke's body had been moved to the Harris County Medical Examiner's Office for autopsy.

SFMO commenced an LODD investigation under the authority of Texas Government Code Section 417.0075. The statute requires SFMO to investigate the circumstances surrounding the death of the firefighter, including the cause and origin of the fire, the condition of the structure, and the suppression operation, to determine the factors that may have contributed to the death of the firefighter. The State Fire Marshal is required to coordinate the investigative efforts of local government officials and may enlist established fire service organizations and private entities to assist in the investigation.

HFD Arson Bureau had almost completed the scene excavation portion of their origin and cause investigation prior to the arrival of SFMO investigators. Agents from the U.S. Bureau of Alcohol, Tobacco and Firearms (BATF) were assisting HFD with other aspects of the fire investigation.

SFMO, with the assistance of HFD, began the SFMO LODD investigation with an overview of the fire scene, an examination of the building structure and systems, and a review of HFD records of the incident. The SFMO Incident Coordinator requested the assistance of an investigator from the SFMO Fire Industry Licensing division to assist with an evaluation of the fire alarm, sprinkler, and standpipe systems. The SFMO Incident Coordinator also requested assistance from the Texas Fire Chief's Association and the Texas State Association of Fire Fighters in reviewing fireground operations at the incident. The Texas Commission on Fire Protection was requested to assist in the evaluation of the personal protective equipment of the firefighter. The National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality Investigation and Prevention Program was notified.

Origin and Cause Investigation

The HFD Arson Bureau had almost completed the scene excavation portion of their origin and cause investigation prior to the arrival of SFMO investigators. SFMO did not participate in the scene excavation or in the follow up phases of the investigation. HFD investigators determined the fire originated in a bedroom of Unit 52 used as a television and computer room. **(Figure 1)**

On April 2, 2002 the HFD Arson Bureau ruled the fire as accidental in origin, with the probable cause being carelessly discarded smoking materials ¹. The origin and cause report reported an ashtray was located near a sofa in the area of origin in the television room. Additional testing of electronic equipment in the room of origin may be conducted by an outside research firm at a later date.

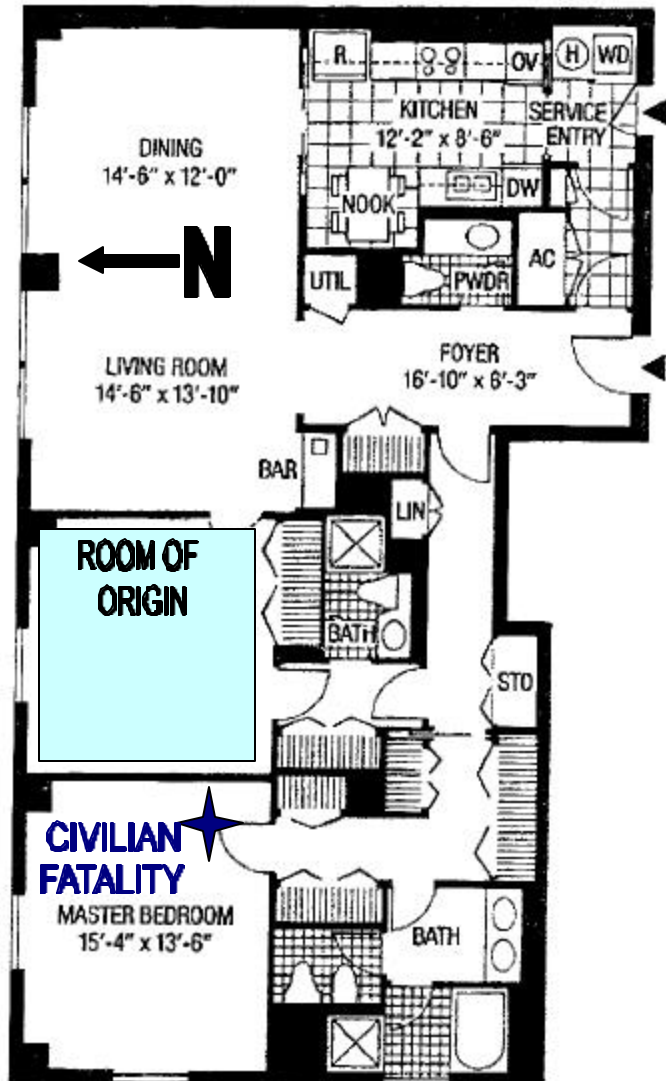


Figure 1-Unit 52

Building Structure and Systems

Construction

Four Leaf Towers-West is a 41-story high rise residential building. **(Figure 2)** The basement service area contains electrical, mechanical, and fire protection equipment. A parking garage is also located in the basement. The first floor contains a lobby, administrative offices, mailboxes, security office, and ancillary areas. The second floor contains self-storage units for residents. Floors 3-40 contain condominium apartments. Building mechanical equipment is located on the 41st floor.

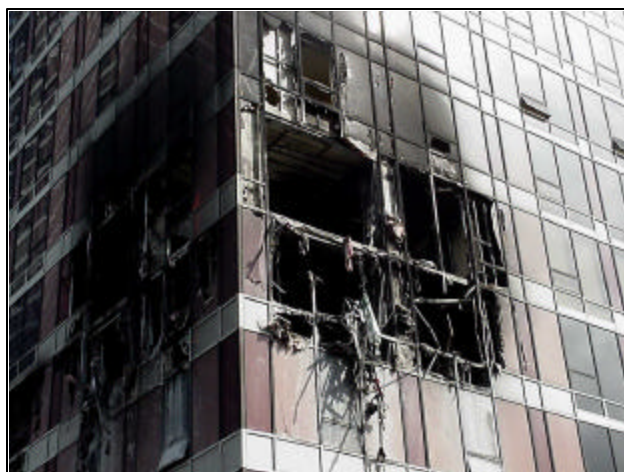


Figure 2-Northwest Corner of Building **Figure 3-Curtain Wall-Floor Slab Gap**

The building construction is similar to Type I construction as described in NFPA 220, *Types of Building Construction*, and the Uniform Building Code. Reinforced concrete columns support poured concrete floors.

A glass and aluminum framed curtain wall comprises the exterior of the building. Curtain wall construction utilizes a metal and glass exterior wall supporting its own weight that is attached to a structure. A vertical void exists between the edge of the concrete floor slabs and the glass curtain wall. **(Figure 3)** These floor-to-floor openings are sealed with a combination of gypsum board, plywood and glass fiber insulation. The curtain wall construction contributed to the vertical spread of fire to the sixth and seventh floors.

The condominiums in the building are divided into rooms by non-load bearing walls constructed of metal studs covered with gypsum board. Ceilings are gypsum board screwed to metal runners attached to the underside of the concrete roof/floor deck. Interior finish, such as floor and wall coverings, is left to the individual owners and varies from unit to unit.

Fire-rated gypsum board walls provide separation between adjacent condominiums. Some horizontal penetrations by electrical and telecommunications wiring were observed through these separating walls.

Each residential floor has an "H"-shaped corridor arrangement with four passenger elevators located in the transverse portion of the H. The long legs of the H-shaped corridor are oriented in a north-south direction. **(See figure 7 later in this report for corridor configuration)** Exit stairs on residential floors are located at the south end of each long corridor. Stair C opens directly into the east corridor. Stair B opens into a vestibule that itself opens into the west corridor.

Each condominium has a main entrance that opens into the north-south exit access corridors. Corridor doors providing access to the condominiums are 1 ¾" thick solid wood-core doors equipped with spring hinge self-closing devices.

On floors 3-15, two-bedroom condominiums located on the four corners of the building have a second door from the kitchen area that opens into a service elevator lobby. The service lobbies each have a service elevator, trash chute access opening, and electrical service closets. The north service lobby on each floor opens directly into the west corridor. The south service lobby on each floor is accessible via a door opening into the vestibule that connects the west corridor with Stair B. Smaller one-bedroom condominiums on these floors have only one entrance/exit door that opens into the north-south exit access corridors.

On floors 16-38, three-bedroom condominiums are located on the four corners of the building and have a second door from the kitchen area that opens into a service elevator lobby, similar to the corner two-bedroom units on lower floors. There are no small condominiums located on these floors.

On floors 39 and 40, penthouse condominiums located on the four corners of the building have a second door from the kitchen area that opens into a service elevator lobby similar to the corner units on lower floors. There are no small condominiums located on these floors.

Means of Egress

Means of egress from the building are two stairways accessible at each floor level at the south ends of the corridors. The stair treads are 41" wide with a 10" tread and a 7" rise. Handrails are located 31" above the walking surface.

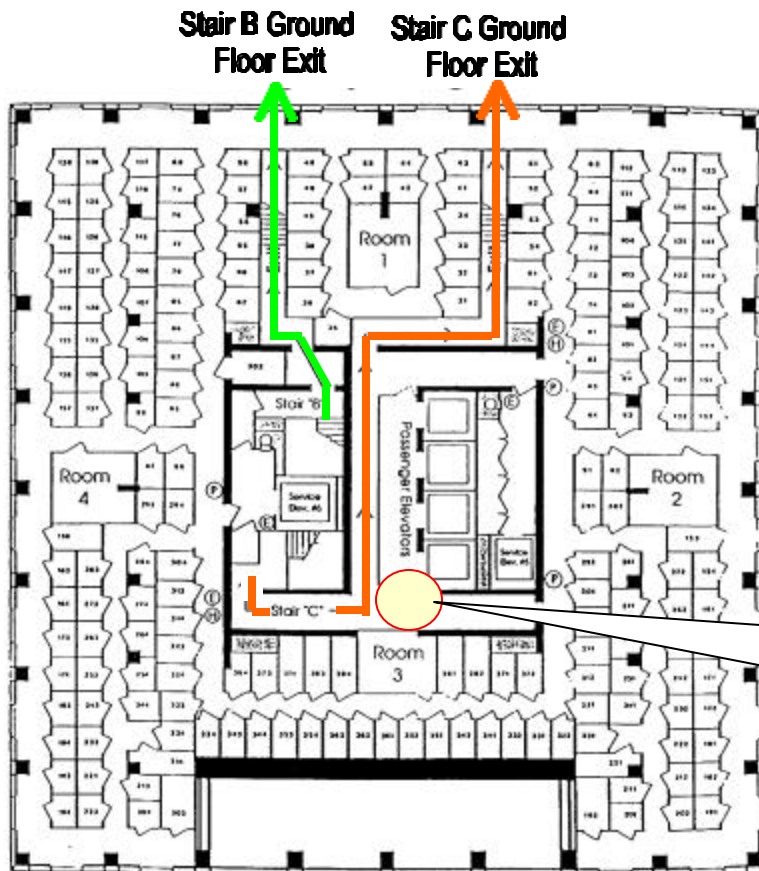
Stair B and Stair C terminate on the second floor. Persons exiting each stairway must transit through the second floor to reach another separate stairway that terminates at an exit door discharging at grade level on the west side of the building. Stair C is equipped with stairway pressurization. Stair B is also equipped with stairway pressurization and the vestibule between Stair B and the west corridor door is equipped with a smoke exhaust system.

Persons using Stair B must pass through a small room prior to reaching a straight run of stair with no intermediate landing that discharges at grade on the west side.



Users of Stair C must negotiate a winding path through an exit passageway to reach the exterior. The path begins at the end of stairway C on the second floor and travels through the second floor to reach the top of a straight run of stairs that discharges directly to the outside. This winding 100'+ path includes three 90-degree left turns and one 90-degree right turn combined with inadequate and confusing exit signage. (Figure 4)

Figure 4-Confusing and inadequate exit signage in Stair C exit pathway



Both firefighters and residents reported confusion in traveling through this area, aggravated by smoke^{2,3,4}. (Figure 5)

Figure 5-Second Floor Exit Routes

Features of Fire Protection

Sprinkler and Standpipe System

The building is equipped with a partial coverage automatic fire sprinkler system. The basement parking garage, first, and second floors have complete coverage. Residential floors 3-40 have fire sprinklers in corridors, service elevator lobbies, and the exit vestibule. Sprinklers in main corridors are spaced approximately 11 feet apart. Individual condominiums are not equipped with fire sprinklers. Corridor sprinklers are flush mount pendant types with decorative covers. Sprinklers in service lobbies are exposed pendant types. Sprinklers in the vestibules are exposed upright types.

The fire pump room is located in the basement. The two electric fire pumps take suction from a water storage tank supplied from municipal water mains. The "low zone" pump is a Peerless two stage horizontal centrifugal 750 GPM pump and serves standpipes and sprinklers on the basement through the 21st floor. The "high zone" pump is a Peerless three-stage horizontal centrifugal 750 GPM pump and supplies standpipes and sprinklers on the 22nd through 41st and rooftop floors.

Both fire pumps were "yellow-tagged" as not in compliance by Tyco-Grinnell Fire Protection on September 13, 2001, because sensing lines on both pumps were not in compliance with NFPA 20. Emergency generators in the building provide backup power to the fire pumps.

Class I standpipes are located in stairways B and C. There are outlets located at each landing. The outlet assemblies include pressure-reducing valves with 2½" NST threads and caps. Testing records for the pressure reducing valves located in the identical East Tower building at 5100 San Felipe show they were last tested on January 22, 1998⁵. No testing records were obtained by HFD for 5110 San Felipe.

One Class III hose cabinet is located on each floor near the door to Stairway B. Each cabinet contains a dry chemical fire extinguisher, a 1 ½" NST discharge valve and a rack mounted 1 ½" hose and nozzle. The hose cabinet is supplied by approximately 2" pipe. Hose cabinets were last inspected in January 2001.

Fire Alarm System

The fire alarm system consists of a fire alarm control panel, manual pull stations, audible alarm devices and sprinkler and standpipe waterflow switches, and smoke detectors. The Notifier brand fire alarm control panel was installed in June 1982. The fire alarm system is a zoned system that provides only basic alarm information at the control panel when activated. When an alarm is received, only the alarm horns of the floor of the alarm, the floor above, and the floor below are activated. A general evacuation alarm switch is located inside the control panel for fire department use.

The fire alarm system was last inspected on July 26, 2001 by Tyco-Grinnell of Houston, Texas. The inspection tag states only audible devices and pull stations were tested. Past inspection tags do not show any periodic sensitivity testing of corridor system smoke detectors as required by NFPA 72, *National Fire Alarm Code*. Emergency generators in the building provide backup power to the alarm system.

Manual pull stations are located on each floor adjacent to the entrance to the exit stairways. Audible alarm horns are located above each of the two pull stations. System smoke detectors are installed in each service and passenger elevator lobby. On the majority of floors, the only other system smoke detectors are located just outside the door leading from the corridor to stairway B. Those few floors with more than one corridor smoke detector have them located at the entrance to stairway C.

Single station smoke alarms in the individual condominiums are not connected to the fire alarm system.

Smoke Alarms in Condominiums

A spot check of condominiums showed that many did not have a smoke alarm at any location inside the residential unit. At the time of initial construction, condominiums had one single station battery-powered smoke alarm installed in the corridor leading to the bedrooms. Maintenance and installation of any additional smoke alarms is the responsibility of the owner of the condominium unit. The lack of a functional smoke alarm may have contributed to the delayed discovery of the fire in Unit 52 and subsequent death of one of the occupants.

Stairway Smoke Protection and Exhaust Systems

Both fire exit stairways have ventilation equipment installed. Stair B and C are equipped with stairway pressurization only. The vestibule between Stair B and the west corridor door is equipped with a smoke exhaust system.

The Houston Fire Department Inspections Division provided the only inspection information available for the stairway pressurization fans, a letter from Grinnell Fire Protection dated August 27, 1997 ⁶. It is not known what testing standards were used, such as NFPA 92A, *Recommended Practice for Smoke-Control Systems*.

High winds, stair doors held open by firefighters and evacuating occupants, and the volume and velocity of smoke quickly overwhelmed the stairway ventilation equipment, causing heavy smoke conditions and near-zero visibility in stairway B throughout the building.

Building and Systems Performance and Human Factors during the Fire

The fire originated in the interior of a bedroom of Unit 52, a two-bedroom condominium on the northwest corner of the fifth floor ¹. The room had been converted into a television and computer room. Initial flame spread was horizontal inside Unit 52. A partially open window in the room of origin provided the fire with an adequate air supply.

As the fire developed in the room of origin, the female resident in the adjacent master bedroom was awakened by her own coughing and she observed smoke entering the open north and west windows of the room. The surviving resident said she did not recall hearing a smoke alarm sounding at any time. ⁷. She described the smoke as being white in color, similar to a cloud of talcum powder.

Fearing an anthrax attack, the female resident arose and closed the bedroom windows. She stated that she could not see the digital alarm clock and the VCR clock in the bedroom⁸. As smoke continued to enter the bedroom, the female resident stated she went to the master bathroom and opened a window on the west side of the building and was able to breathe fresh air.

The female entered the bedroom hallway and called for her husband to follow. He said he couldn't move and was unable to follow. As heat and smoke increased, she moved to the front door of the unit and called for her husband to come toward her voice, but he failed to respond. The female resident stated she recalled running out of her unit to get help.

One of the building fire alarm system smoke detectors in the public area of the fifth floor activated and the fire alarm horn in the corridor began to sound. A neighbor in Unit 51 initially checked the corridor and did not see smoke, so she ignored the alarm. After about five minutes she heard screaming in the hallway and upon opening her door she observed the female resident of Unit 52 standing in the hall, completely covered in soot, including her mouth and teeth. The resident asked her neighbor for help, saying her husband was dying inside the unit. The neighbor tried the door to Unit 52 but it would not open. The neighbor reported the fire to the concierge desk by telephone. Building employees responding to the alarm escorted both of them to the lobby⁹.

The female resident of Unit 52 was transported to a local hospital and treated for severe smoke inhalation and carbon monoxide poisoning. Her carboxyhemoglobin (The compound that is formed when inhaled carbon monoxide combines with hemoglobin in the blood, rendering the hemoglobin incapable of transporting oxygen) level at 5:54 AM was 17.5%. Her injuries, including being covered in soot, indicated that she and her husband were exposed to a large amount of smoke, fire gases, and soot prior to them being awakened by the smell of smoke. Both residents were probably severely affected by carbon monoxide that may have influenced their actions during the fire. A Hermann Hospital physician stated that the carbon monoxide level in the female resident may have affected her recollection of the incident¹⁰. The body of her husband was found in the master bedroom after the fire was extinguished. The Harris County Medical Examiner listed the cause of death as thermal burns and smoke inhalation. The male victim had a fatal blood carbon monoxide level (carboxyhemoglobin) in excess of 60 percent¹¹.

As the fire progressed inside the condominium, it reached flashover stage in the television room. First arriving fire units reported flames showing from the windows. Fire spread horizontally to the master bedroom through building openings and the bedroom hallway. Local television news crews arrived approximately the same time as first arriving fire units. News video showed the fire in the television room was in the free burning stage and the windows of this room had failed, creating a large opening. A stormy weather front passing through the area was producing gusty winds from the north at 16-39 knots¹³. News video shot several minutes later showed the north and west windows of the master bedroom failing and these rooms in the flashover stage of free burning¹².

As firefighting operations commenced, the initial attack crew of E2 and L28 observed only a light haze of smoke as they walked through the fifth floor corridors. Upon making entry to Unit 52 moderate smoke was observed initially, rapidly changing to heavy smoke and zero visibility within seconds. This may coincide with the failure of the windows in the master bedroom. Firefighters reported that the level of heat seemed to intensify right at the doorway of Unit 52.

Firefighters reported the heat level significantly decreased by distance on either side of the opening.

This intensification in heat may be due in part to the Venturi Effect. The gusty north winds entering the large opening created by the broken north and west windows would tend to accelerate as the air currents passed through the significantly smaller door opening into the corridor. The rate of wind acceleration is inversely proportional when comparing the speed of the wind passing through the large open windows to the speed of the wind passing through the small doorway opening. **(Figure 6)**

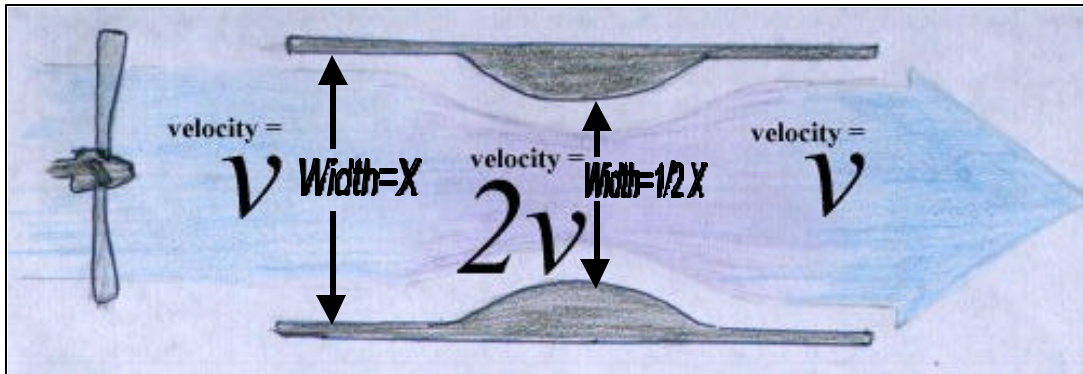


Figure 6-Illustration of Venturi Effect

For example: Under laboratory conditions, a 30 mph wind passing through a 60 square foot opening into a confined area would tend to accelerate to 90 mph when passing through a 20 square foot opening at the other end of the confined area (30/60 → 90/20.) As the air moving through the doorway of Unit 52 into the corridor increased in velocity, the air at the doorway would decrease in pressure, causing even more heat, smoke, and fire gases to be pulled from the interior of the condominium and expelled into the corridor. **(Figure 7)**

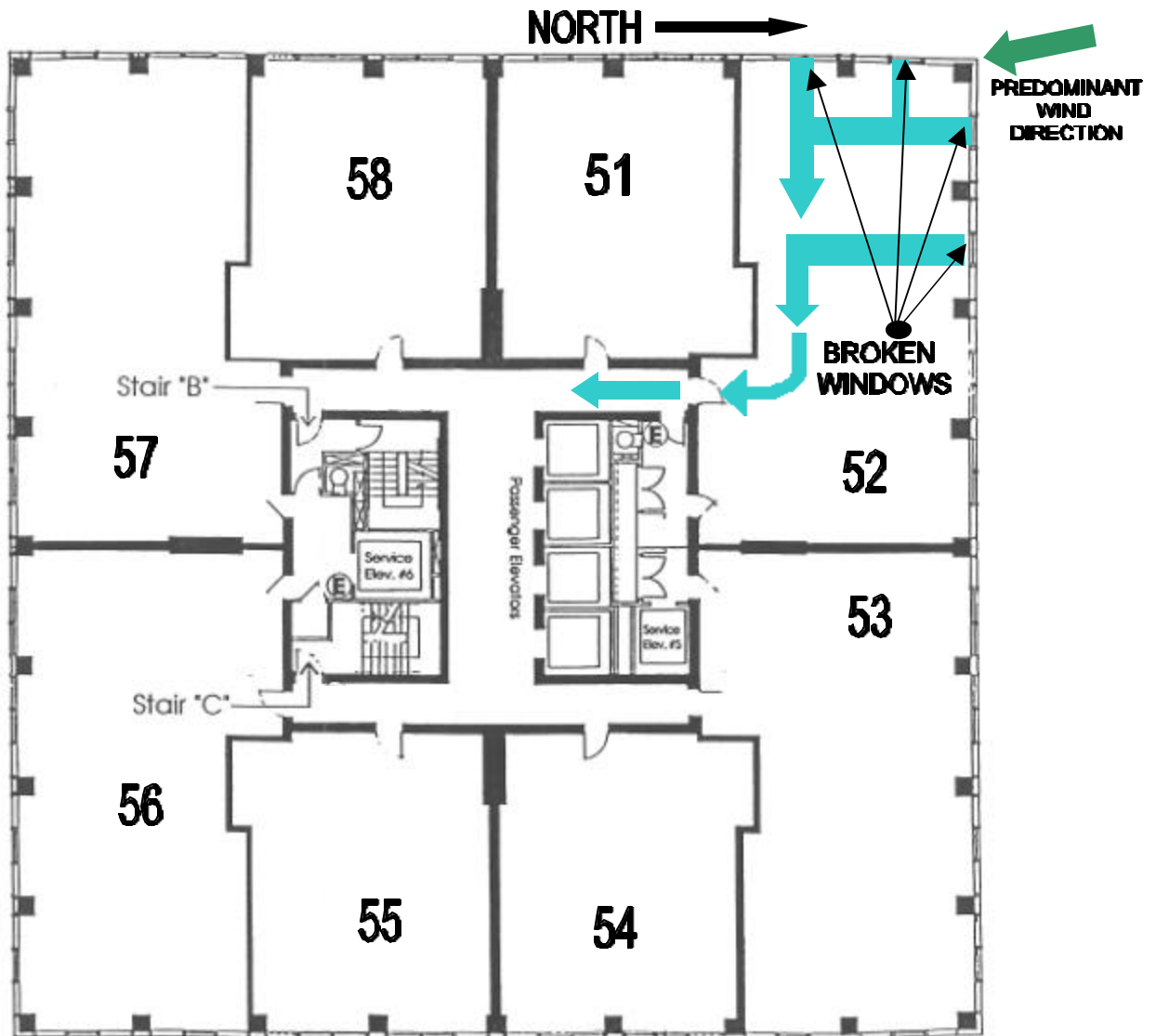


Figure 7-Wind driven air currents in Unit 52 and corridor

The Venturi Effect may be partially responsible for the amount of smoke that quickly filled the main corridors of the fifth floor and entered the B stairway, overcoming the protection provided by the vestibule exhaust and stairway pressurization fans. News video footage shows pressurized smoke venting from the stairway exit at grade level ¹². Firefighters and residents reported they experienced near zero visibility inside stairway B.

When the initial attack group withdrew from Unit 52, they left their hose line in place in the entry foyer¹⁴. This prevented the self-closing solid core door from closing, allowing flames and smoke to enter the corridor. A fire sprinkler head in the corridor, located approximately 88 inches from the door to Unit 52, fused and prevented any further flame damage in the corridor. There is a clear line of demarcation in damage to the vinyl wall covering in areas wetted by the sprinkler spray as compared to non-wetted areas. **(Figure 8)**



Figure 8

Every sprinkler head in the north-corridor from Stair B to Unit 52 opened. The sprinkler head in the service elevator lobby outside the kitchen of Unit 52 also opened. One sprinkler head on the west side of the elevator lobby that connected both main corridors opened also. The combination of the discharging sprinkler heads, closed solid core doors, and fire rated walls prevented any significant horizontal spread of fire damage outside of Unit 52.



Figure 9

The fire and products of combustion began to spread vertically through openings between the concrete floor slabs and the glass curtain wall. In addition, some flame and smoke spread may have occurred through unsealed vertical floor openings between the fifth and sixth floor. The openings, which may have been made during initial construction, were located in the bathrooms, near heating and air conditioning units, and in other areas. The openings were exposed when the gypsum board ceilings of Unit 52 failed. **(Figure 9-unsealed vertical penetration from Unit 62 bathroom looking down into Unit 52 bathroom)** These unsealed penetrations were found in several areas of the building. Unsealed openings, in combination with the lack of sprinkler protection, can allow flames and products of combustion to spread rapidly, endangering residents above the fire.

Unsealed vertical penetrations were observed in other condominiums, indicating that this was a common practice when the building was constructed. **(Figure 10-looking up into ceiling/floor penetration)**



Figure 10

As fire and smoke spread vertically from Unit 52, contents of Unit 62 ignited, resulting in heavy damage to that unit. Flames continued to spread vertically and began to enter Unit 72, resulting in broken windows and scorching of carpet in areas where the curtain wall-floor slab gap was sealed with lightweight materials. **(Figures 11 and 12)** The vertical spread of fire was stopped at this level by both a master hose stream from an aerial platform and the use of a standpipe cabinet hose by firefighters checking for extension from the sixth floor.



Figure 11



Figure 12-close-up of scorched carpet in dashed area from Figure 11

Fireground Operations

NOTE: The following sequence of events was developed from known times of events based on radio transmissions timestamps, firefighter witness statements, and comparison of video news footage. Those events with known times are identified. Events without discrete times are approximated in the sequence of events based on firefighter statements regarding their individual actions and observations at the fire.

At 4:43:36 AM on October 13, 2001, the Houston Fire Department received a report of a fire alarm from employees of the West Tower of the Four Leaf Towers Condominiums located at 5110 San Felipe in Houston ¹⁵. Follow-up calls were made by the employees and residents reporting a fire and smoke on the fifth floor with a person trapped ¹⁶.

Houston FD Engine Company 2, a three-man company commanded by Captain Jay Jahnke was dispatched at 4:48:48 AM ¹⁷ to the scene as part of the first alarm assignment, arriving at 4:53:44 AM. Upon arriving at the scene at Engine 2's Captain Jahnke reported heavy fire on the fifth floor and requested a second alarm. District Chief 28 arrives at 4:54:22 AM and assumes San Felipe Command. Jahnke, firefighter Michael Phillips, and Engineer/Operator Jimmy Johnson traveled to the fifth floor via stair B. They brought a high-rise hose pack, forcible entry tools, and a bag with utility items with them. At 05:01:17 AM they observed only light smoke in the corridors of the fifth floor. Upon Jahnke opening the door to Unit 52, smoke was observed about midway down from the ceiling. Jahnke closed the door and they begin a search of condominiums adjacent to Unit 52. Phillips and Johnson connected a high rise hose pack consisting of 150' of 1 3/4" hose and an adjustable spray stream nozzle to the outlet of the floor hose cabinet. Jahnke did not see the layout of the hose as Phillips brought the nozzle to where Jahnke waited at the entrance door of Unit 52 ¹⁹.

At approximately 5:04 AM Captain Robert Green and firefighter Dan Matt of Ladder 28 joined Engine 2. They had ridden the elevator and stopped at the floor below the fire to study the corridor and exit layout prior to walking up to the fifth floor. A search rope carried by L28 was not deployed due to only light smoke being visible.

The four personnel from E2 and L28 made entry to Unit 52 at approximately 5:04 AM to begin initial firefighting and rescue operations on the fifth story of the 42-story high-rise condominium building. All members of the attack crew activated their SCBA's just prior to making entry. E2 E/O Johnson observed heavy black smoke from ceiling to floor when the attack crew made entry. Johnson, who was not wearing bunker clothing or an SCBA, returned to L28 for a thermal imaging camera that was left behind. When Johnson returned to the fifth floor, he placed the thermal imaging camera just inside the corridor from Stair B and because of the amount of smoke present, returns to the ground floor to assist others with establishing a water supply.

As the initial attack crew entered Unit 52, they were met with moderate heat and heavy smoke conditions. Phillips observed some flames overhead but commented that they went out too quickly when he applied water to the area. An initial search of the foyer area and kitchen hallway of Unit 52 did not locate the male resident that was reported trapped. Approximately five minutes after making entry to Unit 52, the SCBA air supply of firefighters Phillips and Matt respectively ran low on air and they exited the floor one at a time as their alarms sounded.

They each made their way to the stairway B exit door and down stair B to the outside. Matt and Phillips both stated they met two unidentified firefighters on the fifth floor landing and they advised them two firefighters were still on the fifth floor^{18,20}. Matt and Phillips were treated at the scene for smoke inhalation.

Shortly after Matt and Phillips departed, Jahnke stated to Green that he would probably be low on air soon²¹. Jahnke and Green withdrew from Unit 52 into the corridor to make their way to the exit stair B. The two Captains left their hoseline in place on the floor inside Unit 52. This held the self-closing hall door open as the firefighters withdrew¹⁴. Heat and smoke was pushed into the north to south corridor by gusty north winds entering broken windows of the north and west sides of the condominium.

Visibility in the corridor was near zero. Jahnke left ahead of Green as they followed the fire hose away from the entrance to Unit 52. Green left his handheld radio and flashlight²⁴ at the entrance to Unit 52 as rushed to catch up with Jahnke. Green said Jahnke was disoriented as they left Unit 52 and stated they were going the wrong direction. Green encouraged Jahnke to continue following the hose. As they reached a tangle of hose on the floor near the hose cabinet connection, Green took the lead. Several firefighters described the tangle of hose as a "spaghetti bowl." As they approached the Stair B door, Jahnke became separated from Green. As Green exited the fifth floor he encountered Captain Vaughn from Engine 3 at the stair landing. He told him Captain Jahnke was ten feet or less inside the door near the hoseline²¹. He felt sure that the other firefighters would find Jahnke so he traveled down the stairs and exited the west side of the building.

Green then entered the west lobby of the building and traveled through to the east lobby where he informed Lobby Command of the location of Jahnke. He then exited through the main entrance on the east side. Green stated he never ran low of SCBA air. As he was assisted in removing his SCBA and bunker gear he found he had been burned on his arm and stomach. He was transported to the hospital for treatment.

At 5:09:51 AM an unidentified person (later identified as Jahnke by other firefighters) called for help on his portable radio on Channel A4 (tactical channel) and stated "Emergency! We need help on the fifth floor!"²². At 5:10:26 AM the HFD Fire Tac dispatcher advised Command he had someone calling for help on the fifth floor. At 5:10:53 AM Jahnke called on channel A4. "Engine 2, we're trapped on the fifth floor. Engine 2, help!"²²

At 5:11:00 AM Command called Lobby Control on channel A4 and asked if they received E2's message. At 5:11:05 AM Lobby Control acknowledged on channel A4 that the emergency message was received. At 5:11:50 AM Lobby Command called San Felipe Command on channel A4 to request some companies he can go up with.

At 5:11:56 AM San Felipe Command acknowledged Lobby Command and stated that he was sending him some companies right then. At 5:12:03 AM the Fire Tac dispatcher notified all companies on channel A4 that they have a "mayday" on the fifth floor and he is sending a third alarm assignment to the scene²².

At 5:12:18 AM Jahnke called on channel A4, "Engine 2, we're trapped on the fifth floor! ²²" At 5:12:25 AM HFD dispatched the third alarm assignment on channel A2. At 5:13:20 AM Jahnke transmitted on channel A4-"Engine 2, emergency! We're running out of air! ²²"...(rest of the transmission is unintelligible) This is the last transmission received from Captain Jahnke.

In reviewing HFD radio logs, there was no direct radio communication attempted between Command staff on the scene and Jahnke.

Rescue 11 had arrived at the fire at 5:06:07 and was staged in the parking area outside the building as part of the second alarm assignment. When they heard Jahnke's mayday call, they proceeded to the lobby to act as a Rapid Intervention Team (RIT). Captain Mathison of R11 told his three firefighters to "travel light" ²³ so they brought a thermal imaging camera, an extra one-hour SCBA with facemask and a pigtail hose, a set of irons, a search rope, and the "saddlebags" containing door wedges, straps, and small equipment.

Rescue 11 traveled up the stairs to the fifth floor. The low air alarms on the SCBA of Engine 3's crew had begun to sound and as they traveled down the stairs they met Rescue 11 coming up. Rescue 11 encountered heavy smoke at the third floor and activated their SCBA's at that point.



Figure 13-Fifth floor layout. Locations of civilian victim, Captain Jahnke, and fire hoseline are approximate and based on firefighter interviews.

As they arrived at the fifth floor, R11 firefighters Connelly and Mockler stopped to hook up a search rope at the stairway doorknob. R11's Captain Mathison and firefighter Kahney proceeded on down the hall. Visibility was about one foot with heavy smoke and steam. They met Captain Robert Parry of E60 as they moved toward the sound of a PASS device going off.

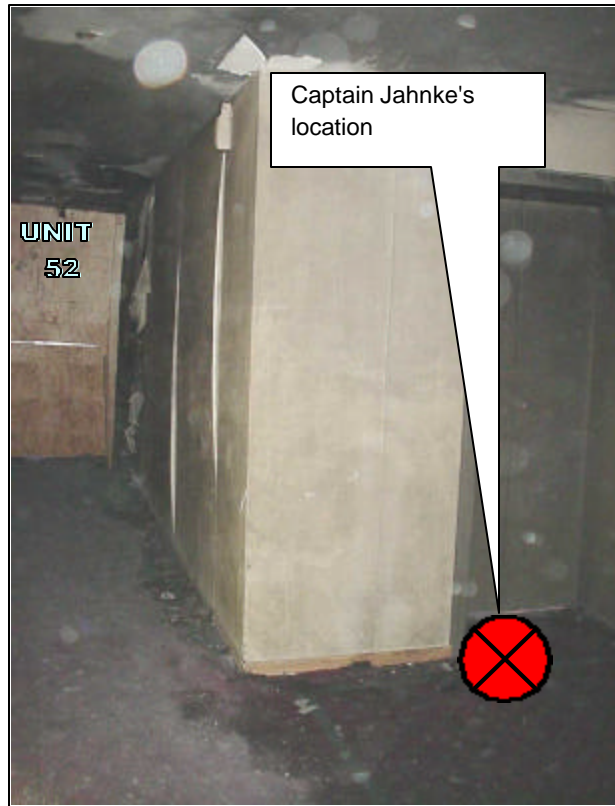


Figure 14-Approximate location where Captain Jahnke was found.

Approximately 5:30 AM, Jahnke was located by the rescue team of Mathison, Kahney, and Parry in the elevator lobby, halfway between Unit 52 and the exit stair door. He was approximately 25 feet from the B stair vestibule door and 50 feet from the C stair door. (Figures 13 and 14)

Captain Jahnke's SCBA air supply had been depleted, his mask and helmet was off, and his personal safety alarm was sounding and flashing. Captain Jahnke was face down and his personal radio was out of his pocket and lay on the floor in the area where he was found. With some difficulty, the rescue crew of three began to move Jahnke toward the stairs. The time is estimated at about 5:31 AM.

Water discharging from several sprinkler heads was making it difficult for the rescuers to get a good grip on Jahnke. Kahney removed his gloves and did not feel a lot of heat in the area. Parry removed one of Jahnke's boots to get a better hold. The three describe moving down the corridor toward the stair door, bouncing off the sidewalls as they went.

Near the hose cabinet they encountered Connelly who pressed herself into the wall and floor as they went over the top of her with Jahnke. It was around this point that Jahnke's SCBA harness and cylinder came off over his head. Based on HFD photographs, it was not possible to determine if the waist strap of the SCBA was fastened when it was found ^{26,27}.

The rescue team continued to move Jahnke toward the stairs. At some point, possibly in the stairway, Jahnke's coat came off over his head ²³.

As they approached the stair door they met a large group of firefighters who were crowding the area and attempting to make entry. In the confusion Rescue 11's Kahney and Mockler were pushed into the south service elevator lobby from the stair B vestibule. The side-hinged door to the vestibule automatically closed behind them. As other rescuers were moving Jahnke down the stairs to the outside of the building, Mockler and Kahney found themselves disoriented in the service lobby.

The rescue team removed Jahnke from the fifth floor and carried him down the stairs to the outside of the building at 5:36:24 AM ²⁸. After aggressive resuscitative efforts at the scene, Jahnke was taken to Memorial Hermann Hospital, arriving at 6:03:07 AM ²⁹. Jahnke was pronounced dead shortly after his arrival at the hospital. The Harris County Medical Examiner attributed the cause of Captain Jay Jahnke's death to asphyxia due to lack of oxygen. His carboxyhemoglobin level was 18%.

A Second Group of Trapped Firefighters

After being pushed into the service elevator lobby, Mockler and Kahney began searching for the exit door. Visibility was near zero. When Mockler's SCBA air ran low, Mockler called "Mayday" on his portable radio on channel A4. When no response was received, Kahney changed his portable radio to channel A2 and transmitted "Rescue 11 ...unintelligible...we have two firefighters trapped." at 05:34:19 ³⁰. The emergency call was repeated by R11 on Channel A4 at 05:34:27. At 05:34:31 HFD A2 Dispatcher asked R11 if they were trapped. At 05:34:36 R11 called on channel A4 "Rescue 11, we're on the 5^h floor landing. We can't locate the..." ⁵⁸ At 05:34:42 HFD A4 Dispatcher repeated R11's emergency to Command and advised them R11 was trapped on the fifth floor. **(See figure 13 for location of the service elevator lobby)**



Figure 15-Floor plan sign located in all south service elevator lobbies.

AT 05:35:41 HFD Dispatch tried to call R11 on channels A2 and A4 and received no response. As he searched for the exit, Kahney found a building floor plan adjacent to the service elevator **(Figure 15)** and used it to reorient himself and he then led Mockler to the door from the service lobby to the vestibule. Kahney recalled that there was a large group of firefighters in the vestibule area and that he and Mocker were pushed into the stairway. Kahney and Mockler made their way to the outside of the building without assistance.

It is not known the actual time Kahney and Mockler made their way out of the building, but television news footage of the scene documents the time to be between 05:37 and 05:40 ¹². In the video they can be seen sitting on the curb and driveway while CPR continues on Captain Jahnke in the background. HFD Dispatch transmitted the last radio traffic regarding the R11 Mayday call at 05:39:46 ³². There was no radio transmission declaring the emergency situation was concluded.

The Fire Attack Continues...

After Captain Jahnke was removed from the building and R11 extricated themselves from their entrapment, the fire continued to progress through Unit 52 and into other areas of the building. Attack crews made several attempts to enter the fifth floor but were driven back by heat and smoke.

At 05:49:24 L69 reported to Command that heavy smoke was observed in Unit 62, directly above Unit 52 and the fire was spreading vertically. L69 also reported that the fire has spread horizontally across half of the north side of the fifth floor.

At 05:57:22 Command instructed D8 to have a supply line laid to L69 and for L69 to attack the fire from the exterior using the tower ladder's master stream. At 05:58:58 L69 reported to Command that fire was coming out of the sixth floor and going up the side of the building. At 06:04:24, E49 notified Command that heavy fire was coming out of a window on the west side of the fifth floor.

At 06:04:33 Lobby Command called D8 to remove all personnel from the fire area so L69 can attack the fire from the exterior with an aerial master stream³³. At 06:05:05 L69 notified Command that heavy fire is now visible coming out of the west side of the sixth floor. The windows on the seventh floor in the area of Unit #72 were broken and L69 observed fire extending to the seventh floor. At 06:05:36 Command requested a sixth alarm at 5110 San Felipe³³.

L69 operated its aerial master stream from approximately 06:13 to 06:38 and knocked the visible fire down on all floors. After the master stream was shut down, task forces made up of engine and ladder company firefighters began fire attack on the fifth floor. At 06:40:36 D5 reported handlines were operating on the seventh floor and lines were needed on the sixth and fifth floors.

Other task forces were assigned to search all floors of the building. An extended evacuation of all residents continued. Many residents and some firefighters were treated for smoke inhalation and medical conditions aggravated by the fire. A major medical alert was announced citywide as some residents were taken to local hospitals.

At 07:14:50 Task Force 6 reported fire was knocked down on the sixth floor. At 07:30:56 L31 encountered communications problems and called HFD Dispatch on a cellular phone. L31 requested that Command be notified that all fire was out on the fifth floor and a possible fatality had been found³⁴.

At 08:02:37 Lobby Command ordered all first and second alarm companies to report to Rehab. They are bused to Station Two to write statements regarding their activities at the fire.

At 08:44 the Houston Fire Department continued assisting civilians that were evacuating the building and transporting the injured to local hospitals.

At 09:13:20 the fire at 5110 San Felipe was declared under control ³⁵. Multiple fire and EMS units remained on the scene for several more hours while the building was methodically searched for remaining residents and to assist fire investigators.

Personal Protective Equipment

Protective Clothing and Equipment Evaluation

The Texas Commission on Fire Protection (TCFP) was requested by the SFMO IC to conduct an evaluation of Captain Jahnke's personal protective equipment for performance and compliance with TCFP rules for regulated fire departments.

The protective equipment was evaluated by TCFP Compliance Officer Fred Green for compliance with Texas Administrative Code Title 37, Part 13, Chapters 435.1, *Protective Clothing* and 435.3, *Self-Contained Breathing Apparatus* and NFPA standards adopted by TCFP. Photographs taken during the examination are on file at the Texas Commission on Fire Protection. The TCFP report (SFMO document number 02-50-10-D-91) is located in the reference materials of the SFMO LODD investigation file.

The examination of the protective equipment took place on October 22, 2001 at 1100 Elder, the HFD Evidence Repository, where Captain Jahnke's gear and clothing had been secured in a locked area.

Captain Jahnke's bunker coat, bunker pants, gloves, protective hood, and one boot were inspected and all were found to be undamaged and in compliance.

Captain Jahnke's helmet was not in compliance because it lacked a face shield or permanently attached goggles ³⁷. Personal clothing removed from Captain Jahnke was examined with no damage observed.

Captain Jahnke's SCBA and integrated PASS alarm were only visually inspected because the unit was to be shipped to NIOSH for further testing. (See NIOSH report in following section) The SCBA (HFD serial number 19400382) was last flow tested on August 30, 2001 by Hoyt Breathing Air Products. The SCBA face mask showed no signs of damage with no visible soot or smoke residue on the inside. The TCFP report stated Captain Jahnke's name was engraved on the face mask. The breathing air cylinder had a silver colored metal band around the neck, which according to the HFD SCBA maintenance shop, indicated the cylinder was due for hydrostatic testing during the year 2000. The cylinder was past its required hydrostatic test date and was not compliant ³⁷.

SFMO inquired whether Captain Jahnke had been fit tested for his SCBA face mask as required by federal OSHA Respiratory Protection Standards. HFD replied Jahnke had not been fit tested with the SCBA face piece that was issued to him ³⁸.

Other impounded equipment included a flashlight and handheld radio from L28 and a yellow handheld radio from E2 that was found next to Captain Jahnke. The flashlight and radio from L28 had sustained heavy fire damage. It was not possible to determine what radio channel had been selected on the handheld radios.

Captain Jahnke's autopsy report indicated he had suffered thermal burns to his hands and forearms ³⁶. No damage to his firefighters protective equipment was noted in areas corresponding to his injuries.

SCBA Performance Evaluation

On November 20, 2001 the National Institute for Occupational Safety and Health (NIOSH) received Captain Jahnke's SCBA from the Houston Fire Department for evaluation for compliance with NIOSH respiratory protection regulations.

On December 19, 2001 the SCBA was examined and evaluated by the National Personal Protective Technology Laboratory, located in Morgantown, West Virginia.

The only unusual observation made during the visual inspection was the presence of water in the connection between the cylinder outlet and the high pressure coupling ³⁹. NIOSH stated the amount was more than would be expected to occur by condensation, indicating that part or all of the SCBA may have been submerged.

NIOSH reported a personal identification number was engraved on the SCBA facepiece lens. While no structural damage to the lens was observed during the physical examination, engraving can cause cracks or weakening, and is discouraged by NIOSH ³⁹.

The SCBA air cylinder was found to be past the required hydrostatic test date ³⁹. After an inspection, the cylinder was filled to facilitate functional testing of the SCBA.

A personal alert safety system (PASS) device was attached to the backframe of the SCBA and functioned in the normal and emergency modes. NIOSH does not certify PASS devices, so no further evaluation of performance was conducted.

Performance testing was conducted to evaluate compliance with NFPA 1981-*Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service, 1997 Edition* and 42 CFR 84, *SCBA Performance Requirements*.

The following performance tests were conducted on the SCBA:

NIOSH SCBA Certification Tests conducted to evaluate compliance with the performance requirements of 42 CFR 84:

1. Positive Pressure Test
2. Rated Service Time Test (duration)
3. Gas Flow Test
4. Exhalation Breathing Resistance Test
5. Static Facepiece Pressure Test
6. Remaining Service Life Indicator Test (low-air alarm)

National Fire Protection Association (NFPA) Test conducted to evaluate compliance with the performance requirements of NFPA 1981, 1997 Edition:

7. Air Flow Performance Test

All testing was completed by December 21, 2001. NIOSH has retained videotapes of all testing procedures.

The SCBA met the requirements of all tests except for the Remaining Service Life Indicator Test. The indicator activated prematurely, alarming at 1240 psi when the proper set point should have been between 1035 and 1215 psi ³⁹.

During the Rated Service Time Test, droplets of water were observed to spray from the facepiece-mounted regulator onto the interior surface of the lens. While NIOSH did not consider this an ordinary occurrence, this did not cause the unit to fail the test ³⁹.

Upon completion of testing, the SCBA was stored at NIOSH pending return to the Houston Fire Department. The complete NIOSH report (SFMO document number 02-50-10-D-80) is located in the reference materials of the SFMO LODD investigation file.

Recommendations

Recommendations have been developed regarding the fire and fireground operations. The majority of the recommendations are based upon nationally recognized consensus standards for the fire service.

Comments directed specifically at this incident:

- Ten minutes elapsed from the time of first call to the first fire department unit on the scene. Five minutes of this time elapses between the receipt of the call at 911 to the time fire units are dispatched to the fire ¹⁵.

Insurance Services Office (ISO) requires that the call be dispatched within one minute of receiving the call.

NFPA 1221, *Standard for Installation, Maintenance, and Use of Emergency Service Communications Systems*, Chapter 4-3.1 states:

The authority having jurisdiction shall ensure that the number of telecommunicators needed to effect the prompt receipt and processing of alarms shall be as follows:

- (1) In jurisdictions receiving 730 or more alarms per year, at least one telecommunication shall be on duty in the communication center.
 - (2) Ninety-five percent of alarms shall be answered within 30 seconds, and in no case shall the initial call taker's response to an alarm exceed 60 seconds.
 - (3) The dispatch of the emergency response agency shall be made within 60 seconds of the completed receipt of an emergency alarm.
- Five engines and three ladders were initially dispatched to the first alarm; seventeen personnel were on scene within seven minutes of dispatch.

NFPA 1710 Chapter 5.2.2.1.1, 5.2.2.2.1: Engine and ladder companies shall be staffed with a minimum of four on-duty personnel.

The proper utilization of personnel on the fire scene is as important as adequate staffing.

Engineers on apparatus not designated for water supply or aerial ladder evolutions should remain with their officer and other company personnel to provide an additional firefighter.

- Personnel stated that their SCBA air cylinders were going empty shortly after they had activated their SCBA. These reports included personnel from different units and stations.

HFD Standard Operating Procedures (SOP) in effect at the time of the incident stated that SCBA cylinders must be refilled or replaced when they reach a pressure of less than 3000 psi⁴⁰.

NFPA 1852, *Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA)* Chapter 6.3.7 states: "All in-service SCBA cylinders shall be stored fully charged." Chapter 6.3.7.1 states: "Cylinders shall be filled when the pressure falls to 90 percent of the manufacturer's specified pressure level." (4050 psi for a 4500 psi SCBA cylinder) Low air cylinders should be segregated from full cylinders until filled.

4500 psi SCBA units with cylinders holding only 3000 psi may be part of the cause of the short service duration of SCBA's at this fire. Adherence to departmental SOP's and TCFP standards for daily written breathing apparatus checks are vital to insuring a dependable air supply.

- There was no feedback from the fire attack crew on the fifth floor to Incident Command regarding progress in the fire attack and initial search. The first indication of trouble was the call for help from Captain Jahnke.
- Command was not notified as firefighters exited the fifth floor as they ran out of air. Additional firefighters could have been committed to the attack to replace departing firefighters and back up those that remained if Command had been notified.
- Over 100 radio transmissions not related to the rescue of Captain Jahnke or the trapped members of Rescue 11 took place on Channel A4 during the critical period between the initial call for help and the firefighters reaching a place of safety.

Multiple unrelated radio transmissions took place after Rescue 11's mayday call. Fire Dispatch or Command made no announcement terminating the mayday condition after Rescue 11 extricated themselves from their entrapment.

Rescue efforts take priority over all unrelated radio transmissions until Dispatch announces the emergency situation has been concluded. All units should go to face-to-face communications and refrain from using radios unless they are involved in the rescue effort. A second radio channel should be designated for command functions not related to rescue efforts. The radio channels should remain clear of normal traffic until released by Command or Dispatch.

- The initial dispatch reported that the fire was located on the fifth floor, followed by transmissions from E2 that they had located the fire on the fifth floor. Despite this, several companies were sent to, or on their own initiative, traveled to the wrong floor.

The correct location of a high-rise fire should be repeated periodically on the radio for clarity. Companies should understand their assignments and the building floor arrangement.

General Comments:

- NFPA 1500, *Fire Department Occupational Safety and Health Programs*, Chapter 8.3.1: The Fire Department shall provide an accountability system that will provide for a rapid accountability of all personnel.

Personnel running out of air should depart as a team (minimum of two) to maintain safety and accountability standards.

A Safety or Accountability officer should be assigned to assure that accountability is accomplished.

Company unity must be maintained to facilitate accountability.

- NFPA 1500 Chapter 8.1.3: The incident management system shall be utilized at all emergency incidents.

Command must provide strong and clear direction for the incident.

Strategic goals must be established early into the incident.

Logistics, Operations, Planning Sectors/ Divisions, and/or Groups must be developed and utilized to be effective.

Divisions, sectors, or group should be established to provide an effective span of control for the incident commander.

Build up sector/divisions sufficiently with resources before adding or developing another.

Personnel should be assigned to assist the Incident commander at the Command post

- NFPA 1500 Chapter 8.4.7 (Texas Senate Bill 382): "In the initial stages of an incident where only one crew is operating in the hazardous area at a working structural fire, a minimum of four individuals shall be required, consisting of two individuals working as a crew in the hazard area and two individuals present outside the hazard area available for assistance or rescue at emergency operations where entry into the danger area is required."

- NFPA 1500 Chapter 8.3.5: "Officers assigned the responsibility for a specific tactical level management component at an incident shall directly supervise and account for the companies and/or crews operating in their specific area of responsibility."

NFPA 1561, *Standard on Emergency Services Incident Management System*: Chapter 4.7.4: "All supervisors shall maintain a constant awareness of the position and function of all personnel assigned to operate under their supervision. This awareness shall serve as the basic means of accountability that shall be required for operational safety."

NFPA 1561, Chapter 5.1.6 "The incident commander shall initiate an accountability and inventory worksheet at the beginning of operations and shall maintain that system throughout operations."

NFPA 1561, Chapter 5.1.7: "The incident commander and members who are assigned a supervisory responsibility for a tactical level management unit that involves multiple companies or crews under their command shall have assigned a member(s) to facilitate the ongoing tracking and accountability of all assigned companies."

- NFPA 1500 Chapter 7.1.2: "Protective clothing and protective equipment shall be used whenever the member is exposed or potentially exposed to the hazards for which it is provided."

Entering the fire floor of a known working fire without a charged line exposes personnel and does not provide a safety line for personnel to follow directly to an exit.

All personnel, including engineers and medics, should wear full protective equipment when entering a building that is on fire.

Thermal imaging cameras should be deployed as safety equipment with the attack lines.

Standardization of makeup, placement, and utilization of high-rise packs, use of extra SCBA cylinders, thermal imaging cameras, etc. is needed to provide familiarization for those personnel that swing from station to station.

- When a mayday or trapped personnel is reported, Command should assign a Rescue Sector/ Group to specifically be responsible for rescue efforts. All units should go to face-to-face communications and refrain from using radios unless they are involved in the rescue effort. Attack units attempting to change channels under stress can cause confusion and missed transmissions. A second radio channel should be designated for command functions not related to rescue efforts. The radio channels should remain clear of normal traffic until released by Command or Dispatch.

All other firefighting operations must continue for the safety of the personnel and the victims.

- NFPA 1500 Chapter 8.5.4: "The incident commander shall evaluate the situation and the risks to operating crews and shall provide one or more rapid intervention crew/company commensurate with the needs of the situation."

A RIT replacement team should be assembled when the RIT is assigned to conduct a rescue effort during a prolonged fire attack.

Consideration should be given to establishing RIT teams for each division/sector actively involved in firefighting or high risk activities.

- NFPA 1500 Chapter 4.1.2: "The fire department shall prepare and maintain written policies and standard operating procedures that document the organization structure, membership, roles and responsibilities, expected functions, and training requirements, including the following:

- (1) The types of standard evolutions and their performance standards, and the evolutions that must be performed simultaneously or in sequence for different types of situations
- (2) The minimum number of members who are required to perform each function or evolution and the manner in which the function is to be performed
- (3) The number and types of apparatus and the number of personnel that will be dispatched to different types of incidents
- (4) The procedures that will be employed to initiate and manage operations at the scene of an emergency incident."

- NFPA 1404, *Standard for Fire Department SCBA Programs*, Chapter 7.2.1:" Air cylinders shall be maintained at 90%" (4050 psi for 4500 psi cylinder), low air cylinders should be segregated from full cylinders until filled.

- Communication recommendations:

Fire ground operations should be on a channel that can be monitored by dispatch for the safety of personnel.

Fire ground channels should be clear of "Data Bursts" that could cause interference.

Command to Dispatch communications should be on a separate frequency on large incidents.

Other Considerations

- Firefighting personnel should be familiar with features of fire protection in buildings and use them to their advantage during fire ground operations.

- If personnel leave a fire area without extinguishing the fire, they should close the door to help confine the fire and provide a protective barrier between exiting firefighters and the fire.
- Personnel should not leave their attack lines in warehouses, large structures or high rise buildings. Search ropes are not as easy to find as a hoseline, unless the ropes are tied directly to the personnel.
- Radio-facemask interfaces should be provided for at least all company officers.
- Flashlights should be attached to turnout gear to prevent loss on the fireground.
- Command should designate one stairwell for firefighting operations and deploy personnel to route evacuating occupants to a separate exit stairwell. Fire alarm systems with voice announcement capabilities may be used to provide evacuation information to occupants.
- All fire department personnel should be familiar with pre-plans in first-in districts.
- Ventilation of the stairwells should be addressed early into the incident.
- Buildings with restricted access or locked stairwells should provide a way for the fire department to access them in the case of an emergency
- Personnel should check out the floor below a fire for the layout of the fire floor. A pre-plan would assist firefighters in determining if the floor layout is the same from floor to floor.
- Dispatchers and/or call takers should be educated on evacuation and shelter-in-place information is to be given to citizens in emergency situations.
- The State Fire Marshal's Office should regulate fire protection companies that install, test, and maintain smoke control systems including stairwell pressurization and exhaust systems. Adoption of a nationally recognized standard such as NFPA 92A, *Smoke Control Systems* by SFMO as the industry standard is recommended.
- Installation of floor level exit signs and illumination of exit paths may assist occupants and firefighter in escaping when standard exit signs and lights are obscured by smoke.
- All high-rise buildings, regardless of date of construction, should be equipped with a complete coverage automatic fire sprinkler system.

Appendix

FOOTNOTED REFERENCES

1. Document number 02-50-10-D. Houston Fire Department, Final origin and cause report.
2. Document number 02-50-10-D-36. Statement of HFD District 21 Chief Anthony Bisbano.
3. Document number 02-50-10-D-43. Statement of HFD Captain Larry Strong.
4. Document number 02-50-10-D-70. Statement of Village Fire Department firefighter Chet Davis.
5. Document number 02-50-10-D-117. Grinnell Fire Protection report of pressure-reducing valve testing for 5100 San Felipe.
6. Document number 02-50-10-D-112. Grinnell stair pressure test dated 8/27/97.
7. Document number 02-50-10-D-72. Statement of Melina Dill taken by BATF on October 13, 2001.
8. Document number 02-50-10-D-109. Statement of Melina Dill taken by HFD on October 23, 2001.
9. Document number 02-50-10-D-103. Binder of HFD replies to SFMO questions containing statement of Unit 51 resident Maude Carter taken by HFD on October 22, 2001.
10. Document number 02-50-10-D-276. Medical records interpretation by Hermann Hospital Dr. Richard Bradley, M.D. of Melina Dill's condition when admitted to the Emergency Center dated December 5, 2001.
11. Document number 02-50-10-D-100. Harris County Medical Examiner Autopsy Report on Charles Dill, dated January 4, 2002.
12. Document number 02-50-10-D-97. Houston Channel 2-NBC raw news video footage.
13. Document number 02-50-10-D-108. HFD report of weather conditions at the time of the fire on October 13, 2001.
14. Document number 02-50-10-D-277. SFMO follow-up interview with L28 Captain Robert Green dated December 17, 2001, Response to Question # 25.
15. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 1.

16. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 4.
17. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 5.
18. Document number 02-50-10-D-124. SFMO follow-up interview with L28 Dan Matt.
19. Document number 02-50-10-D-132. HFD Assistant Chief Gary Vincent's handwritten notes from E2 firefighter Mike Phillips NIOSH interview, item # 14.
20. Document number 02-50-10-D-54. Statement of HFD E2 firefighter Michael Phillips dated October 13, 2001.
21. Document number 02-50-10-D-51. Statement of L28 Captain Robert Green dated October 13, 2001.
22. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, pages 17-22.
23. Document number 02-50-10-D-57. Statement of R11 Captain Clyde Mathison dated October 13, 2001.
24. Document number 02-50-10-D-254. HFD photo of L28 Captain Green's radio and flashlight in corridor. Photo in blue photo album.
25. Document number 02-50-10-D-221. HFD photo of E2 Captain Jahnke's radio and helmet near west elevator landing.
26. Document number 02-50-10-D-164. HFD photo of an SCBA in the elevator lobby.
27. Document number 02-50-10-D-165. HFD photo of an SCBA in the elevator lobby.
28. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 59.
29. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 86.
30. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 57.
31. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 58.
32. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 65.
33. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 87.

34. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 165.
35. Document number 02-50-10-D-88. HFD Radio Log of events of October 13, 2001, page 200.
36. Document number 02-50-10-D-99. Harris County Medical Examiner Autopsy Report on Captain Jay Jahnke, dated January 4, 2002.
37. Document number 02-50-10-D-91. Texas Commission on Fire Protection Compliance Report on Captain Jay Jahnke's personal protective equipment and SCBA, dated November 16, 2001.
38. Document number 02-50-10-D-103. Binder of HFD replies to SFMO questions containing Letter from Assistant Chief Hector Trevino, item # 14.
39. Document number 02-50-10-D-80. NIOSH Final report of SCBA testing.
40. Document number 02-50-10-D-103. Binder of HFD replies to SFMO questions containing Letter from Assistant Chief Hector Trevino, item # 17.

**HOUSTON FIRE DEPARTMENT FIRE SCENE OPERATIONS-5110 SAN FELIPE
TIMELINE OF EVENTS**

NOTE: This timeline was developed from Houston Fire Department radio transcripts, statements of firefighters and witnesses, and television news footage.

<i>TIME</i>	<i>EVENT</i>	<i>SOURCE</i>
04:43:36	911 receives first call reporting fire alarm at 5110 San Felipe.	HFD Radio Log
04:43:47	911 transfers call to HFD Fire Dispatch.	HFD Radio Log
04:44:12	HFD telecommunicator validates location of alarm in CAD system.	HFD Radio Log
04:44:48	First 911 call to HFD ends	HFD Radio Log
04:46:19	First call of alarm is queued to the HFD dispatch radio dispatcher, prioritized as a "D" level response.	HFD Radio Log
04:48:15	Incident record created in the CAD system.	HFD Radio Log
04:48:48	HFD dispatch transmits first-alarm assignments via radio to D28, D6, D5, E2, E28, E3, E38, E11, L28, L38, L301, SF002, A28. All units are on HFD dispatch channel A2.	HFD Radio Log
04:52:35	HFD radio dispatcher notifies responding units that multiple calls have been received confirming a fire on the fifth floor.	HFD Radio Log
04:52:52	HFD radio dispatcher notifies responding units to check both towers (East Tower at 5100 and West Tower at 5110 San Felipe) due to calls being received from both towers.	HFD Radio Log
04:53:44	E2 on scene, reports heavy fire on about the fifth floor. E2 requests a second-alarm assignment.	HFD Radio Log
04:54:02	SF002 arrives on location.	HFD Radio Log
04:54:22	D28 advises SF002 he is on location.	HFD Radio Log
04:54:46	D28 Notifies HFD Dispatch he is on location with heavy fire showing from about the fifth floor.	HFD Radio Log
04:54:58	E7, L7 reports on location.	HFD Radio Log

<i>TIME</i>	<i>EVENT</i>	<i>SOURCE</i>
04:55:39	E28 reports on location.	HFD Radio Log
04:55:55	E2 requests HFD dispatcher to send a truck company to the lobby.	HFD Radio Log
04:56:08	Command (D28?) instructs E28 to take over lobby control.	HFD Radio Log
04:56:34	HFD radio dispatches second alarm assignment of E16, E60, E37, E51, L16, L51, D69, D21, D10, CC002, RE11, CR17, L69, AS002, S003.	HFD Radio Log
04:58:02	HFD radio advises responding units to switch to tactical channel A-alpha-4.	HFD Radio Log
04:58:37	E2 (Jahnke) calls on channel A2 asking dispatcher to repeat what channel on scene units are to use.	HFD Radio Log
04:59:17	E2 (Jahnke) repeats his transmission on channel A2, asking what channel on scene units are on.	HFD Radio Log
04:49:50	D6 reports on location. Advises HFD dispatch he is moving to radio channel A4.	HFD Radio Log
04:59:39	D28 calls HFD dispatch on channel A2 and advises he has a confirmation of a person trapped on the fire floor.	HFD Radio Log
05:01:02	E2 advises they have a hose laid and will lay another on the fifth floor. Channel A4.	HFD Radio Log
Unknown	E2 Captain Jahnke, FF Phillips, E/O Johnston arrive at fifth floor.	Phillips, Johnston Interviews
Unknown	Firefighter Phillips observes only light smoke on fifth floor.	Phillips Interview
05:01:17	E2 (Jahnke) advises San Felipe Command on channel A4 that he is on the fire floor, #5.	HFD Radio Log
Unknown	L28 Captain Green, FF Matt travel to fourth floor via elevator, observe floor layout.	Green interview
05:02:54	E2 asks command on channel A4 who his second company is.	HFD Radio Log
05:03:00	Command advises E2 that E3 should be there backing him up. Channel A4.	HFD Radio Log

TIME	EVENT	SOURCE
05:03:08	E2 (Jahnke) advises Command he is attempting to conduct a primary search of the other rooms on the fire floor because he is waiting for another company before he can enter the unit that is on fire. Channel A4.	HFD Radio Log
05:03:18	Lobby Control asks E3 if they are on the fire floor to back up E2. Channel A4.	HFD Radio Log
Unknown	L28 (Captain Green, FF Matt) arrive on fifth floor via Stair C. L28 (Green) observes light smoke, E2 1 ¾" hose pack connected to 1 ½" hose cabinet outlet. Green observes E2 Jahnke and Phillips in corridor outside entrance to Unit # 52.	Green interview
Unknown	E2 E/O Johnston leaves fifth floor to obtain a thermal imager	Johnston interview
05:05:24	Lobby Command calls Engine 2A on Channel A4, with no apparent response.	HFD Radio Log
05:06:38	L38A calls L38 on Channel A4. Advises L38 that fire is in room #43.	HFD Radio Log
05:09:04	Lobby Control asks L28 for a progress report.	HFD Radio Log
05:09:24	Command notifies Lobby Control on Channel A4 that he can see heavy fire from the outside of the building and states that it appears that they have not hit the fire yet.	HFD Radio Log
05:09:51	Unknown unit transmits on Channel A4 "Emergency, we need help on the fifth floor"	HFD Radio Log
05:10:27	HFD Fire Tac dispatcher advises Command he has someone calling for help on the fifth floor.	HFD Radio Log
05:10:53	E2 (Jahnke) calls on channel A4. "Engine 2, we're trapped on the fifth floor. Engine 2, help!"	HFD Radio Log
05:11:00	Command calls Lobby Control on channel A4 and asks if they received E2's message.	HFD Radio Log
05:11:05	Lobby Control acknowledges on channel A4 that the emergency message was received.	HFD Radio Log

TIME	EVENT	SOURCE
05:11:50	Lobby Command calls San Felipe Command on channel A4 requesting some companies he can go up with.	HFD Radio Log
05:11:56	Acknowledges Lobby Command and states that he is sending him some companies right then.	HFD Radio Log
05:12:03	Fire Tac dispatcher notifies all companies on channel A4 that they have a "mayday" on the fifth floor and he is sending a third alarm assignment to the scene.	HFD Radio Log
05:12:18	E2 (Jahnke) calls on channel A4, "Engine 2, we're trapped on the fifth floor!"	HFD Radio Log
05:12:25	HFD dispatches third alarm assignment on channel A2. E5, E505, E33, E8, L6, L33, D8, SC17, CV11 are dispatched to 5110 San Felipe.	HFD Radio Log
05:13:20	E2 (Jahnke) transmits on channel A4-"Engine 2, emergency, were running out of air!" "...(rest of transmission is unintelligible) Last transmission received from Captain Jahnke.	HFD Radio Log
05:13:57	Command transmits to all second alarm companies to report to Lobby Control as they arrive. Channel A4.	HFD Radio Log
05:15:30	HFD fire dispatch transmits fourth alarm on channel A2 to E6, E49, E69, E13, L21, L68, D31.	HFD Radio Log
05:27:05	Command reports all firefighters are accounted for with the exception of the Captain of E2 (Jahnke). Transmitted on channel A4.	HFD Radio Log
05:32:47	HFD Fire Tac dispatcher notifies Command that HFD is receiving calls from persons trapped on the 36 th floor. Transmitted on channel A4.	HFD Radio Log
05:34:19	Rescue 11 reports two firefighters trapped on Channel A2. Based on statements from R11 this is occurred as Captain Jahnke is removed from the fifth floor to the stairs.	HFD Radio Log
05:34:27	Unknown Unit (Rescue 11) calls "Emergency" on channel A4.	HFD Radio Log
05:34:31	HFD Channel A2 to R11 "you have trapped firefighters?"	HFD Radio Log

TIME	EVENT	SOURCE
05:34:36	"Rescue 11, we're on the 5 th floor landing. We can't locate the..." Channel A4	HFD Radio Log
05:34:42	HFD Fire Tac dispatcher repeats R11's "Emergency" call to command and advises them R11 is trapped on the fifth floor. Channel A4.	HFD Radio Log
05:35:18	San Felipe Command calls Lobby Control to verify he received R11's mayday call that were trapped on 5. Channel A4	HFD Radio Log
05:35:41 05:35:58	HFD dispatch calls for R11 on Channels A2 and A4 asking for their location. No response received.	HFD Radio Log
05:36:24	E28 calls Command on channel A4 and notifies him that they have Captain Jahnke downstairs.	HFD Radio Log
05:36:53	Command contacts HFD Fire Tac dispatcher on channel A4 to confirm that HFD dispatch has received the message that E2's captain is downstairs.	HFD Radio Log
05:36:55	Dispatch asks San Felipe Command if they need a fifth alarm due to R11's mayday. Channels A2, A4	HFD Radio Log
unknown	Rescue 11's trapped firefighters are observed outside the building on the west side.	Television news footage
05:38:52	"505 to Dispatch, somebody's on A-2..., somebody's on A-2, hollering! Sounds like, Rescue 11." Channel A4	HFD Radio Log
05:39:46	HFD Dispatch calls San Felipe Command on Channels A2 and A4: "Dispatch to San Felipe Command, be Advised we could hear their alarms going off from their PASS devices, but we're not getting any further Information other than garbled traffic."	HFD Radio Log
05:40:03	Command requests all staged companies to bring their crews to Lobby Command. Channel A4	HFD Radio Log
05:41:24	HFD Dispatch repeats the requests for companies to Lobby Control on Channels A2 and A4.	HFD Radio Log
05:46:50	Shift Commander requests a fifth alarm at his location on channel A4.	HFD Radio Log
05:47:25	Lobby Command repeats the need for crews to come to Lobby Control on Channel A4.	HFD Radio Log

TIME	EVENT	SOURCE
05:47:33	HFD fire dispatch transmits fifth alarm on channel A2 to E536, E44, E62, E46, L36, L46, D82.	HFD Radio Log
05:49:24	L69 notifies Command that fire has broken out on the north side of the sixth floor. Another fire has broken out about halfway through the building on the fifth floor (Unit #52 living and dining room) and fire is still visible on the corner of the fifth floor. (master bedroom and TV room of Unit # 52) L69 advises Command that heavy smoke is visible on the sixth floor and he cannot see in the windows. All traffic is on channel A4.	HFD Radio Log
05:50:01	HFD unit #2 reports on location on channel A4.	HFD Radio Log
05:51:18	Medic 60 goes in route to Hermann Hospital with CPR on Captain Jahnke. Channel B6	HFD Radio Log
05:57:22	Command request D8 to hook up a line over the Tower (L69) and knock down the fire from the outside. Channel A4.	HFD Radio Log
05:58:58	L69 reports to Command on channel A4 that there is fire extension on the north side of the building coming out of the sixth floor (Unit # 62) going up the side of the building.	HFD Radio Log
06:03:07	Medic 60 arrives at Hermann Hospital with Jahnke. CPR is still in progress. Channel B6	HFD Radio Log
06:04:24	E49 notifies Command on channel A4 that he has heavy fire coming out of the fifth floor window on the west side of the building.	HFD Radio Log
06:04:33	Lobby Command calls District 8 to remove all personnel from fire area. An aerial master stream is preparing to attack the fire from the exterior. Channel A4.	HFD Radio Log
06:05:05	L69 calls Command on channel A4 and notifies him that he has heavy fire coming out of the sixth floor on the west side of the building. The windows on the seventh floor are broken out (Unit #72) and he has fire now extending to the seventh floor.	HFD Radio Log
06:05:35	Command calls HFD fire dispatch on channel A2 and requests a sixth alarm at his location.	HFD Radio Log

TIME	EVENT	SOURCE
06:06:43	HFD fire dispatch transmits the sixth alarm for 5110 San Felipe on channel A2. E34, E517, E508, E21, L31 and L37 are assigned on the sixth alarm.	HFD Radio Log
06:13:07	Unknown unit transmits that Tower 69 is hitting the fire from the outside. Channel A4	HFD Radio Log
06:15:47	Engine 6 requests hose to Sixth Floor Stair C. There is fire along the sixth floor. Fire has not extended to the seventh floor. Channel A4	HFD Radio Log
06:38:13	Tower 69's aerial master stream is shut down. The fire has been blacked out. Crews begin interior attack on 5.	HFD Radio Log
06:40:36	D5 reports handlines are in operation on 7. Lines are need on 6 and 5.	HFD Radio Log
07:14:50	Task Force 6 reports fire is knocked down on 6.	HFD Radio Log
07:30:56	L31 telephones HFD Dispatch and ask them to relay to San Felipe Command that all fire is out on 5 and all areas Have been searched. A civilian fatality has been found in Unit 52.	HFD Radio Log
08:17:43	San Felipe Command returns all 1 st , 2 nd , 5 th , and 6 th alarm companies to service. Fire is not tapped out yet.	HFD Radio Log
09:13:20	Signal 7-1. The fire at 5110 San Felipe is declared under control. Holding all companies on the scene.	HFD Radio Log

West Tower Floors 3 - 15 1 & 2 Bedroom Units

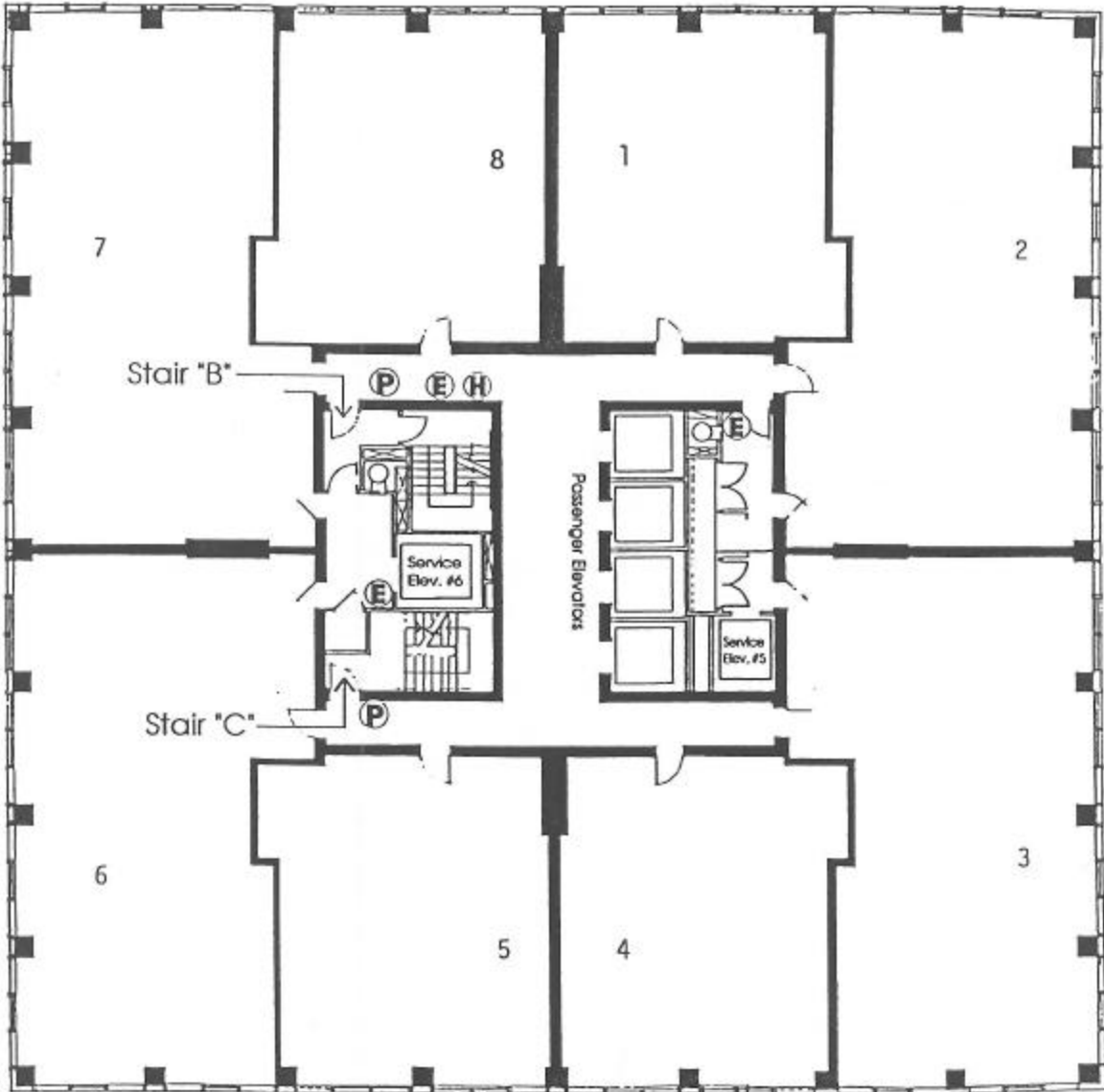


Numbering Key

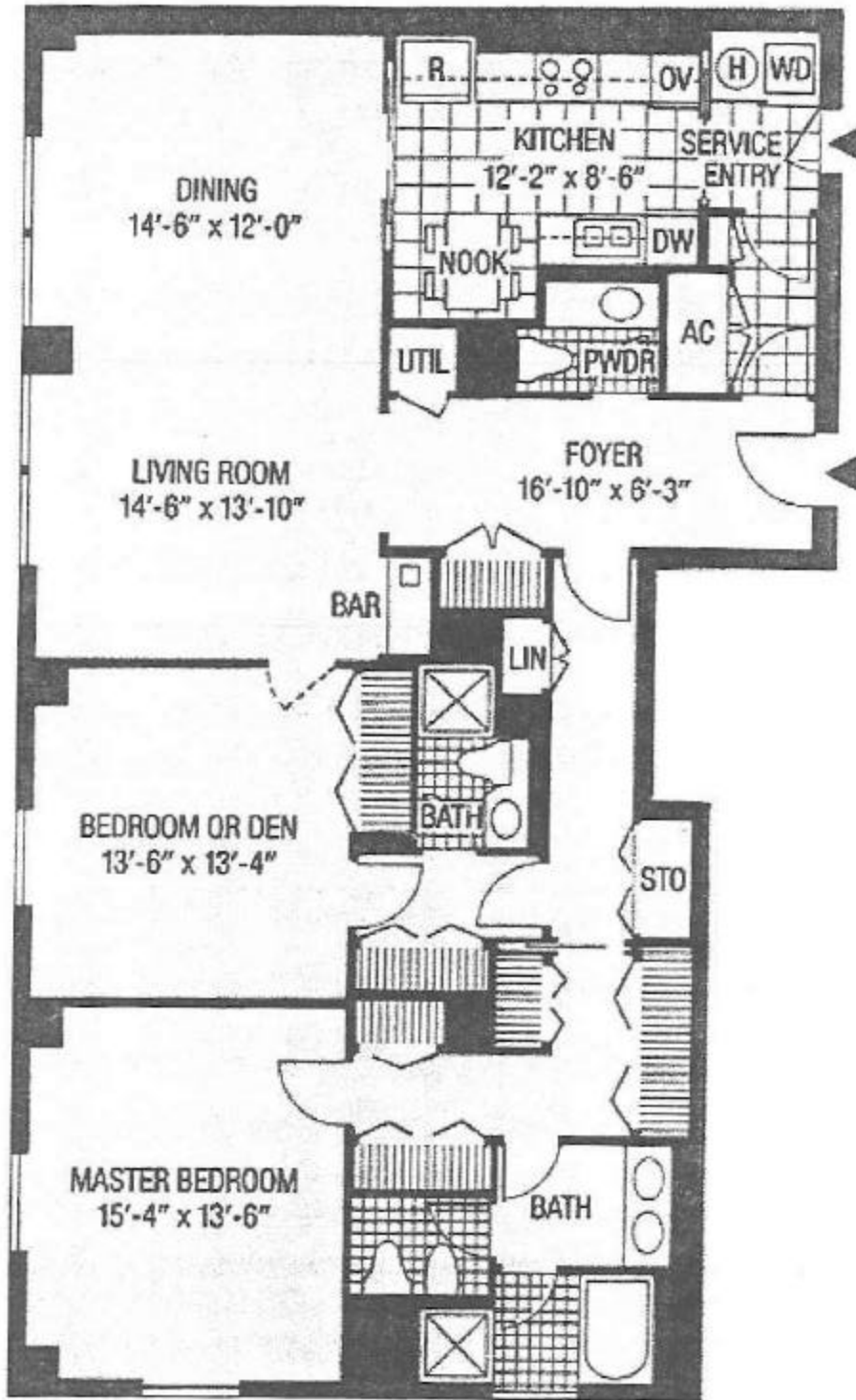
First Digit: Flr. # Second Digit: Unit #
3 5

First 2 Digits: Flr. # Last Digit: Unit #
15 8

- Ⓟ - Pull Station
- Ⓜ - Fire Hose
- ⓔ - Extinguisher



IDENTICAL FLOOR PLAN ON ALL FLOORS 3-14



TWO BEDROOM APARTMENT FLOOR PLAN

CASE NUMBER: 02-50-10

SUBJECT: Line-of-Duty Death, Captain Jay Jahnke, Houston Fire Department,
10/13/01

DOCUMENT LOG

VOLUME ONE---DOCUMENTS 02-50-10-D-01 TO 02-50-10-D-87		
Document Number	Source	Description
02-50-10-D-01	HFD	List of Houston Fire Department units assigned to fire
02-50-10-D-02	HFD	Houston FD Daily Staffing Report 10/12/01
02-50-10-D-03	HFD	Houston FD Daily SCBA Inspection Report, 10/01/01
02-50-10-D-04	HFD	Statement of George McAteer, EMS Supervisor, 10/13/01
02-50-10-D-05	HFD	Statement of Ronald Havemann, Cascade 2B, 10/13/01
02-50-10-D-06	HFD	Statement of Gregory E. Frank, Paramedic, SQ3, 10/13/01
02-50-10-D-07	HFD	Statement of Jason Mize, SQ3B, 10/13/01
02-50-10-D-08	HFD	Statement of Richard Collins, Captain, E28B, 10/13/01
02-50-10-D-09	HFD	Statement of Ricky Burleson, A528, 10/13/01
02-50-10-D-10	HFD	Statement of Dwayne Santiago, E28B, 10/13/01
02-50-10-D-11	HFD	Statement of Jason Mathis, E28B, 10/13/01
02-50-10-D-12	HFD	Statement of Randy Brown, A28, 10/13/01
02-50-10-D-13	HFD	Statement of Roland Chaves, L28B, 10/13/01
02-50-10-D-14	HFD	Statement of Ernest Herrera, A528, 10/13/01
02-50-10-D-15	HFD	Statement of Randy Walker, E60, no date
02-50-10-D-16	HFD	Statement of Kim Zawada, E60, 10/13/01
02-50-10-D-17	HFD	Statement of Julie Childers, SQ60, 10/13/01
02-50-10-D-18	HFD	Statement of George Kantis, A60, 10/13/01
02-50-10-D-19	HFD	Statement of Richard Watterson, A60, no date
02-50-10-D-20	HFD	E-mail from HFD DC28 to Donald Haynes re: staffing
02-50-10-D-21	HFD	HFD District 28 Staffing Report by W.R. Green
02-50-10-D-22	HFD	Statement of Michael Reid, E28, 10/13/01
02-50-10-D-23	HFD	Statement of Richard Halles (?), D10, no date
02-50-10-D-24	HFD	Statement of Alan Gunderson, SF15, no date
02-50-10-D-25	HFD	Statement of Joseph Noack, SQ62, no date
02-50-10-D-26	HFD	Statement of Dwayne Wyble, E3, 10/13/01
02-50-10-D-27	HFD	Statement of Roger Bobo, L16B, no date
02-50-10-D-28	HFD	Statement of Deena Elliott, L16B, 10/13/01
02-50-10-D-29	HFD	Statement of Kevin Wright, E16B, 10/13/01
02-50-10-D-30	HFD	Statement of William Fenley, E16B, 10/13/01
02-50-10-D-31	HFD	Statement of Richard Sepulveda, Capt. E16, 10/13/01
02-50-10-D-32	HFD	Statement of Damon Alsup, E11, no date
02-50-10-D-33	HFD	Statement of Troy Koterak, E11, 10/31/01
02-50-10-D-34	HFD	Statement of James Mockler, R11, 10/13/01
02-50-10-D-35	HFD	Statement of Robert Parry, E60B, 10/13/01
02-50-10-D-36	HFD	Statement of Anthony Bisbano, D21B, no date

02-50-10-D-37	HFD	Statement of David Almaguer, Captain, EMS HQ, 10/13/01
02-50-10-D-38	HFD	Statement of Chris Staff, E51B, 10/13/01
02-50-10-D-39	HFD	Statement of Earl Drummel (?), E51, 10/13/01
02-50-10-D-40	HFD	Statement of Donald Sims, Captain, E51B, no date
02-50-10-D-41	HFD	Statement of William Courville, L51B, no date
02-50-10-D-42	HFD	Statement of Norman Champagne, E51, 10/13/01
02-50-10-D-43	HFD	Statement of Lanny Strong, Captain, L51B, no date
02-50-10-D-44	HFD	Statement of John Blevins, L51, no date
02-50-10-D-45	HFD	Statement of Eddy Donaldson, Captain, E37B, no date
02-50-10-D-46	HFD	Statement of Ted Bowen, E37B, 10/13/01
02-50-10-D-47	HFD	Statement of Marshall Hefley, E37B, 10/13/01
02-50-10-D-48	HFD	Statement of Gary Taylor, D28, 10/13/01
02-50-10-D-49	HFD	Statement of Arthur Broussard, D6B, 10/14/01
02-50-10-D-50	HFD	Statement of Gary Taylor, D28, 10/14/01
02-50-10-D-51	HFD	Statement of Robert Green, L28, 10/13/01
02-50-10-D-52	HFD	Statement of Daniel Matt, L28, 10/13/01
02-50-10-D-53	HFD	Statement of Todd Kahney, R11B, 10/13/01
02-50-10-D-54	HFD	Statement of Michael Phillips, E2, 10/13/01
02-50-10-D-55	HFD	Statement of William Vaughn, Captain, E3B, 10/13/01
02-50-10-D-56	HFD	Statement of Leighton Yaw, D5B, 10/13/01
02-50-10-D-57	HFD	Statement of Clyde Mathison, Captain, R11, 10/13/01
02-50-10-D-58	HFD	Statement of James Johnston, E2, 10/13/01
02-50-10-D-59	HFD	Statement of Donald Sims, Captain, E51B, 10/13/01
02-50-10-D-60	HFD	Statement of David Wilson, Station 37, 10/13/01
02-50-10-D-61	HFD	Statement of Steve Newsome, E3, 10/13/01
02-50-10-D-62	HFD	Statement of Clarence Woulard, SQ62, 10/13/01
02-50-10-D-63	HFD	Statement of William Sheffield, SF2, 10/13/01
02-50-10-D-64	HFD	Statement of Alton Laskowski, Captain, E11, 10/13/01
02-50-10-D-65	HFD	Statement of Chris Staff, E51B, 10/13/01
02-50-10-D-66	HFD	Statement of Billy Wilson, Village FD, 10/13/01
02-50-10-D-67	HFD	Statement of Robert Pecina, E60B, 10/13/01
02-50-10-D-68	HFD	Statement of Robert Pecina, E60B, 10/13/01 (legal paper)
02-50-10-D-69	HFD	Statement of Scott Mullins, Village FD, 10/13/01
02-50-10-D-70	HFD	Statement of Chet Davis, Village FD, 10/13/01
02-50-10-D-71	HFD	HFD Interoffice memo from Chief Dispatcher Brandt Wilburn to Assistant Chief Herbert Sims regarding fire dispatch telephone and radio communications. 10/13/01
02-50-10-D-72	HFD	ATF arson task force interview with Melina Dill 10/13/01
02-50-10-D-73	HFD	Typical Two Bedroom Condominium Floor Plan from Four Leaf Towers-West-undated
02-50-10-D-74	HFD	HFD Diagram - fifth floor corridors by T.D. Wood 10/16/01
02-50-10-D-75	HFD	HFD Diagram - Unit 52 by T.D. Wood 10/15/01
02-50-10-D-76	HFD	HFD Diagram - Television room by T.D. Wood 10/16/01
02-50-10-D-77	HFD	HFD Diagram - master bedroom by T.D. Wood 10/16/01
02-50-10-D-78	HFD	SCBA Inspection Query, 5/30/2000

02-50-10-D-79	HFD	Handwritten note regarding Dellasala receiving Capt. Jahnke's Scott SCBA, bunker pants, nozzle, undated
02-50-10-D-80	NIOSH	NIOSH Final Report of SCBA testing
02-50-10-D-81	HFD	ATF arson task force interview with Melina Dill 10/13/01 REPLACEMENT
02-50-10-D-82	HFD	Statement of HFD Investigator F.V. Moore re: his activities
02-50-10-D-83	HFD	Statement of HFD Investigator R.L. Scott re: his activities
02-50-10-D-84	HFD	Statement of HFD Investigator A. Garcia re: his activities
02-50-10-D-85	HFD	Statement of HFD Investigator K. J. Brolan re: his activities
02-50-10-D-86	HFD	Preliminary TEXFIRS report incident # 11013174
02-50-10-D-87	HFD	HFD Arson Bureau, preliminary case information incident number 011013174
VOLUME TWO---DOCUMENTS 02-50-10-D88 TO 02-50-10-D-277		
02-50-10-D-88	HFD	HFD Radio and Phone Transcript-complete
02-50-10-D-89	NIOSH	SCBA testing report
02-50-10-D-90	HFD	Radio and telephone recordings-seven audio cassettes
02-50-10-D-91	TCFP	Protective Clothing and SCBA compliance report
02-50-10-D-92	HFD	HFD SOG-Incident Management
02-50-10-D-93	HFD	HFD SOG-Highrise Firefighting
02-50-10-D-94	HFD	Four Leaf Towers Evacuation Plan approved by HFD
02-50-10-D-95	HFD	HFD Quick Reference Sheet for Four Leaf Towers
02-50-10-D-96	HFD	HFD Arson-Videotape of 5110 San Felipe Investigation
02-50-10-D-97	HFD	HFD Arson-videotape-Channel 2 NBC raw fire footage
02-50-10-D-98	HFD	HFD audiotape of calls transferred from 911
02-50-10-D-99	M.E.	Autopsy Report, HFD Capt. Jay Jahnke, dated 1/4/02
02-50-10-D-100	M.E.	Autopsy Report, Charles Dill, dated 1/4/02
02-50-10-D-101	HFD	HFD Fire Incident Update printout, dated 10/13/01
02-50-10-D-102	SFMO	Letter to HFD Ass't. Chief Vincent with list of follow-up questions attached
02-50-10-D-103	HFD	Binder of HFD Replies to SFMO Inquiries
02-50-10-D-104	HFD	Letter from Tyco/Grinnell to Four Leaf Towers regarding fire alarm inspection dated 1/31/2000.
02-50-10-D-105	HFD	Houston Bldg. Department Certificate of Occupancy dated 1/13/99
02-50-10-D-106	HFD	Letter from Tyco/Grinnell to Four Leaf Towers regarding fire pump inspection dated 9/13/01.
02-50-10-D-107	HFD	Fire safety brochure for residents of Four Leaf Towers
02-50-10-D-108	HFD	Weather conditions at time of fire obtained by HFD
02-50-10-D-109	HFD	Statement of Melina Dill to HFD dated 10/23/01
02-50-10-D-110	HFD	Grinnell fire pump flow test record dated 5/23/2000
02-50-10-D-111	HFD	Grinnell fire pump flow test record dated 1/18/2000
02-50-10-D-112	HFD	Grinnell stair pressure test dated 8/27/97
02-50-10-D-113	HFD	HFD Notice of Violation to Four Leaf Towers dated 9/4/97

02-50-10-D-114	HFD	HFD Notice of Violation to Four Leaf Towers dated 6/9/00
02-50-10-D-115	HFD	ATF Interview of Melina Dill at Herman Hospital Emergency Room with two hand drawn diagrams
02-50-10-D-116	HFD	Colwell Electric Co. report of test of emergency power system at 5100 San Felipe, dated 4/26/00
02-50-10-D-117	HFD	Grinnell Fire Protection report of pressure-reducing valve testing for 5100 San Felipe dated 1/22/98
02-50-10-D-118	HFD	Fire Depository Box plans application to HFD from Four Leaf Towers dated 7/8/97
02-50-10-D-119	HFD	Handwritten statement of Vlado Kasljevic, Four Leaf Towers employee dated 10/13/01
02-50-10-D-120	HFD	Handwritten statement of Franco Zigno, Four Leaf Towers employee dated 10/13/01
02-50-10-D-121	HFD	Handwritten statement of Ifeanyi Oramulu, Weiser Security employee assigned to Four Leaf Towers dated 10/13/01
02-50-10-D-122	HFD	Handwritten statement of Steven Welch, Weiser Security employee assigned to Four Leaf Towers dated 10/13/01
02-50-10-D-123	HFD	Handwritten statement of Kenyon Simon, Four Leaf Towers employee dated 10/13/01
02-50-10-D-124	SFMO	SFMO follow-up interview with Dan Matt, L28 dated 12/17/01
VOLUME TWO---DOCUMENTS 02-50-10-D88 TO 02-50-10-D-277		
02-50-10-D-125	HFD	Diagram of power strip and attached appliances dated 10/18/01
02-50-10-D-126	SFMO	SFMO follow-up interview with Capt. Robert Parry, E60 dated 12/17/01
02-50-10-D-127	SFMO	SFMO follow-up interview with Jimmy Johnson, E2 dated 12/17/01
02-50-10-D-128	HFD	HFD Ass't. Chief Gary Vincent's handwritten notes from NIOSH interview with Capt. Clyde Mathison, R11
02-50-10-D-129	HFD	HFD Ass't. Chief Gary Vincent's handwritten notes from NIOSH interview with Jimmy Johnson, E2
02-50-10-D-130	HFD	HFD Ass't. Chief Gary Vincent's handwritten notes from NIOSH interview with Capt. Robert Green, L28
02-50-10-D-131	HFD	HFD Ass't. Chief Gary Vincent's handwritten notes from NIOSH interview with Dan Matt, L28
02-50-10-D-132	HFD	HFD Ass't. Chief Gary Vincent's handwritten notes from NIOSH interview with Mike Phillips, E2
02-50-10-D-133	SFMO	SFMO follow-up interview with Todd Kahney, R11 dated 12/17/01
02-50-10-D-134	HFD	Statement of Kathryn Conza dated 10/13/01
02-50-10-D-135	HFD	HFD Arson Bureau Photo
02-50-10-D-136	HFD	HFD Arson Bureau Photo
02-50-10-D-137	HFD	HFD Arson Bureau Photo
02-50-10-D-138	HFD	HFD Arson Bureau Photo
02-50-10-D-139	HFD	HFD Arson Bureau Photo

02-50-10-D-140	HFD	HFD Arson Bureau Photo
02-50-10-D-141	HFD	HFD Arson Bureau Photo
02-50-10-D-142	HFD	HFD Arson Bureau Photo
02-50-10-D-143	HFD	HFD Arson Bureau Photo
02-50-10-D-144	HFD	HFD Arson Bureau Photo
02-50-10-D-145	HFD	HFD Arson Bureau Photo
02-50-10-D-146	HFD	HFD Arson Bureau Photo
02-50-10-D-147	HFD	HFD Arson Bureau Photo
02-50-10-D-148	HFD	HFD Arson Bureau Photo
02-50-10-D-149	HFD	HFD Arson Bureau Photo
02-50-10-D-150	HFD	HFD Arson Bureau Photo
02-50-10-D-151	HFD	HFD Arson Bureau Photo
02-50-10-D-152	HFD	HFD Arson Bureau Photo
02-50-10-D-153	HFD	HFD Arson Bureau Photo
02-50-10-D-154	HFD	HFD Arson Bureau Photo
02-50-10-D-155	HFD	HFD Arson Bureau Photo
02-50-10-D-156	HFD	HFD Arson Bureau Photo
02-50-10-D-157	HFD	HFD Arson Bureau Photo
02-50-10-D-158	HFD	HFD Arson Bureau Photo
02-50-10-D-159	HFD	HFD Arson Bureau Photo
02-50-10-D-160	HFD	HFD Arson Bureau Photo
02-50-10-D-161	HFD	HFD Arson Bureau Photo
02-50-10-D-162	HFD	HFD Arson Bureau Photo
02-50-10-D-163	HFD	HFD Arson Bureau Photo
02-50-10-D-164	HFD	HFD Arson Bureau Photo
02-50-10-D-165	HFD	HFD Arson Bureau Photo
VOLUME TWO---DOCUMENTS 02-50-10-D88 TO 02-50-10-D-277		
02-50-10-D-166	HFD	HFD Arson Bureau Photo
02-50-10-D-167	HFD	HFD Arson Bureau Photo
02-50-10-D-168	HFD	HFD Arson Bureau Photo
02-50-10-D-169	HFD	HFD Arson Bureau Photo
02-50-10-D-170	HFD	HFD Arson Bureau Photo
02-50-10-D-171	HFD	HFD Arson Bureau Photo
02-50-10-D-172	HFD	HFD Arson Bureau Photo
02-50-10-D-173	HFD	HFD Arson Bureau Photo
02-50-10-D-174	HFD	HFD Arson Bureau Photo
02-50-10-D-175	HFD	HFD Arson Bureau Photo
02-50-10-D-176	HFD	HFD Arson Bureau Photo
02-50-10-D-177	HFD	HFD Arson Bureau Photo
02-50-10-D-178	HFD	HFD Arson Bureau Photo
02-50-10-D-179	HFD	HFD Arson Bureau Photo
02-50-10-D-180	HFD	HFD Arson Bureau Photo
02-50-10-D-181	HFD	HFD Arson Bureau Photo
02-50-10-D-182	HFD	HFD Arson Bureau Photo
02-50-10-D-183	HFD	HFD Arson Bureau Photo
02-50-10-D-184	HFD	HFD Arson Bureau Photo
02-50-10-D-185	HFD	HFD Arson Bureau Photo
02-50-10-D-186	HFD	HFD Arson Bureau Photo

02-50-10-D-187	HFD	HFD Arson Bureau Photo
02-50-10-D-188	HFD	HFD Arson Bureau Photo
02-50-10-D-189	HFD	HFD Arson Bureau Photo
02-50-10-D-190	HFD	HFD Arson Bureau Photo
02-50-10-D-191	HFD	HFD Arson Bureau Photo
02-50-10-D-192	HFD	HFD Arson Bureau Photo
02-50-10-D-193	HFD	HFD Arson Bureau Photo
02-50-10-D-194	HFD	HFD Arson Bureau Photo
02-50-10-D-195	HFD	HFD Arson Bureau Photo
02-50-10-D-196	HFD	HFD Arson Bureau Photo
02-50-10-D-197	HFD	HFD Arson Bureau Photo
02-50-10-D-198	HFD	HFD Arson Bureau Photo
02-50-10-D-199	HFD	HFD Arson Bureau Photo
02-50-10-D-200	HFD	HFD Arson Bureau Photo
02-50-10-D-201	HFD	HFD Arson Bureau Photo
02-50-10-D-202	HFD	HFD Arson Bureau Photo
02-50-10-D-203	HFD	HFD Arson Bureau Photo
02-50-10-D-204	HFD	HFD Arson Bureau Photo
02-50-10-D-205	HFD	HFD Arson Bureau Photo
02-50-10-D-206	HFD	HFD Arson Bureau Photo
02-50-10-D-207	HFD	HFD Arson Bureau Photo
02-50-10-D-208	HFD	HFD Arson Bureau Photo
02-50-10-D-209	HFD	HFD Arson Bureau Photo
02-50-10-D-210	HFD	HFD Arson Bureau Photo
02-50-10-D-211	HFD	HFD Arson Bureau Photo
02-50-10-D-212	HFD	HFD Arson Bureau Photo
02-50-10-D-213	HFD	HFD Arson Bureau Photo
02-50-10-D-214	HFD	HFD Arson Bureau Photo
02-50-10-D-215	HFD	HFD Arson Bureau Photo
VOLUME TWO---DOCUMENTS 02-50-10-D88 TO 02-50-10-D-277		
02-50-10-D-216	HFD	HFD Arson Bureau Photo
02-50-10-D-217	HFD	HFD Arson Bureau Photo
02-50-10-D-218	HFD	HFD Arson Bureau Photo
02-50-10-D-219	HFD	HFD Arson Bureau Photo
02-50-10-D-220	HFD	HFD Arson Bureau Photo
02-50-10-D-221	HFD	HFD Arson Bureau Photo
02-50-10-D-222	HFD	HFD Arson Bureau Photo
02-50-10-D-223	HFD	HFD Arson Bureau Photo
02-50-10-D-224	HFD	HFD Arson Bureau Photo
02-50-10-D-225	HFD	HFD Arson Bureau Photo
02-50-10-D-226	HFD	HFD Arson Bureau Photo
02-50-10-D-227	HFD	HFD Arson Bureau Photo
02-50-10-D-228	HFD	HFD Arson Bureau Photo
02-50-10-D-229	HFD	HFD Arson Bureau Photo
02-50-10-D-230	HFD	HFD Arson Bureau Photo
02-50-10-D-231	HFD	HFD Arson Bureau Photo
02-50-10-D-232	HFD	HFD Arson Bureau Photo
02-50-10-D-233	HFD	HFD Arson Bureau Photo

02-50-10-D-234	HFD	HFD Arson Bureau Photo
02-50-10-D-235	HFD	HFD Arson Bureau Photo
02-50-10-D-236	HFD	HFD Arson Bureau Photo
02-50-10-D-237	HFD	HFD Arson Bureau Photo
02-50-10-D-238	HFD	HFD Arson Bureau Photo
02-50-10-D-239	HFD	HFD Arson Bureau Photo
02-50-10-D-240	HFD	HFD Arson Bureau Photo
02-50-10-D-241	HFD	HFD Arson Bureau Photo
02-50-10-D-242	HFD	HFD Arson Bureau Photo
02-50-10-D-243	HFD	HFD Arson Bureau Photo
02-50-10-D-244	HFD	HFD Arson Bureau Photo
02-50-10-D-245	HFD	HFD Arson Bureau Photo
02-50-10-D-246	HFD	HFD Arson Bureau Photo
02-50-10-D-247	HFD	HFD Arson Bureau Photo
02-50-10-D-248	HFD	HFD Arson Bureau Photo
02-50-10-D-249	HFD	HFD Arson Bureau Photo
02-50-10-D-250	HFD	HFD Arson Bureau Photo
02-50-10-D-251	HFD	HFD Arson Bureau Photo
02-50-10-D-252	HFD	HFD Arson Bureau Photo
02-50-10-D-253	HFD	HFD Arson Bureau Photo
02-50-10-D-254	HFD	HFD Arson Bureau Photo
02-50-10-D-255	HFD	HFD Arson Bureau Photo
02-50-10-D-256	HFD	HFD Arson Bureau Photo
02-50-10-D-257	HFD	HFD Arson Bureau Photo
02-50-10-D-258	HFD	HFD Arson Bureau Photo
02-50-10-D-259	HFD	HFD Arson Bureau Photo
02-50-10-D-260	HFD	HFD Arson Bureau Photo
02-50-10-D-261	HFD	HFD Arson Bureau Photo
02-50-10-D-262	HFD	HFD Arson Bureau Photo
02-50-10-D-263	HFD	HFD Arson Bureau Photo
02-50-10-D-264	HFD	HFD Arson Bureau Photo
02-50-10-D-265	HFD	HFD Arson Bureau Photo
VOLUME TWO---DOCUMENTS 02-50-10-D88 TO 02-50-10-D-277		
02-50-10-D-266	HFD	HFD Arson Bureau Photo
02-50-10-D-267	HFD	HFD Arson Bureau Photo
02-50-10-D-268	HFD	HFD Arson Bureau Photo
02-50-10-D-269	HFD	HFD Arson Bureau Photo
02-50-10-D-270	HFD	HFD Arson Bureau Photo
02-50-10-D-271	HFD	HFD Arson Bureau Photo
02-50-10-D-272	HFD	HFD Arson Bureau Photo
02-50-10-D-273	HFD	HFD Arson Bureau Photo
02-50-10-D-274	HFD	HFD Arson Bureau Photo
02-50-10-D-275	HFD	Final Fire Investigation Report for 5110 San Felipe
02-50-10-D-276	HFD	Physician's statement regarding medical treatment of Melina Dill after the fire
02-50-10-D-277	SFMO	Follow-up interview with L28 Captain Robert Green