

STATE FIRE MARSHAL'S OFFICE

Firefighter Fatality Investigation



Investigation Number 04-285-04

Firefighter Kevin W. Kulow

Houston Fire Department

April 4, 2004

Texas Department of Insurance
Austin, Texas

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Summary

Probationary firefighter Kevin W. Kulow, age 32, died of thermal burns while conducting an interior fire attack at an arson-caused two-alarm nightclub fire at 7610 Kempwood in Houston, Texas on April 4, 2004. Firefighter Kulow was a member of the Houston, Texas Fire Department (HFD). Two other firefighters on the interior attack team were injured by the fire, one critically.

Firefighter Kulow was part of a six Houston firefighter team that had advanced a hose line into the nightclub when the fire rapidly increased in intensity causing the hose team to withdraw from the building. Kulow may have become separated from other team members as they attempted to exit the building. It was not possible for rescue crews to enter the building due to extensive fire involvement and possible collapse when it was determined Kulow was missing.

The other five firefighters made their way independently to the outside of the building. One fire captain sustained critical respiratory injuries requiring his hospitalization. Another captain sustained serious burns to his face, knees and hand. No other firefighters from the interior attack team reported any injuries requiring hospitalization.

After the fire was brought under control, firefighters entered the building and found deceased Firefighter Kulow. Firefighter Kulow's body was transported to the Harris County Medical Examiner for autopsy.

Firefighter Kulow sustained multiple injuries including extensive burns from fire exposure. The cause of death was listed as thermal burns to most of his body and upper respiratory system.

Firefighter Kevin W. Kulow served in the Houston Fire Department for seven months. He is survived by his wife and two sons.

Introduction

The Texas State Fire Marshal's Office was notified of the death of Houston probationary firefighter Kevin Kulow on April 4, 2004. State Fire Marshal's Office (SFMO) Chief Inspector Richard L. Bishop was assigned as the SFMO fatality investigation team leader. Bishop and other city, state, and federal investigators traveled to the fire scene in Houston on April 4, 2004 to conduct an investigation of the incident.

The SFMO commenced a firefighter fatality 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.

The National Fallen Firefighter's Foundation and the National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality Investigation and Prevention Program were notified.

Origin and Cause Investigation

Investigators from the State Fire Marshal's Office, Bureau of Alcohol, Tobacco, Firearms, and Explosives, Houston Fire Department Arson Bureau and Houston Police Homicide Division conducted an examination of the scene of the fire from April 4 to April 8, 2004.

Investigators from these agencies determined that the cause of the fire was incendiary.

Investigators determined that several suspects had spread gasoline at multiple locations around the exterior walls of the occupied nightclub and ignited the fuel, causing a rapidly developing fire with multiple points of origin that eventually spread throughout the building.

The suspects were identified, arrested, and convicted of murder.

Building Structural Evaluation

This structure had various construction methods and materials. The walls, ceilings, and known interior finishes varied throughout the structure and the finishes of a significant portion of the building could not be determined due to the extent of fire damage. The structure had three sections with the middle section being the original building and the west and east sections added on at later dates.

[See diagrams of the building layout located at the end of this report.]



Southeast corner and main entrance, El Festival Ballroom, 7610 Kempwood

The exterior walls of the original (middle section) building consisted of concrete blocks with a stucco finish. Steel I-beams supported the gable design (with limited slope) roof system that consisted of metal affixed to “S” channel. The interior wall and ceiling finish could not be conclusively determined; however, a portion of this wall appeared to be made of concrete blocks.

The construction material of the walls of the two additions varied with portions consisting of concrete blocks while other sections had wood framing (nominal 2” x 4” construction). The addition on the east end of the building had a roof constructed of wood and was overlaid with asphalt shingles. The pitch of the roof was not significant enough to ensure adequate water runoff to prevent excess roof loading.

The construction of the walls of the west end of the building was very similar to the addition made to the east end of the building. The roof was constructed of plywood and was overlaid with a built-up tar and gravel roof. The pitch of the roof was also not significant enough to ensure adequate water runoff to prevent excess roof loading.



East side, El Festival Ballroom, 7610 Kempwood

Note: The two additions collapsed prior to recovering the victim. The victim was found in the original (middle section) building that had not collapsed.

Building Life Safety Evaluation

The building's compliance with minimum standards in relation to life safety were evaluated and based upon minimum requirements established by NFPA 101, Life Safety Code, 2003 edition. The section titles referred to are as used in NFPA 101.

Means of Egress

The existence of exit signage and emergency lighting could not be determined due to the extent of fire damage. Previous Houston Fire Department inspections had noted the presence of illuminated exit signs. This building contained five doors discharging to the exterior, and three of these doors were identified for egress purposes. This assembly occupancy had an occupant load less than 600 people and thus was required to have a

minimum two means of egress. The location, information and Life Safety Code discrepancies involving these doors are as follows:

- Two doors are installed adjacent to each other in the east wall of the south end of the middle section. Both of these doors were primary entrance/exits per the business owner.
- The northernmost door of the two opened against the direction of exit discharge and had it functioned correctly, would have a net clear opening size of approximately 34 inches. This door is not considered a compliant means of egress because it opens against the direction of travel of persons exiting the building. The door assembly was out of alignment and the bottom of the door dragged on the floor, preventing it from opening to a full 90 degrees or more, restricting the available width for persons entering or exiting the building. The door was found partially open.
- The southernmost door of the two was located approximately 20 inches south of the north door described above. This door opened in the direction of egress. It incorporated a deadbolt locking device having a thumb release on the egress side and an approximate 34 inch net opening size. The door was closed and the deadbolt lock was locked at the time of the fire. This door lacked the panic bar egress hardware required for assembly occupancies with occupant loads exceeding 100 persons. Panic hardware is required to facilitate rapid unlatching to prevent a crowd crush at the door in an emergency.
- Two doors are installed adjacent to each other with one located in the west end of the south wall of the middle section and the adjacent door located in the east end of the south wall of the west section.
 - The east door incorporated panic hardware and had an approximate 34 inch net opening width. The distance between the nearest edge of this door and the south door located in the east wall of the middle section was approximately 41 feet and 6 inches. This distance was not equal to or greater than one half of the widest diagonal measurement of the building and thus failed to meet minimum requirements concerning remoteness of means of egress. Remote location of exits from each other is vital to prevent one emergency from blocking all the available exits. This door constituted the third exit as identified by the business owner.
 - The west door was obstructed by chair storage. This door was not considered an exit as described by the business manager.

- A door was located in the south end of the west wall of the west section.
 - This exterior door was accessed through an interior door from the nightclub that opened into a storage area. This door entering into the storage area incorporated a key operated deadbolt locking device found in the locked position. The door discharging to the exterior from the storage area was obstructed by a two-wheeled hand cart and other miscellaneous items. This exterior door would not have been considered an acceptable exit due to occupants having to traverse a storage room containing contents having a greater degree of hazard than the assembly area of the building.

Features of Fire Protection

The interior finish in this building varied and could not be conclusively identified due to the extent of fire damage. However, the building was found to contain Type A, B, and C interior wall finishes. The Life Safety Code permits types A, B, or C in assembly areas having occupant loads of 300 or fewer.

The building did not contain a fire detection or alarm system or automatic fire sprinkler protection.

Operating Features

An enclosed room area located at the north side of the west section contained a gas grill connected to an LP gas cylinder. The gas grill is similar to those sold for outdoor grilling. A second LP gas cylinder was found adjacent to the gas grill.

The Life Safety Code references NFPA 58, *Liquefied Petroleum Gas Code* when LP Gas is utilized. Texas Railroad Commission LP gas safety rules and NFPA 58 prohibits storage and use of this size of LP gas cylinder inside buildings.

The gas grill was not protected by a vent hood and exhaust assembly as required by the Life Safety Code and NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*. The vent hood and exhaust assembly requires a vent hood, grease removal filters, an exhaust fan, an exhaust duct to the building exterior, and a fixed automatic fire extinguishing system.

Fire Ground Operations Sequence

NOTE: The following sequence of events was developed from known times of events based on radio transmission timestamps, and firefighter witness statements. 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.

On April 4, 2004 at 5:56:13 the Houston Fire Department was dispatched to a reported truck on fire with hazardous materials at 7610 Kempwood. District Chief 5, Engine 50, Engine 5, Hazardous Material 1, Hazardous Material 2, Safety Officer 2, Medic 50, Ladder 38 and Ladder 4 were dispatched. District Chief 5 carried both District Chief Leighton Yaw and District Chief Thomas Skinner who was just coming on shift at the time of the alarm.

At the time of the alarm Engine 50 (E50) probationary firefighter Mark Limon was met by probationary firefighter Kevin Kulow of the oncoming shift. Firefighter Kulow said he would take the call on E50 and Firefighter Limon went back into the station quarters.

At 6:03:37 E50 reported it was in the area with heavy smoke visible but had not found the location of the fire. At 6:03:54 District Chief 5 (D5) Leighton Yaw asked the fire dispatch if a box alarm had been dispatched. The dispatcher replied that the alarm was dispatched as a hazardous material call. At 6:04:13 D5 called dispatch to report the call was a building on fire with heavy smoke at the same location as the original call. Dispatch acknowledged and stated a box alarm would be dispatched. (A second hazardous material alarm assignment was dispatched instead at 6:06:05 with the following units: District Chief 4, Engine 38, Engine 13, Safety Officer 15, Ambulance 38, Ladder 77, and Ladder 67.)

At 6:04:34 E50 arrived on the scene, parked in the parking lot just east of the building and Captain James Walterbach radioed Central Dispatch to report a one story commercial building on fire. E50 had a view of only the east and south sides of the building during it's approach. At 6:05:00 Ladder 38 (L38) arrived at the fire.

At 6:06:57 an unknown unit (probably E50) announced they were going to be making a fast attack and that there were two barbeque pits with propane tanks in the back. At 6:08:15 E50 announced "Engine 50 going inside for a fast attack." E50 crew stretched 200 feet of 1 ¾-inch pre-connected handline and Captain Walterbach, Firefighter Larry Roberts and probationary firefighter Kevin Kulow positioned themselves at the main entrance on the southeast corner of the building. Captain Walterbach had conducted a partial size-up of the building as he walked through a crowd of people that had gathered in the parking lot on the east end of the building. There was no visible fire observed on the exterior of the building by the first arriving units. In post-incident statements and interviews, Walterbach and Roberts stated they encountered a wall as they entered the building that forced them to make a hard turn to the right. As they advanced into the building a short distance, they encountered difficulty in moving the hose.

D5 acting as Kempwood Command, assigned Ladder 38 (L38) to be Sector 1 (Fire Sector) Command with E50. After encountering difficulty locating the seat of the fire and advancing the hose line, E50's crew returned to the entrance door to regroup where they met the crew from L38, Captain Robert Smith and firefighter Abel Sarabia and probationary firefighter Pedro Hinojosa. The two crews joined on the one hose line in the following order: Roberts, Kulow, Walterbach, Smith, Hinojosa, Sarabia. As the crews from E50 and L38 entered the building they stated they could not see any fire. Captain Smith of L38 had a thermal imaging camera (TIC) with him, but did not use it. In their subsequent statements and interviews there was some disagreement in the crew regarding the smoke level that each of them observed. Other officers and firefighters stated later that they observed heavy dark smoke from the northwest corner of the building as they arrived.

Command assigned Engine 5 at 6:07:52 to set up and maintain the Grace™ electronic accountability system (EAS) and become the rapid intervention team (RIT).

At 6:09:00 Engine 5 (E5) advised Command of fire through the roof in the back of the building. At 6:10:10 District Chief Skinner as Fire Sector reports two 5 gallon propane tanks in the northwest corner of the building and at 6:10:19 follows with the report of heavy fire showing through the roof at the same location. The presence of the propane tanks was acknowledged by E50 (firefighter interviewed stated it was probably E/O Stephen Wingate.) At 6:10:37 E5 firefighters Royce Harper and Eric Walker announced the EAS was activated and monitoring the status of personnel on the scene.

The members of the E50/L38 hose crew stated they made a hard right upon entry and then a left. Walterbach stated he heard water flowing from the nozzle and asked if the seat of the fire had been located. He got no response. Upon hearing the report of fire through the roof, Walterbach stated he told the others to leave the building. Walterbach stated he did not radio this to incident command. Walterbach described the heat level as not uncomfortable, more "like a sauna." Walterbach then experienced problems with his breathing apparatus, inhaled smoke as he called on his radio for help, and he was soon rendered incapable of self-escape from the burning building by smoke and carbon monoxide inhalation and high temperature injuries to his respiratory system.

[The following events were described in post incident statements and interviews as happening almost simultaneously. The order of these firefighter recollections may not be the exact order of events of that day.]

E50 firefighter Roberts stated he heard the order to evacuate and turned and could not see anyone else. Firefighter Roberts stated he dropped the nozzle and followed the reflective name and trim of another firefighter's coat as he followed the hose line out of the burning building. Firefighter Roberts said he saw another firefighter fall, but the firefighter regained his feet and Firefighter Roberts followed him out. When Firefighter Roberts emerged, he realized he had followed a L38 firefighter out and had not seen

Captain Walterbach or probationary firefighter Kulow. Firefighter Roberts stated that while he was inside the building he encountered extreme heat on the shoulders of his protective equipment, but not did not describe any unusually high temperatures on his legs.

L38 Senior Captain Smith stated that conditions inside the building had deteriorated rapidly and he saw a member of E50 exit. Senior Captain Smith was bumped away from the hose line into a wall by an exiting firefighter. Senior Captain Smith, dazed and disoriented from his impact with the wall, regained the hose line and began following it out. Senior Captain Smith stated that prior to being bumped off the line, the heat level he experienced was not significant, but there was zero visibility. Senior Captain Smith stated that as he followed the line out of the building, the heat level rose dramatically and he saw the fire “flash.” When Senior Captain Smith approached to what he felt was a safe distance from the entrance door, he removed his glove to remove his breathing apparatus regulator to call out to his crew. Upon touching the floor with his ungloved hand, Senior Captain Smith sustained second degree burns to his hand and also to his knees. Senior Captain Smith also sustained burns to the sides of his jaw.

L38 firefighter probationary Hinojosa had the hose jerked violently from his hands. (Hinojosa was fifth on the hose line.) As tried to escape the burning building, probationary firefighter Hinojosa considered using the forcible entry tools he carried to breach a wall to escape the interior, but he stated he reverted to his training to remain on the hose line and follow it to safety. L38 firefighter Sarabia described the heat level he felt when attempting to leave the building was so intense that he did not think he would get out alive. Firefighter Sarabia and probationary firefighter Hinojosa felt the heat level increase dramatically as they approached the door-so dramatically that they felt they were going toward the fire instead of out of it. Probationary firefighter Hinojosa stated he heard PASS alarms sounding and noises that sounded like others being injured and trying to escape as he moved toward the exit. Firefighter Sarabia and probationary firefighter Hinojosa reversed their direction, going back into the interior of the nightclub a short distance before realizing their mistake and reversing again toward the exit. Firefighter Sarabia and probationary firefighter Hinojosa then followed the hose line and crawled out of the building entrance. Both Firefighter Sarabia and probationary firefighter Hinojosa described extreme heat to their backs and knees as they exited. Neither reported any injuries that required treatment.

After escaping the building, L38 firefighter Sarabia noted that E50 firefighter Roberts and his fellow L38 probationary firefighter Hinojosa were safely outside. Firefighter Sarabia then saw that his officer, L38 Senior Captain Smith, was missing. Firefighter Sarabia instructed probationary firefighter Hinojosa to wait just inside the exit door and Firefighter Sarabia reentered the building and located a firefighter lying on his back motionless on the floor 8-10 feet inside the door. Utilizing the breathing apparatus straps on the down firefighter, Firefighter Sarabia dragged the firefighter to the doorway and firefighter Sarabia and probationary firefighter Hinojosa drag the firefighter outside the building, where Firefighter Sarabia identified the injured firefighter as E50 Captain Walterbach. Firefighter Sarabia reentered the building a second time and located his

L38 officer, Senior Captain Smith, crawling along the hose line about eight feet inside the building. Firefighter Sarabia assisted Senior Captain Smith out of the building. Firefighter Sarabia stated that a few seconds after he and Senior Captain Smith escaped, he looked back at the entrance door and it “was orange from floor to ceiling.” Firefighter Sarabia believed that the interior was now engulfed in flames and that further entry would not be possible until the fire was suppressed.

[The report narrative resumes at this point with the description of known events as they progressed simultaneously with the other activities outside the fire building.]

At 6:11:04 Command confirmed with Ladder (L4) that all building utilities have been disconnected. At 6:11:26 Fire Sector advised E50 that the seat of the fire was near the barbeque pits (in the northwest corner) and that fire had broken through the roof.

At 6:12:50 Command asked Fire Sector if personnel should be pulled out of the fire building. At 6:12:56 an unknown unit sent a partial transmission “...we’ll pull out.” The Fire Sector commander (Skinner) reported his observations face-to-face with Kempwood Command (Yaw.) At 6:13:41 Command instructed the RIT team (E5) to check on Engine 50 and ordered all companies to go defensive, that this was a defensive fire.

D5 instructed the EAS operators at the command post to put the EAS into evacuation mode which sounds an alarm on each firefighter PASS device on the scene and tracks which firefighters acknowledge the evacuation alarm.

At 6:13:52 dispatch sounded a special alert tone to all units and announced a defensive mode has ordered at the fire. The fire dispatched called for a Personnel Accountability Report (PAR).

At 6:14:57 and unidentified unit (later identified as E50 Captain Walterbach) transmitted: “(unintelligible...I need help...(unintelligible).” Evacuation alarms from the PASS devices were audible on the recording of the transmission. At 6:15:02 Command ordered apparatus on the scene to sound their air horns to advise all personnel of the change to the defensive fire mode and to evacuate the building. At 6:15:15 an unidentified unit transmitted: “(unintelligible)...got a firefighter down.” At 6:15:19 an unidentified unit asked “Who is it?” with the reply being “I don’t know, I don’t know.” At 6:15:26 and unidentified unit transmits: “(unintelligible)...and I think if I have another one, I can try and pulling him out, I need another one.” The unidentified unit is breathing hard into the radio during the transmission. (this was later identified by interviewed firefighters as probably L38 firefighter Sarabia.)

Simultaneously, firefighters were observed crawling and falling out of the entrance door where E50 and L38 entered the building. The events that led to the firefighters evacuating the building were described in the previous narrative.

At 6:15:37, Command ordered Engine 38 (E38) to assist E50 and L38.

At 6:17:29 L38 E/O Salazar called Command and stated: "Ladder 38 calling District 5, Ladder 38 and Engine 50 personnel are accounted for." At 6:17:35 Command repeated back L38 E/O's confirmation that all L38 and E 50 personnel are accounted for.

At 6:17:46 Command stated that is a defensive fire and that everybody should back away from the building.

Radio traffic from 6:18:09 to 6:20:17 related to establishing a defensive attack and water supply.

At 6:20:25 E38 transmits the following: "Engine 38 to Command, we've got all companies accounted for that were inside. Ladder 38 and Engine 50's crew is out."

At 6:21:31 Command requested two extra engines and crews to the scene from dispatch. This was to build the total alarm assignment to an equivalent strength of a normal second alarm structural fire assignment.

Radio traffic from 6:21:51 to 6:23:42 continued regarding the dispatching of extra units and establishing water supplies to support the defensive attack.

At 6:24:52 Medic 50 (M50) transmitted that it was going to Hermann Hospital with E50 Captain Walterbach for treatment for smoke inhalation. At 6:25:00 Command contacted M50 and asks if the firefighter from E50 was aboard. M50 replied that Captain Walterbach was the only passenger.

At 6:25:14 Command transmitted "Command to firefighter 50." No reply was received.

At 6:27:13 Ladder 77 (L77) requested an ambulance for L77 firefighter Eddie Parrott who was struck by E13 as it was backing up to set up defensive operations. Parrott was transported to Spring Branch Hospital where he was treated and released for a shoulder injury.

At 6:29:49 L38 contacted Command and transmitted: "Yes sir, we got uh... one firefighter on Engine 50 we can not account for. We can not account for one firefighter on Engine 50. He was outside, his whereabouts now are unknown."

At 6:30:14 Command instructed all companies to look for the missing firefighter from E50 and to have him report to the command post. At 6:30:29 Dispatch transmits an alert tone and requested any personnel from E50 to report to the command post. At 6:32:48 dispatch asked command if the missing fire fighter had been located and if an additional alarm for this location should be sounded.

At 6:33:00 Command reported that they are still trying to account for one firefighter and then followed with "Electronic accountability accounts for everybody."

At 6:34:04 Command warned fire units on the scene of a possible collapse of the fire building. At 6:35:16 Command requested another PAR from all crews and asked if the missing E50 firefighter was with any of them. Several units announced their crews were accounted for but the E50 firefighter was not with them. At 6:37:00 the Shift Commander requested all personnel from E50 to the command post.

At 6:38:04 dispatch requested Hermann Hospital to contact any personnel on the ambulance taking Captain Walterbach to ascertain if the missing E50 firefighter was with them. At 6:38:34 M50 contacted dispatch by radio to confirm that the only E50 personnel they had transported was Captain Walterbach.

At 6:38:51 Command contacted dispatch and stated the missing firefighter was outside the building when the defensive mode was announced and that he cannot be located.

Shift Commander Deputy Chief Dale Lawson assumed Kempwood Command at 6:41:58. D5 District Chief Yaw was assigned as Operations Sector. At 6:43:58 Command requested another PAR of units on the fire scene followed by a request at 6:47:37 for a rehab unit. Rehab 17, a specialized apparatus for firefighter rehabilitation, was dispatched to the scene on Kempwood.

At 6:50:29 Command confirmed with dispatch that they have contacted all ambulances that have left the fire scene to verify missing firefighter 50-B was not with them. Dispatch confirmed that was correct. At 6:51:13 Ambulance 13 transported L38 Senior Captain Smith with burns to his hands to Spring Branch Hospital.

At 6:59:14 Command instructed L38 to shut down the ladder pipe so a secondary search of the building could be undertaken. At 7:00:39 Command advised dispatch that a secondary search was underway. D4 requested E62 to the front of the building to make entry as a search team. At 7:09:39 Rescue Sector contacted E62 to inform them the conditions of the building were still deteriorating.

At 7:10:30 Command requested heavy equipment be brought to the scene to assist in the search effort after being contacted by Rescue Sector command. At 7:11:42, Rescue Sector command called E62 out of the building and requested Operations Sector to bring in additional hand lines to knock down residual fire.

After applying additional water on the fire, Command called for all hose streams to be shut down and apparatus motors cut off at 7:23:28. Dispatch transmitted an alert tone and repeated the message.

E62 entered the building and located probationary firefighter Kulow approximately 35 feet from the front door in the rear central portion of the building. Probationary firefighter Kulow was lying on his side and back and his helmet was off. Probationary firefighter Kulow had sustained extensive burns and was obviously deceased. The area of the building where Probationary firefighter Kulow was found had not collapsed and there was no significant accumulation of debris covering the victim's body.

At 7:25:28 Safety 15 transmitted to Command: "Safety 15 to Command, we found the firefighter." Command acknowledged and Rescue Sector requested E77 to assist with removing the firefighter. At 7:26:11 Command contacted the dispatch center to request that Critical Incident Stress Management (CISM) be set up. At 7:28:19 District Chief Jack Williams contacted the dispatch center by telephone to request HFD Arson investigators to the scene and that the CISM team be activated. At 7:28:28 Command advised Operations Sector that the firefighter was being removed from the building. At 7:32:57 HFD Chief Hector Trevino was notified of the firefighter fatality.

Additional hose streams continued to be applied on the burning building. Rescue 11(a specialized heavy rescue team) was requested at 8:52:19 to return to the fire scene to assist in stabilizing the building for investigators. HFD dispatch sounded the tap out for the fire alarm at 7610 Kempwood at 15:49:04.

Investigation Into The Death Of The Firefighter

Probationary firefighter Kulow was found lying on his side/back, face up near a roll of carpet or building material. Most of his protective equipment had burned away or was heavily damaged.

The Harris County Medical Examiner's report listed the cause of death as third and fourth degree thermal burns to 95 percent of the body and thermal burns to the upper respiratory system. There was less than 5% carboxyhemoglobin (a measure of carbon monoxide exposure) in Probationary firefighter Kulow's blood and no soot was found in the upper and lower respiratory tract.

Based on the injuries sustained and the damage to the victim's protective equipment, the State Fire Marshal's Office surmises that the Probationary firefighter Kulow was exposed to a rapid intensification of heat and flames inside the nightclub that overwhelmed his protective equipment, exposing his body and his respiratory system to intense heat that caused him to be rapidly overcome.

Personal Protective Equipment Evaluation

Probationary firefighter Kulow entered the building wearing full firefighter protective equipment, including a helmet, flame resistant hood, bunker coat, bunker pants, boots, gloves, and a self-contained breathing apparatus (SCBA).

The Texas Commission on Fire Protection was requested to assist in the investigation and examined the remnants of Kulow's personal protective equipment. Due to the extensive destruction of the protective equipment it was not possible to determine if the equipment was in compliance with all NFPA standards.

The self-contained breathing apparatus (SCBA) was too badly damaged to be evaluated and tested for proper performance. Only fragments of the EAS PASS device were found at the scene.

Findings & Recommendations

The following recommendations are based upon nationally recognized consensus standards for the fire service. All fire departments should be aware of the content of the standards and should develop programs based on them to increase the level of safety for fire department personnel.

FINDING #1

Initial interior fire attack by Engine 50 and later by Ladder 38 commenced prior to the establishment of a rapid intervention or rescue team. According to the statements of those involved the initial entry into the building was for the purposes of fire suppression, not search and rescue.

Recommendation:

State and federal regulations prohibit entry into atmospheres presenting an imminent danger to life and health (IDLH). Entry into IDLH atmospheres without a standby rescue team is limited to the response to an imminent life-threatening situation when immediate action could prevent the loss of life or serious injury before the team of four fire protection personnel equipped with full protective equipment including SCBA are assembled. Departmental policy, federal and state regulations regarding entry into IDLH atmospheres should be complied with by all employees.

U.S. Occupational Safety and Health Administration Respiratory Protection Standard, CFR 1910.134 (g) (4); Texas Commission on Fire Protection Standards Manual, Chapter 37 Texas Administrative Code 435.17 (b).

FINDING #2

Interior attack was commenced prior to a complete size-up of the building. The multiple points of fire origin and the large volume of fire on the northwest corner was not visible to Engine 50 prior to the commencement of interior operations. When interviewed, District Chief Skinner stated that if Engine 50 had not already been inside the building when he arrived, he would not have permitted them to enter. The rapid deterioration of interior conditions may have been predictable.

Recommendation:

Size-up is a systematic process consisting of the rapid, yet deliberate, consideration of all critical fireground factors and leads to the development of a rational attack plan based on these factors. The initial size-up is the basis of the attack plan and is extremely important to overall success.

Brunacini, A, (2002). Fire Command. Quincy, MA: National Fire Protection Association

FINDING #3

Electronic accountability systems are not a substitute for face-to-face accountability of crews by their officers and sector officers. The existing electronic accountability technology at that time did not provide the actual location of firefighters on the fire scene.

Recommendation:

Manual accountability procedures such as face-to-face roll calls, lists of personnel inside IDLH areas, and other methods are the foundation of a solid accountability system. Accountability procedures must facilitate the tracking of responders by both location and function. Manual accountability methods may be supplemented, but not replaced, by an electronic accountability system that can sense when crew members become immobile or call for assistance. The capability of remotely sounding an evacuation alarm and verifying receipt by individual firefighters enhances fireground safety.

NFPA 1561, Standard on Emergency Services Incident Management System, Chapters 5.3.2, A.5.3.2; Texas Commission on Fire Protection Standards Manual, Chapter 37 Texas Administrative Code 435.13 (d).

FINDING #4

Accountability was compromised and resulted in the erroneous report that all members of Engine 50 safely escaped the interior of the building when conditions deteriorated. The incapacitation of the captains of both Engine 50 and Ladder 38 resulted in the Engineer/Operators of Ladder 38 and Engine 50 stepping into the command position of the interior attack group, and he mistakenly reported that all personnel were accounted for.

Recommendation:

All members should remain aware of the makeup of their team at all times to provide for accurate accountability if any member of the team becomes disabled.

Incident Management plans shall address both routine and unusual incidents and shall provide standardized procedures and supervisory assignments that can be applied to the needs of situations of differing types, sizes, and complexities.

NFPA 1561, Standard on Emergency Services Incident Management System, Chapter 5.1.6; Texas Commission on Fire Protection Standards Manual, Chapter 37 Texas Administrative Code 435.13 (d).

